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A COMPLETE GUIDE TO ALL THAT RELATES TO THE HORSE,

Its History, Varieties, and Uses—Breaking, Training, Feeding, Stabling, and Grooming—How to Buy, Keep, and Treat a Horse in Health and Disease, &c., &c.

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THE HISTORY OF THE HORSE.

CHAPTER I.

THE ORIGIN AND ANCIENT HISTORY OF THE HORSE.

The original country of the Horse is not known with certainty from any extant records of history or from reliable tradition. Buffon has asserted, and his thousand-and-one copyists—compilers of Natural Histories, Anecdotes of Animals, Select Readings, and the like—have echoed, that Arabia is the cradle of the race.* More recent enquirers, searching and thinking for themselves, have shown this to be mere assumption. Certainly the nature of that country, its wide expanse of sandy plains, and its scanty herbage, offer no indication of a fit habitat for the wild horse to increase and multiply; and the conclusion is almost inevitable, that the Arab steed, like the thorough-bred of our own country, is indebted for the peculiar excellences which have made it celebrated, to the care, skill, and sedulous attention of its breeders and trainers: in short, that the Arab horse is not indigenous to that country, but the product of judicious cultivation during a long series of years—a process for which man is always rewarded by the development of the best, and often new and higher qualities, in the object of his care.

Nor are there wanting written proofs of this position. We shall first refer to the Bible, as the oldest historical record, to show that Arabia, notwithstanding its modern celebrity, has not the claim to number this noblest of quadrupeds among the native animals; and then proceed to notice those nations in which, at the earliest periods, the horse, as we know from their monuments, was used in war and in the arts of peace.

In those countries where the horse is indigenous, he appears to have been reduced to servitude from the earliest formation of human society. The first country in which we have proof of its domestication is in Africa. In Egypt, then, we have the testimony of history, both sacred and profane, as well as the marvellous monuments of this great community, which have survived the lapse of three thousand years, to attest the early subjugation of this valuable animal. In numerous sculptures, fresh as if yesterday from the chisel of the artist, the horse of the Egyptians appears harnessed to the chariots of warriors and kings; and the subsequent history of the same country shows how much it relied on the power of the horse in war. It is from the records of Jewish history that we receive the earliest written accounts of the subjugation of the horse in Egypt;† and, from the same source, we learn that the ancestors of the Israelites were not possessed of horses when they dwelt in the plains of Syria. When Abraham, more than 1,900 before Christ, sent his servant from Palestine to Mesopotamia, to bring a wife for his son Isaac, the messenger thus announced himself to Laban, the brother of Rebecca:—"I am Abraham's servant, and the Lord hath blessed my master greatly, and he is become great; and He hath given him flocks and herds, and silver and gold, and men-servants and maid-servants, and camels and asses." Observe, there is in this enumeration no mention of the horse; neither is it once spoken of in the subsequent recital of the wealth of Isaac. Again, when Jacob returned to his native land, he had oxen, sheep, goats, and asses, and camels, but no horses. In a later age, when the descendants of Jacob had multiplied in a district of Egypt which lies between the Nile and the Red Sea, and whence they were conducted to the Promised Land, they retained the habits of their ancestors in regard to the horse. In the Levitical law reference is made to the ass to denounce its flesh as "unclean;" and the sin of coveting "thy neighbour's ass" is denounced. Moreover, the duty of a seventh day's rest to that now despised but useful servitor is specially enjoined. Yet, all through, the horse is never spoken of as a part of the wealth or property of the people. On the other hand, there is an injunction that they shall not possess themselves of this animal, the pride of the Egyptians, in the land to which they are to be led. This

* The late Mr. Youatt, in his agreeable and useful book of *The Horse*, compiled for the Society for the Diffusion of Useful Knowledge; Professor Low, in his *Domestic Quadrupeds of the British Islands*; Blaine, and other authorities, adopt this view. Mr. Karkeek, of Truro, in some clever papers in the *Veterinarian* (vol. iii. pp. 18 and 125), supports Buffon, Gibbon, and Niebuhr in their view of the original habitat of the horse.

† The pre-eminently poetical picture of the war-horse in Job (c. xxxix. v. 19—25) is familiar to all:—"Hast thou given the horse strength? Hast thou clothed his neck with thunder?

"Canst thou make him afraid as a grasshopper? The glory of his nostrils is terrible," &c.

In Berenger's *Horsemanship* is a note on the use of the word *thunder* in the above quotation, which is worth transcribing:—"In this enumeration of the beauties and noble qualities of the horse, it should be remarked that the *English translators* make Job say that the animal's neck is clothed with *thunder*, an expression as false as it is absurd. The true rendering of this passage is, that his neck is clothed with a *mane*; thus Bochart, Le Clerc, Patrick, and other commentators translate it. Bochart says that the word which in Hebrew signifies *thunder* is synonymous for the *mane* of a horse; but this being so, it is astonishing that the translator should have set aside the just and natural signification, and have chosen to cover the horse's neck with *thunder* instead of a *mane*; nor is it less amazing that this nonsense should have been extolled by the author of the *Guardian* (vol. ii p. 26), and others, as an instance of the sublime."

rocky and limited territory was then, as it is now, unsuited to the horse, and never could be so well defended by cavalry as by infantry. Indeed, we have the historical fact that the Jews were never so successful as when they trusted to their "foot-men" in their earlier struggles, and in their subsequent wars under the glorious Maccabees.

Moses, well knowing the nature of the country to be subdued, discountenanced the use of cavalry. He counsels the people, when they go forth to the war, to have no fear of the "horses and chariots" of their enemies. He directs the future rulers of the land not "to multiply horses;" and so closely was this command adhered to, that it was the practice to hamstring the horses made prizes of in the field. David, when he took seven hundred horses and one thousand chariots, houghed all the horses except one hundred of those trained for chariots. The Psalmist speaks with proud disdain of horses as used in war, exults in the overthrow of "the horse and his rider," and never mentions them, except as used by the enemies of his country. As the commerce of Judea, and her intercourse with other nations, increased, these prejudices were broken down, and Solomon, his son, formed an army of chariots and cavalry; nay, he established a trade for horses with Africa, and supplied the neighbouring countries with those animals from Egypt. It is farther remarkable, that when the Jews entered Palestine from the south, they encountered no horses; for no mention is made of horses in the first campaign of Joshua. The Philistines alone had horses, in the south of Syria; and they were an Egyptian colony. There is, therefore, every reason to conclude that Arabia, and all the countries southward of Palestine to the Persian Gulf, were, at that time, without horses.

Proofs multiply upon us. When the Midianites, *an Arabian nation*, were subdued, the spoil consisted of sheep, oxen, and slaves, but no horses. In the reign of Saul a war was carried on with Arabian nations on the Persian Gulf; the plunder consisted of slaves, camels, sheep, and *asses*. And, in an attack on Judea, by the Midianites, in an after age, we are told they came "with *their cattle and their tents;* and they came as locusts for multitude:" still no mention of horses. But although the Jews, on their first entrance to Palestine from the south, found no horses, no sooner did they come in contact with the nations of the *north*, than they were met by warlike people possessed of horses and chariots. These nations approached the Black Sea and the Caspian, the great region of what may be called the "Asiatic horse;" this being the source of supply, and not Africa, with which, at that time, they were cut off from intercourse; nor Arabia, as that country had no horses. If, then, historical record be of worth, we must conclude that Syria and Arabia, and the countries to the Persian Gulf, were not countries of the subjugated horse in early times, and that the horses which they possessed in later times came to them, not from the south, or from Africa, but from the great river-watered plains and wide steppes of the north, the original habitat of that species of the equine race which we shall call the Horse of Central Asia.

It was from their contiguity to this region that the Assyrians and the Medes became so early nations of conquering horsemen. From other documents we learn that Asia Minor was a country of horses; and these again, we believe, came from the north, and not the south. An able writer, Professor Low,* to whom we are much indebted for his researches, suggests an easy explanation of what might seem to suggest itself as a difficulty. He says, we may believe that the species was called into existence in more than one place, and was thence diffused as from different centres; and thus we may suppose one species existed in Africa, and another in eastern and northern Asia. Hence we conclude, from the testimony of history, that the Egyptians derived their horses from the vast continent which they inhabited, and not from a region from which they were separated by a tract of arid and sandy country, in which *the horse did not exist in the first ages.* On the contrary, this remarkable people procured the horses they so early possessed from regions where the African horse was as indigenous as those of Asia are to the plains of Tartary. The horse, then, appears to have been obtained by the Arab as his predatory habits took a more extended range; and his contact with Persia, and countries to the north, put it in his power to obtain them, and he acquired them and prized them, just as we see savages in modern times possess themselves of fire-arms for purposes of destruction or of defence. Though there is no precise record of when the Arabs began to use horses, it is clear that they had very little multiplied there till after the Christian era. Strabo states that in the time of Tiberius Cæsar, the south of Arabia, called Arabia Felix, had "neither horses nor mules," and that as regards Arabia Deserta, the north of Arabia, it had no horses, but the camel supplied its place. This is definite; and we find that though the warlike and aggressive followers of the Prophet became horsemen, and laid the original countries of the horse in the East under contribution, the horse in Arabia, in the time of Mahomet, was neither numerous nor generally possessed. When the Prophet of the Moslem advanced on Mecca, to wreak his vengeance on the enemies of the Koran, he had no more than *two horses in his army*; and in the list of plunder which he carried back with him after his victory there were oxen, sheep, and camels, but, as in more remote scripture times, not a mention of a single horse is made.

When once, however, the horse was added to the family of the Bedouin, in aid of the predatory purposes of this nation of robbers, the acquisition was treasured with unceasing care, and the condition of the horse looked to with unsleeping anxiety. To the wandering and plundering Ishmaelite the horse possessed a value that no other people could estimate. Not only did luxury and enjoyment depend upon their horse's goodness, his stoutness, his readiness, and his speed, but often the owner's liberty and life. Hence the love and regard for the horse acquired by this peculiar people; hence the warmth of esteem which leads to their hyperbolical Eastern praises; hence the cherished memory of their feats; hence their boastful pedigrees. Thus the Arab has formed for himself noble families of horses; and breeding from these, and

* *Domestic Animals of the British Islands.* London: Longman & Co.

preserving the purity of descent, this artificial product has distinguished them, above all the people of the East, as the possessors of a race of animals remarkable for many valuable properties, and suited, in an eminent degree, to the condition of the country and the uses of the people, who have brought them to a certain standard of perfection. The further history of the Arab horse is treated of in the Supplement on the Race Horse and Racing.

To Sesostris, fable and the poets attribute the subjugation of the horse among the Egyptians. We have already noticed that Egypt was the direct source of Solomon's supplies. The price of a horse, we are then told, was 150 shekels, which, according to our scripture computation, would be about £17 10s., an immense sum if we estimate it by the price of food in those times. Six hundred years after Solomon, in the time of Xenophon, a good horse was £27 12s.; at least, that is the price—fifty drachmæ—which Seuthis the Thracian paid for the steed on which he rode during the Retreat of the Ten Thousand.

Mr. Griffith, the ingenious annotator and translator of Cuvier's great work, *Le Regne Animal*, expresses his opinion that the horse is indigenous to Asia, and especially to the plains of Tartary, but that almost every district has its variety. These we shall note, at length, when we come to treat of Asiatic, African, and European horses in their varieties.

Upper Egypt, Ethiopia, Libya, Mauritania, Numidia, indeed, all the country north and west of Sahara, the Great Desert, doubtless abounded, even before the historic period, with numerous fleet and beautiful horses, the progenitors of the Barbs, of the stately horses of Dongola, and—through Palestine and Syria eastward to Persia, and westward into Asia Minor—meeting most probably with occasional crosses from the more northern breeds, whom they met roaming southwards, a migratory tendency remarkable not only in the northern races of man, and all animal creation, wild quadrupeds, as the deer, and in birds, but even in the innumerable shoals of the finny tribes.

Colonel Hamilton Smith discusses the question as to whether the use of chariots, or the art of riding was the earliest service of the horse. It is a point of curiosity rather than of importance, and, perhaps, does not admit of a satisfactory conclusion. In Egypt, Palestine, and Greece, Colonel Smith supposes there were originally chariots only The monuments and authorities do not, we think, negative the existence of riders. Job, with the exception of Genesis the most ancient extant writing, distinctly describes the horse as trained to battle; but he does not stop there. From a verse in the same chapter he shows that the horse was then, as now, employed in the chase of the ostrich, (exclusively an African bird), "what time she lifteth herself up on high, she scorneth the horse and his rider;" and a still earlier intimation of the backing of this noble animal is found in Genesis, chap xlix., v. 17. "An adder in the path, that biteth the horse's heels, so that his rider falleth backward." For ourselves we cannot see any valid reason for not accepting the opinion of Berenger,* that, although either might be the more prevalent in particular countries, or at particular periods, the one must have suggested and accompanied the other.

It appears most probable that the horse was subjugated in Central Asia from an ante-historic period, whence the knowledge of his usefulness radiated to China and India. Another early region, perhaps of equal antiquity in the training of the horse, was Egypt and the adjacent countries. That systematic attention was there paid to the breed of these animals the abundant historical and sculptured remains testify, and these seem to be designed from high bred types. In one or other of the countries of Western Europe the bridle, the true saddle, and probably the horse-shoe were invented; while with many of the Asiatic nations a horse, a mare, and a colt were fixed standards of value.

Next to the Egyptians, the Assyrians and Medes became, according to Strabo, the most celebrated horsemen of the ancient world. These people are often mentioned by the Jewish writers for the beauty of their horses and their skill as horsemen, and for the splendour of their equestrian trappings. They were at a later period imitated by the Persians, who decked and "clothed their horsemen most gorgeously." Although Persia became most renowned for its horse-riding, Xenophon says, that before the time of Cyrus, Persia had no horses; but that, from personal example, encouragements, prizes, and recommendations of the king, every man in Persia rode on horseback. Indeed, the very name of the people, by which their country afterwards became known, was taken from the Chaldee and Hebrew word *peresh*, a horseman. Immense droves of these animals were reared in the plains of Assyria and Persia; and one author speaks of 150,000 horses feeding in one vast plain near the Caspian gates. The Nysæan horses used by the kings of Persia are declared to have been the finest horses in the world—a pre-eminence apparently claimed by every nation that ever possessed a horse; and we may also add, by most persons who have owned one.

In Greece, the art of riding horses, and most probably the introduction of the horse himself, did not very long precede the Trojan war. Homer, who was some centuries after Joshua, frequently dwells on the beauty of the horses which drew the chariots of his heroes; although the fact is worthy of note, that he makes but two references to horse-riding in the *Iliad*, and but one in the *Odyssey*. The first in the *Iliad* (K 513), is where Ulysses and Diomed, having stolen the horses of Rhesus, without the chariot, mount and gallop them to the Grecian camp That in the *Odyssey* is merely as a simile (E 371), likening Ulysses, after his shipwreck, bestriding a beam of wood, to a man on horseback. The reference in the 15th Book of the *Iliad*, however, as it gives an early instance of the Ducrow feat of riding four horses, we will quote:—

> "So when a horseman, from the watery mead,
> (Skilled in the manage of the bounding steed)
> Drives four fair coursers, practised to obey,
> To some great city, through the public way;
> Safe in his art, as side by side they run,
> He shifts his seat, and vaults from one to one;

* History of Horsemanship, vol. i., p. 12.

And now to this and now to that he flies;
Admiring numbers follow with their eyes."

The horse formed a prominent feature in the beautiful mythologic fables of the ancients.

Neptune, we are told, created the horse by striking the earth with his trident:—

"When Neptune his huge trident hurl'd
Against the sounding beach, the stroke
Transfix'd the globe, and open broke
The central earth, whence swift as light
Forth rush'd the first-born horse."

Æschylus, the tragedian, describes Prometheus as the first who taught man to render the horse obedient to the yoke (perhaps cultivating the earth is here alluded to).

Pluto carried off Proserpine in a chariot drawn by four horses (a *quadriga*); their names are preserved.

In Ovid's beautiful fable of Phaeton, a description is given of the horses which were supposed to draw the chariot of the sun, and which we find thus alluded to by our own immortal bard:—

"Gallop apace, ye fiery-footed steeds,
To Phœbus mansion; such a waggoner
As Phaeton would whip you to the west,
And bring in cloudy night immediately."*

The goddess Aurora is represented, by the ancient poets, drawn in a rose-coloured chariot by milk-white horses, and preceding the sun at his rising.

It was the eighth of the labours of Hercules to destroy Diomedes, king of Thrace, a tyrant who fed his mares on human flesh. Mars, the god of war, was generally represented as riding in a chariot, drawn by furious horses, named Flight and Terror; and horses were offered up on his altars, to propitiate his warlike spirit.

The origin of the Centaurs, half man, half horse—a favourite fable of the ancients, some of whom, as Plutarch and even Pliny, have actually maintained that these monsters existed—is thus given by Palæphatus, in his book, *De Incredibilibus Historiis*. This author relates, that in the reign of Ixion, king of Thessaly, a herd of mad bulls descended from Mount Pelion and ravaged the neighbouring country. In consequence of a large reward offered by Ixion for the destruction of the bulls, certain adventurous young men turned their attention to the training of horses for the saddle; before that time they having been only used in chariots. These men having attacked the bulls on horseback, and cleared the country of them, ravaged the plains of Thessaly, and even attacked Ixion himself. At their departure from these exploits, the ignorant Lapithæ, as the inhabitants of that county were called, seeing only the tails of the horses and the upper parts of the men, delineated them as monsters, half man and half horse.

The "certain adventurous young men" here spoken of were a colony of Egyptians.† A Grecian tradition makes these Centaurs actual beings, and fables that Philyre, the mother of the Centaurs, cohabited with Saturn in Philyres, an island near the south shore of the Euxine (this would point to Asia Minor); and that from that island she emigrated to Thessaly and the country of the Pelasgi. This mother of the Centaurs gives a hint to Mr. Tennant, who, thereupon, takes a rapid glance at the probable migrations of the horse, which is so much in accordance with our views that we make no apology for quoting it:—"In this way one might amuse himself by attempting to trace, even by the few data afforded by history, the circuit by which horses, with the consequent art of equestrian exercise, passed from Egypt, the original and central riding-school of the world, into Greece and into Europe. From Egypt they passed into Assyria and Persia; from Assyria to Cappadocia, Amazonia, and Pontus—countries where horses were most reared, most admired, and, as the most admirable objects in animated nature, offered up as sacrifices to the sun. From Pontus they passed, with the streams of westward-rushing population, to Phrygia and the southern banks of the Propontis; and from thence, with 'horse-taming' Pelops and the Pelasgi, they migrated into Thessaly, and confounded with their novel and terrifying appearance, the simple and aboriginal inhabitants, to whom 'the horse and his rider' seemed a monster, outlandish and inscrutable!" The Thessalonians for many centuries continued the most celebrated of the Grecian cavalry.

Another colony of Egyptians appears to have landed somewhat later in Southern Greece, and to have introduced the horse to Athens. The leader of this migratory band was Erichthoneus.* This horse-breaker by profession, or prince and leader of a people, perhaps both, is celebrated by Virgil in his third *Georgic*. The lines are thus given in Dryden's version:—

"Bold Erichthoneus was the first who joined
Four horses for the rapid race design'd,
And o'er the dusty wheels presiding sat:
The Lapithæ to chariots add the state
Of bits and bridles; taught the steed to bound,
To run the ring, and trace the airy round;
To stop, to fly, the rules of war to know,
T' obey the rider, and to dare the foe."

The most celebrated individual horse, of the Thessalian or an allied breed, was Bucephalus, the charger of Alexander the Great. He was bought for sixteen talents from Philonicus,

* *Romeo and Juliet* (Act iii. scene 2). † See Tennant's *Shreds of Antiquity*.

* Mr. Bracy Clark, a scholar and a careful studier of all things pertaining to the horse, and to whom we owe one of the best and earliest essays on the horse's foot, observes—"Those err widely who derive this name from the old Greek language, since the Egyptian appears the natural clue to it. *Erictho*—the ancient Egyptian word, of which the Greeks made *Erictheus* and *Erichthonius*, as of Apollo they made *Apollonius*—is composed of two words, *ers facere, vel rei alicujus auctorem esse*, and *chto*, or *ichto*, *equus*, the horse; and hence *Erictho*, *autor equitatus et equorum*, the occupation ascribed to Erichthoneus, in the lines of Virgil. Aristides and others confirm this by observing that he first tamed the horse, and then applied him to the chariot. On this account he was raised to heaven, and placed among the constellations, as *Auriga*, *Agitator*, or *Heniochus*, the driver, or charioteer.

Chiron, poetically surnamed the Centaur—half man, half horse—was, it is conjectured, a Thessalian. His hybrid nature, signified his medical skill was equally directed to human and to brute medicine. Æsculapius, to whom the establishment of rational principles in medicine is attributed, as well as Podalirius and Machoan, were also his pupils. These early professors of the *ars medendi* and veterinary science were for centuries venerated as the oracles and fathers of medicine.

out of his breeding pastures of Pharsalia. It is known he was a *skewbald*—that is white, clouded with large bay spots. He was, in short, a genuine and noble specimen of what moderns would call a circus horse, and his habits corresponded with this description. These parti-coloured horses were prized by the Parthians, but disliked by the Romans, who objected to them because so easily seen in partial darkness. Bucephalus was ridden by Alexander at the battle of the Hydaspes, and there received his death wound. Disobedient for once to the command of his master, he galloped from the heat of the fight, brought Alexander to a place where he was secure from danger, knelt, as was his custom, for him to alight, and having thus, like a good and faithful servant, discharged his duty to the last, he trembled, dropped down, and died.

Although, with the exception of the pastures of Thessaly, Greece was not a favourable country for the horse, he was soon found necessary in all parts of the country for the purposes of offence and defence. Accordingly, in most of the states, particularly in Athens and Sparta, a new order of citizens was instituted, to be ranked second in the Commonwealth, and distinguished by certain honours and privileges, as owners of horses. The equites, or knights, of the Roman Republic, were instituted with the same view of keeping up the numbers and excellence of this noble animal.

Blundeville, in *The Fower Chiefest Offices belonging to Horsemanship*, speaks thus of the horses of Greece, and his description applies well to the animal we see figured on the frieze of the Parthenon and other temples. "The horses of Greece have good legges, great bodyes, comely heades, and are of high stature and verie wel made forwarde, but not backwarde, because they are pin-buttocked. Notwithstanding they are very swifte, and of a bolde courage. But of alle the racys of Greece, both the horses and mares of Thessaly for their bewtie, bignes, and courage of al authors are most celebrated. For which cause Xerxes, on hys comming into Greece, made a runnyng of horses in chariots to be proclaymed in Thessalia, because hee wolde have hys owne horses to runne wyith the best in Greece. Julius Cæsar also beying dictatour of Rome, knowying the courage of the horses, was the first that ordeyned them as a spectacle before the people to fighte wyth wilde bulls, and to kyll them."

The caparisoning of the horse, and his part in the celebrated Olympic games will come more properly into the history of racing; whereto the two great works of Xenophon, "The Duties of the Master of the Horse," and "Of the Management of the Horse," will furnish prefatory matter.

On the decline of the Greek empire the Romans claim attention. It is clear that from the very building of their city they sedulously attended to the breeding and management of the horse. Chariot and horse races were early introduced, but the chariot-race seems to have fallen into disfavour and horse-races to have advanced in esteem. Down to the times of the Cæsars the young men of the equestrian order were enthusiastically devoted to horse exercise. Numerous writers describe or allude to these. They were either trials of speed, or more frequently exhibitions of dexterity in the manège, pacing and curvetting in intricate circles, a performance in modern times limited to the circus. Standing upright on the back of the horse, lying along his back, vaulting off and on, picking up objects from the ground, and shifting from one horse to another, were among the favourite feats of these noble youths.

The knowledge of the horse now becomes more accurate and generally diffused. The most eminent Roman writers on rural affairs introduce incidental notices of the breeds and the diseases of the horse and their remedies. Cornelius Celsus, whose veterinary works are lost, is stated to have written excellently on this branch of the subject. Marcus Terentius Varro, (70 B. C.) M. Portius Cato, (130 B. C.) Virgil, (10 B. C.), a few years later Columella and Palladius, also wrote on the horse and his diseases. The two last copiously for the time. During this period the Roman emperors, busied in foreign wars, and maintaining a numerous cavalry, professional *veterinarii* were appointed to the several legions, and the horse and his diseases were systematically studied. Not much that is worth preserving has come down to modern times from any of these "professionals."

About the middle of the fourth century, one of these, by name Vegetius, wrote the first work worthy of the name of a treatise on the Veterinary art. He begins systematically with the diseases of the head and their treatment, and proceeds to those of the feet. He also gives extracts from the works of Chiron and of Hippocrates, which else had been totally lost.

The Romans seem to have learned the inhabitants of the southern Mediterranean coast, to place superior value on the mare. Their authors are of one accord in this. It may be in some degree attributable to the custom of the Romans to castrate all horses employed in traffic, for hire, or in agriculture. Oxen were used for the latter purpose in almost every other country. The horse was rendered far more valuable and useful by these applications of his strength and docility. The practice spread from Italy, and this most admirable servant of man became a yet more general object of cultivation and attention. The irruption of the Goths, however, swept away almost every vestige of the civilization of the Romans, and the breeding of the horse and improvements in agriculture shared the general ruin.

Passing from Rome to Britain, we find in the 33rd chapter of the 4th book of Cæsar's Commentaries, an accurate detail of the mode of equestrian warfare in Britain, as practised in the century before Christ. This will, we think, add another corroboration to the fact that the "*penitûs toto divisos orbe Britannos*" had their own indigenous horse, aye, and a horse of such size and vigour as to attract the cupidity of the conquerors. Cæsar carried many of them to Rome, and the British horse—we will presently speak of the *mannii* or ponies—was for a long time in request in many parts of the Roman Empire. It is impossible that Cæsar, who had horses of the full stature, fifteen hands and upwards, in his cavalry, could speak thus if his enemies had driven Welsh or Dartmoor

ponies, as some have gratuitously assumed, not knowing how else to get rid of the difficulty of a special horse for these separated islands. The passage of Cæsar will speak for itself. "Their mode of fighting with their chariots is this: firstly, they drive about in all directions and throw their weapons, and generally break the ranks of the enemy with the very dread of their horses and the noise of their wheels; and when they have worked themselves in between the troops of horse, leap from their chariots and engage on foot.

"The charioteers meantime withdraw some little distance from the battle, and so place themselves with the chariots, that if their masters are overpowered by the number of the enemy they may have a ready retreat to their own troops. Thus they display in battle the speed of horse with the firmness of infantry; and by daily practice and exercise attain to such expertness, that they are accustomed, even on a declining and steep place, to check their horses at full speed, and manage and turn them in an instant, to run along the pole and stand on the yoke, and thence betake themselves with the greatest celerity to their chariots again."

How numerous these horses were at the time of Cæsar's invasion, we learn from the fact that when Cassibelaunus dismissed the main body of his army, he retained four thousand of his war chariots to harass the Roman army in their attempts to forage.

The Romans soon found it necessary to send a numerous cavalry into England, and at this period must have come the first cross in their breeding; horses from Gaul, Italy, Spain, and every province of the Roman empire being brought into the island. For hundreds of years we are without any record as to whether the British horse was thereby deteriorated or improved. We may presume that the neglect of breeding from selected parents must have led to a degeneration of the race.

Reverting to the ponies of Great Britain, these indigenous races were then as distinct as now, and contemporaneous with the British horse of Cæsar. Six centuries after, St. Augustine distinctly speaks of our Shetland, Welsh, New Forest, or Dartmoor breeds. Their diminutive stature is attested. The monk says:—"The mannii, or ponies that are brought from Britain, are those chiefly in use by jugglers and strollers, to exhibit the feats of their craft." They also fancifully shaved or clipped the upper parts of their shaggy bodies to add to their singularity of appearance.

The county of Argyle, in Scotland, is said to derive its name from *Are-Gael*—the breeding or horse-stud of the Gael; and in a superb work recently published, called the "Archæology of Scotland," there is a description of a truly remarkable discovery, throwing light on the charioteering of the Celts. There have been dug up, near the parallel roads of Glen Roy, two *stone* horse collars, the one formed of trap or whinstone, the other of a fine-grained red granite; these bear all the evidence of first-rate workmanship, are highly polished, and are of the full size of a collar adapted to a small highland horse, bearing a close imitation of the details of a horse collar of common materials in the folds of the leather, the nails, buckles, &c. It has been suggested by antiquarians, that the amphitheatre of Glen Roy might have been the scene of ancient public games, and that these stone collars might be intended to commemorate the victor in the race.

Hengist, the name of the founder of the Saxon dynasty, signified an entire horse; and by the Saxons the horse was an object of superstitious veneration. Of this there remains an example which must be familiar to all who in the old coaching days rode through White Horse Vale, in Berkshire. The turf on the side of a hill has been cut away, displaying the chalk beneath in the figure of a gigantic horse, covering many hundred square feet. This is a genuine Saxon relic, and has, we believe, been preserved by a day being annually kept as high festival, on which all weeds are carefully cleared from the figure, and the outline restored.

The Anglo-Saxons are supposed to have first used the horse in ploughing about the latter part of the tenth century; on the border of the Bayeux tapestry, representing the landing of William the Conqueror and the battle of Hastings (A.D. 1066), there is a representation of a man driving a harrow, the earliest instance we believe of horses thus used in field labour in this island.

Hugh the Great, head of the House of Capets, monarchs of France, presented to Athelstan, the natural son of Alfred the Great, whose sister Edelswitha he wooed and won, several running horses from Germany (*equos cursores* of the old Chronicle) magnificently caparisoned. Athelstan seems to have attached due importance to this improvement upon the previous breed, since he issued a decree prohibiting the exportation of horses without his licence. The most marked improvement, however, took place at the Norman Conquest, the martial barons bringing with them a large force of cavalry; and it was, by the way, to their superiority in that important arm that the victory of Hastings was in a great measure to be ascribed.

The office of the Master of the Horse dates back to the reign of Alfred the Great; the ancient Chronicles relate the attention paid by him to the breeding and improvement of the horse, to carry out which in the most efficient manner, an Officer was appointed, called *Hors Thane*—Master of the Horse; and during every succeeding reign this officer has held high rank, being near the royal person on all state occasions.

We may form an estimate of the value of a horse about that time, by an account bearing date A.D. 1000, which enacts that if a horse be destroyed or negligently lost, the compensation to be demanded was thirty shillings, for a mare or colt twenty shillings, and for a man one pound.*

* There were forty-eight shillings in the Anglo-Saxon pound, five pence in the shilling. The value of a horse in current money at that time would be about seventeen or eighteen pounds of modern money—a remarkable coincidence with the earliest recorded value of a horse in distant lands of the East. Mr. M'Culloch estimates that there are now in Great Britain from 1,400,000 to 1,500,000 horses employed for various purposes of pleasure and utility: taking their average worth at from ten pounds to twelve, their total value would be from 14,000,000*l.* to 18,000,000*l.*, exclusive of the young horses.

The year of grace 1112 is important in equestrian annals, as witnessing the introduction into England of the first African horse; and about the same time another was presented by Alexander I., king of Scotland, to the Church of St. Andrews, though what relation a race-horse had to the church has been a knotty point for antiquaries. Both these animals were true Barbs from Morocco, procured doubtless through the agency of Jew dealers. There is no breed which has exercised so great an influence upon the stock of these islands as the Barb, and none more deserving of kindness for the admirable qualities they possess. Kindness and forbearance towards animals is inculcated by the Koran, and it was a cutting satire upon our boasted civilization when, in allusion to this point, a Moor remarked to Colonel Hamilton Smith, "It is not in your book."

With this period we shall conclude our historical retrospect; what is further to be said on the English horse will come when we treat of him in the perfection to which various crosses have brought him, as adapted for the different purposes of his master.

CHAPTER II.

THE NATURAL HISTORY OF THE HORSE: THE WILD HORSE: THE HORSES OF CENTRAL ASIA: THE PERSIAN HORSE: THE TOORKMAN HORSE: THE CIRCASSIAN HORSE: HORSES OF INDIA: BIRMAN AND CHINESE HORSES: THE ARAB.—THE HORSES OF AFRICA:—THE BARB: THE DONGOLA HORSE: THE EGYPTIAN HORSE: THE HORSE OF THE CAPE OF GOOD HOPE.

NATURAL HISTORY OF THE HORSE.

It is not our intention to enter into a disquisition as to the place of the horse in a systematic classification of quadrupeds. We shall merely note, incidentally, some of the more amusing results of that laborious brain-scattering which great naturalists have permitted themselves, while endeavouring rigidly to classify and catalogue the varieties of the horse and his affined races, and the absurdities into which they have been led by obstinately attempting to derive all the different species of the animal from one original pair.

The great Linnæus, in his last edition of Systema Natura, leaves the horse among his *Belluæ*, the sixth order of Mammalia, in company with the hippopotamus, the hog, and the rhinoceros. Erxleben places him between the elephant and dromedary. Gmelin divides his horse genus into two sections: 1, *Equus pedibus bisulcis* (horse with split or double hoof), found in Chili (most probably a Llama), and *Equus solidungulus* (horse with a solid hoof). Jonston has figured a horse, called in German the Ethiopisches Pferd (*Equus Ethiopicus*) with a mane extending the whole length of his body from head to tail. This seems, probably, a sort of yak, of which there are two specimens in the Palace at Sydenham, and many live animals of this tribe have been recently introduced to France by the *Société d'Acclimatation*. Jonston also figures a wild horse with a horn in the centre of his forehead. Though the unicorn has been abandoned by naturalists, some still cling to their *bisulcus*. Old Aldrovandus has some monstrous figures of horses with human faces, and hands at their hinder extremities. A horse of this sort, says that credulous author, belonged to Julius Cæsar, * *teste* Suetonius: "Julius Cæsar rode a horse with remarkable feet nearly like human ones: his hoofs being split after the manner of fingers, &c." This malformed beast must have been used merely to astonish the natives. The painter, however, was not content to give the animal split hoofs; he has drawn him, with as much veracity as the writer, with two human hands, four fingers and a thumb, and nails to each of them! Butler had this monster in his eye when he wrote of the steed of Sir Hudibras:—

> Great Cæsar's horse, who, as fame goes,
> Had corns upon his feet and toes,
> Was not by half so tender-hooft
> Nor trod upon the ground so soft.
> And as that beast would kneel and stoop
> (Some write) to take his rider up,
> So Hudibras's ('tis well-known)
> Would often do to set him down. *

But we will quit these follies of the learned, and come to Cuvier, who places the Solipedes (single-footed animals) at the end of his mammiferous Pachyderms (teat-bearing thick-skinned animals) and makes the family consist of only one genus *Equus*, with four varieties. *E. Caballus* (the horse), *E. Hemionus* (the wild ass of Kertch and the Indus, dziggtai of Thibet and Tartary), *E. Asinus* (the wild ass of Africa, the Onager), *E. Zebra*, and *E. Quagga*. All of which, except the first (and here we have the support of Mr. Bell, in his British Quadrupeds, and Dr. Gray), we repudiate and reject as horses; and maintain that, as a fruitful progeny cannot be obtained from their admixture, and as they always have been and always will be asses, demand for them, in future systems, a separate genus as *Asinus*, protesting against the *Equus* as misapplied. We must quote some remarks of Mr. Bell on the structural differences of the two animals:—"The character of the tail is one of the most striking points upon which this distinction rests. In the horse the whole of this is covered with thick long hair, totally concealing its actual form; whilst in the whole of the others—the ass, the zebra, the quagga, the dziggtai, &c.—it is

* Caius Julius Cæsar utebatur equo insigni pedibus prope humanis, et in modum digitorum unguibus fissis.—*Suet. in Jul.* cap. 61.

* *Hudibras*, part i. canto i. 435.

only clothed with long hair towards its extremity. The mane of the true horse is long and flowing, in the ass it is short and upright. In the horse the hind as well as the fore legs are furnished with those warty excrescences which in the ass are only found on the fore-legs. Waiving some other matters of minor importance, there is one character of some interest and value as a material distinction—I mean the general tendency of the coloration and markings in the two races. In the horse's coat there is an obvious disposition to the formation of small round spots of a different shade or hue to that of the ground, and this is the case whether the colour be black, chesnut, or grey; in the genus *Asinus*, on the contrary, the markings are invariably disposed in stripes. The zebra, the quagga, &c., are examples too familiar to require more than this allusion; and in the common ass not only is the same tendency evinced in the cross-marks on the shoulders, but in the young ass there are frequently observed some small darker bands upon the legs. These tendencies to a peculiar character of colouring and marking are worthy of special note in the mammalia, among which will be found many instances bearing upon the distinction of approximating forms. In birds and insects it is still more marked, general, and striking, and has always attracted the attention of naturalists."

To this may be added the variations in the vocal organs of the two animals (which are mixed in various proportions in the mules), and the wide distinction between the playful whinny or proud neigh of the horse and the excruciating vocal performance of what, if it is to be retained as a horse, we would call *Equus Hierosolymus*.* With these acknowledged varieties of the ass, what but a determination to ignore the patent facts of natural history can induce writers to cling with superstitious awe to some myth of a single type of the horse, and refuse original habitats to the horses of Central Asia, of Africa, of Northern Tartary, of the continent of Europe, aye even to our own Welsh pony and Sheltie, who bear all the marks of genuine races? The facts of geology are admitted: right Reverends, very Reverends, and Deans, uphold the centuries and myriads of years of preadamite history of fossils, rocks, and minerals; but the natural historian is afraid to whisper about there having been half a dozen original horses, or a dozen different dogs, as ancestors for the most distinct varieties of the family.

From this, we trust not altogether uninteresting digression, we return to method. The distinctive characters of the horse according to Linnæus, are:—

"The tail long, with hair all over; the mane long, without any humeral stripe. It is a generous, proud, and strong animal; fit for all the purposes of man; for draught, the course, or the road; he is delighted with the freedom of open pastures; he is fearful of being touched on his hinder quarters; defends himself from the flies with his tail, scratches his fellow, defends his young, calls by neighing, sleeps after night-fall, fights by kicking and biting, rolls on the ground when weary and perspiring, bites the grass closer than the ox, wants a gall-bladder, never vomits; the foal is produced with the legs stretched out; he is injured by being struck on the ear, or upon the stifle, by his being caught by the nose in barracks, by having his teeth rubbed with grease, and by various herbs. His diseases vary in different countries and climates. With us the glanders, a corruption of the ethmoid bones of the nose, is the most fatal and infectious disease. He eats hemlock without injury; he has no canine teeth till five years of age."

The teeth of the horse, fully treated hereafter, are incisors $\frac{6}{6}$; canines $\frac{1}{1}$; molars $\frac{6}{6}$ $\frac{6}{6}$; total 40.

"Of all quadrupeds," says Buffon, "the horse possesses, along with grandeur of stature, the greatest elegance and proportion of parts. By comparing him with the animals above or below him, we find that the ass is ill-made, and that the head of the lion is too large; that the limbs of the ox are too slender, and too short in proportion to the size of the body; that the camel is deformed; and that the grosser animals—as the rhinoceros, hippopotamus, and elephant—may be considered as rude and shapeless masses.

"The great difference between the head of a man and that of a quadruped consists in the length of their jaws, which is the most ignoble of all characters. But though the jaws of a horse be very long, he has not, like the ass, an air of imbecility, nor like the ox of stupidity.* The regularity and proportion of the parts of his head give him a light and sprightly aspect, being gracefully attached to his finely arched neck, which is well supported by the beauty of his chest; he elevates his head as if anxious to exalt himself above the condition of other quadrupeds. In this noble attitude he regards man face to face.

"His eyes are open, lively, and intelligent, his ears handsome and of a proper height, being neither too long like those of the ass, nor too short like those of the bull. His

* The following anatomical distinctions may interest some readers:—In the horse the apertures of the lateral sacs are long and wide, and bear some resemblance to the usual ventricles of the glottis. On the contrary, in the ass, the opening into each of the three sacs is a small round hole, and the anterior sac is a real bag of considerable size. Cuvier states that the mule, which is generated by the male ass and the mare, has the openings into the laryngal sacs wide, and the structure of the organs of voice altogether approaching that found in the horse; and he therefore concludes that the account published by Herissant was taken from the dissection of the offspring of the stallion and the female ass. Blumenbach has, however, followed many other anatomists in attributing similar organs of voice to the common mule and the ass. Cuvier further adds, that in the horse and the mule there is, at the commissure of the two cordæ vocales, a slight fold of the membrane, which is not visible in the ass. The size of this fold has been greatly exaggerated by Herissant; he has also attributed to it important offices, which it does not seem to perform. The peculiar sound called a bray is uttered by the ass in consequence of the extent of the laryngal sacs, and their being so much separated from the cavity of the larynx by very contracted apertures. The bray seems indeed when heard to be a compound discordant sound, produced from the resonance of different sized cavities. Cuvier found in the quagga the larynx organised as in the horse, except that the membrane extending from one corda vocalis to the other, did not exist.—*Rees's Cyclopædia*, art. MAMMALIA. *Majendie's Comparative Physiology.*

* It need scarcely be observed that this is rhetorical nonsense. Each animal is perfect in its adaptation to its place in the scale of creation, and to its purposes.

mane adorns his graceful neck, and gives him the appearance of strength and courage. His long bushy tail covers and terminates with advantage the extremity of his body. His tail, very different from the short tails of the deer, elephant, and hippopotamus, and from the naked tails of the ass, camel, and rhinoceros, is formed of long thick hairs, which seem to rise from his crupper, because the trunk from which they proceed is very short. He cannot, like the lion, elevate his tail; but though pendulous, it becomes him better, and as he can move it from side to side it serves him to drive off the flies which incommode him; for though his skin is very firm, and well garnished with close hair, it is nevertheless very sensible."

THE WILD HORSE.

No authentic record remains of the indigenous horse in his wild state. The dziggtai of Tartary, the kiang of Ladak and the Himalayas, the onager of Numidia, the zebra, and the quagga of Central and Southern Africa, are none of them the *Equus Caballus*, or true horse, of Buffon, Linnæus, Cuvier, Gray, &c.; they all belong to that second family of the *Equidæ*, the ass. Malte Brun very rationally suggests that there was more than one original horse, varying in his different habitat. These would produce a fertile cross, partaking of the qualities and conformation of both sire and dam. This author specifies three original breeds of horse. The first indigenous to Bokhara, Persia, and Asia Minor; the second to Mongolia and Scythia, originated in the steppes of Central and Northern Asia; and third, the Arabian courser. The first two, as true indigenous varieties, we consider most probable, but in the third the great geographer adopted the current opinion of his time, and has assigned no true horse to North Africa—the original habitat of what we now know as the Barb—and has given to Arabia the credit of the first horse of this noble variety. We trust we have already shown, that whatever celebrity the land of Ishmael may have acquired in comparatively modern times for the perfection of its horses—a perfection attained through many generations of careful breeding, training, and the "hard meat" system—it only possessed them at a period long since Africa owned its Barbs. To the land now known as the Empire of Morocco, to Algeria, Tunis, Tripoli, and Lower Egypt, we transfer the claim of Arabia. From this variety too, we opine, the larger varieties of Persia, Armenia, Anatolia, Turkey, and Western Europe drew,—at intervals, from the period of the Carthaginians and Romans until the Crusades, and thence to more modern times—that glorious attribute known as "blood;" which gradually raised and gave fire and vigour to the heavier and more sluggish horses of the European continent and these islands, till the culminating point in speed, size, symmetry, and active strength, was realized in the British "thorough bred," such as we behold him in the son of Bay Middleton and Barbelle, a portrait of whom will be found in this volume.

As we have already said, the dziggtai or Tartary horse of Colonel H. Smith, (See *Naturalist's Library*) is not a horse strictly. He says—"The animal receives its name from the Mongolian Tartars on account of its large ears. The tail has hairs only at the extremity, and a black dorsal line which enlarges at the crupper. The general colour is a uniform bay or fawn colour, but the tint is redder in winter and lighter in summer. The ears, as already intimated, are longer than those of the horse, but straighter and better formed than those of the mule. When undisturbed their character seems social and peaceable; they live in troops of from twenty to thirty, and often in much larger communities. The Mongols, Tungooses, and other nations bordering on the Great Desert hunt these animals for food, the flesh being considered a great delicacy."

The kiang, *(Equus Hemionus)* another of these pseudo-wild horses, was often seen by Col. Markham, who says:—

"The so-called wild horse is numerous throughout Chinese Tartary and Thibet. Several were seen to-day, and Coles killed one—he never killed another; and as for myself I could not have fired a shot after hearing the account of this one's death. The poor beast was badly wounded, and she (for it was a mare) feeling herself struck, walked up quietly within ten paces of Coles, and looked at him as much as to say, 'What have I done to you that you should thus ill-treat me?'"

"I could have shot as many as I pleased without any trouble, but never fired at one. In districts, however, where they have been disturbed and fired at, they become very difficult to approach. They are not at all like horses, but bear a wondrous similitude to a large donkey, being nearly of the same colour, and having a very big head with long ears. Their feet are remarkably good, shaped like those of a horse, and possessing great speed; their movements are easy and graceful, when seen at such a distance that their huge heads are not a prominent feature. Usually seen in companies of from two or three to ten or a dozen, large troops of thirty or forty are occasionally met with. When approached, they stand gazing at the intruder, until he gets within about three hundred yards, when they will trot off to a little distance, and then turn to look, standing as before, until their pursuer draws near, when they again move off. The Tartar name of the wild horse is kiang; young ones are occasionally caught by the Tartars, but I never heard of any attempt being made to break them for use."

We may remark, in concluding this branch of the subject, that the so-called wild horses of the steppes near the banks of the Don and Wolga, are the descendants of horses turned loose by the Russian army when suffering under scarcity of forage at the siege of Azof in 1657, and who have multiplied amazingly, though not so largely as the descendants of the horses taken over to South America by the Spaniards, myriads of whom roam over the Pampas, and of which more than 60,000 hides are imported yearly to this country.

We shall now proceed to consider the varieties of the Horse.

* *Shooting in the Himalayas:* By Col. F. Markham, p. 325.

I.—THE HORSE OF CENTRAL ASIA.

The Tartar and Calmuck horses are perhaps the least cultivated or domesticated of any breed. They are small in stature, and by no means prepossessing in appearance, yet capable of undergoing long journeys, and of standing any amount of exposure. The colts are scarcely ever sheltered, and follow the tribe in its horseback movements. If a colt is weakly, a Calmuck quickly turns him into provender and feasts upon him; or, if of more mature age, subjects him, in the form of a steak-saddle, to a process intended to render the meat tender, which we find recorded in books of travels.*

Linton, the author of a series of pleasant papers on "Russia and its Field Sports" in the *Sporting Review*, 1856-7, thus speaks of the endurance of this race:—

"Although we did not halt on the high road to Moscow till we reached Ichondova, one hundred and ten versts, our horses did at least five leagues an hour. But subsequently, on arriving at Grovona—a place celebrated for the sumptuous building follies committed by Count Aratcheef, the detested favourite of the Emperor Alexander—we were obliged to change our sledges and reduce our horses to two in each, thus simply travelling at the pace of a mail; being finally obliged, when quitting the high roads, to submit to a simple village-sledge, drawn by a small active horse, whose harness was composed of cords. I may here add with much truth that sixty versts are somewhat a long distance thus to travel during a night bitterly cold and dark, with a frozen wind which penetrates to the heart's core, and blinds you with frozen snow fine as salt. It is then, notwithstanding great-coats and furs, that the rigour of a Russian climate finds holes through which to penetrate.

"But it would be very unjust, even when frozen, to accuse the poor beast who drags you; on the contrary, we ought to give the greatest possible praise and consideration for showing the most unequalled patience and courage amid storms and danger, evincing an extraordinary instinct in reference to the snow-covered tracts which are daily re-covered by wind or fresh storms, however previously beaten and demarked; in fact, an unfortunate animal, without apparent form, nerve, or strength—in fact, a horse scarcely seemed sufficient to convey vegetables to market—will trot sixty versts without halting, over snow-clad fields, through woods, over hedges and ravines, into which you descend like an avalanche, and rise again by a miracle; and yet, how are these poor beasts—so strong, so patient, so precious, notwithstanding their ugliness—treated when they arrive at their journey's end? Why, they are permitted to suck up with their lips a little frozen snow to refresh themselves; and then turning their heads towards the sledge they have so patiently drawn, they are granted the happiness of eating the hay which has served as litter to warm the feet of its recent occupants. And thus horse and sledge are left generally in an open court-yard, where they are under the covering of heaven day and night. If it snows during the night, an apparently inanimate object may be seen standing immovable by the sledge in the morning. It is the gallant animal who yesterday drew you fifteen leagues, to return the same distance to-morrow."

These semi-wild animals range over the plains, each herd under the care of a stallion, who jealously prevents intrusion and the mingling of another herd with his own. As the stallion foals grow up they are expelled the herd, and wander till they succeed in forming a herd of their own.

The Ostraces, Urals, Mongols, Calmucks, Nogays, Visigoths, Ostrogoths, and Huns, who people the vast plains of Central Asia, seem to have been always horsemen. The nations known to antiquity as Scythians, Medes, and Parthians, were of common origin with one or other of these hordes, which fed the stream of invasion to the West, the South, and the East. Some of their leaders, from time to time, could bring three hundred thousand cavalry into the field. The celerity of their marches, of their attacks and their retreats; the hardihood to which they brought themselves and their horses; their incursions and settlement—horde after horde—are the staple of the history of Asia, and of a large portion of Europe.

In the central steppes of Tartary there are, however, horses of a larger stature than those here spoken of. The Khirgese Tartars spear them and use them for food—the principal delicacy at high feasts being the horse's head, or a roasted foal.

The milk of the mare has from time immemorial been made by fermentation into a drink called *kumiss*. The process of its preparation is as follows:—To a gallon of fresh mare's milk about a quart of water and a pint of old *kumiss*, or sour milk, is added. The whole is then set in a warm place, covered with a thick cloth. At the end of twenty-four hours a clotted curd will have formed on the top, and the whole mixture will have become sour. It is then beaten up with a churn-staff, and again set by. Another churning completes the process, and the liquor is fit for consumption.

Dr. Clarke, in his *Travels in Russia*, gives the following account of the distillation of a spirit called *rakee* from this *kumiss*. The name will recall the vile brandy with which the Russian columns, who precipitated themselves on our brave Guards on the day of Inkermann, were maddened to the charge. The delicate process of production is thus detailed:—"The still was composed of mud, or very close clay. For the neck of the retort a cane was used; and the receiver entirely covered by a coating of wet clay. The brandy had just passed over. The woman who had the management of the distillery, wishing to give me a taste of the spirit, thrust a small stick

* Butler (*Hudibras*, pt. 1, canto 2) alludes to this unsavoury custom, where he says his bear was a "Muscovite," and "'mong the Cossacks had been bred;"

> "And though his countrymen the Huns,
> Did stew their meat between their bums
> And th' horses' backs whereon they straddle,
> And every man eats up his saddle;
> He was not half so nice as they,
> But ate his raw, when't came in his way."

* *Trans. of Royal Soc. of Edinb.*, vol. i.

with a tuft of camel's hair into the receiver, dropped a portion of it on the retort, and, waving the instrument above her head, scattered the remaining liquor in the air. I asked the meaning of this ceremony, and was answered that it was a religious custom to give always the first of the brandy which they drew from the receiver to their god. The stick was then plunged into the liquor a second time, when more brandy adhering to the camel's hair, she squeezed it into the palm of her dirty hand, and having tasted the liquor, presented it to our lips."

For two hundred and fifty years we are told that the Dukes of Muscovy, at their reception of Tartar ambassadors, made a ceremonial presentation of the milk of mares, after the fashion of coffee with Turks and Persians.

Berenger, in his excellent *Treatise on Horsemanship*, thus sketches the better breed of Tartar horse:—"Though but of a moderate stature, they are strong, nervous, proud, full of spirit, bold, and active. They have good feet, but somewhat narrow. Their heads are well-shaped and lean, but too small (?). Their forehand long and stiff, and the legs overlong. Yet, with all these imperfections, they are good and serviceable horses, being unconquerable by labour, and endowed with considerable speed. The Tartars live with them somewhat in the manner the Arabs do with their horses. When they are six or eight months old they make their children ride them, who exercise them in small excursions, dressing and forming them by degrees, and bringing them into gentle and early discipline; and, after awhile, making them undergo hunger and thirst, and many other hardships. The men, however, do not ride them until they are five or six years old, when they exact from them the severest service, and inure them to almost incredible fatigue, travelling two or three days almost without resting, and passing four or five days without better nourishment than a handful of grass, and with nothing to quench thirst."

The Nogay Tartars have some of the tallest and strongest of the Tartar horses; and a variety that is used for draught. The Khan of Tartary uses these on state occasions. The Nogays can mount, it is said, one hundred thousand men. Each Nogay has four horses when on an expedition: one for his own riding; a second as spare horse; and two more to carry his provision, his slaves, and his plunder.

We will close this notice of the Cossack or Calmuck horse, by a transcript of an often printed account of a race, in which the question of superiority of the English racer in endurance, stoutness, and speed, was incontrovertibly established:—For this match the most celebrated Cossack horses from the Don, the Black Sea, and the Ural, were sent; and, after numerous trials, the best were selected. The English horses, on the other hand, were by no means of the first class. Their names were Sharper and Mina, and neither of them here would have ranked much above 'leather-platers.'

"On the 4th of August, 1825, on the challenge of the Cossacks, a race of the cruel distance of forty-seven miles, out and home, was agreed to. The four horses to start together; and the first in to take the whole stakes.

"On starting, the Cossacks took the lead at a moderate pace—the English horses following at the distance of three or four lengths; but before they had gone half-a-mile the stirrup-leather of Sharper broke, and he ran away with his rider, followed by Mina, and they went more than a mile, and up a steep hill, before they could be held in.

"Half the distance was run in an hour and four minutes. Both the English horses were then fresh, and one of the Cossacks. On their return Mina fell lame, and was taken away. The Cossack horse, likewise, began to flag, when the accompanying Russians began to drag him on by the bridle, throwing away the saddle, and putting a mere child on his back. Sharper, likewise, evidently shewed the effects of the pace at which he had gone when running away, and was much distressed. The Cossacks then had recourse to foul play, and actually carried on their horse; some dragging him on by a rope, and the bridle at his head; and others pulling him on by the tail, and riding alongside of his quarters to support him, and relieving each other at this fatiguing work. Sharper did the whole distance in two hours and forty-eight minutes; and the Cossack horse was warped in eight minutes after him. At starting the English horses carried full three stone more than the Cossacks; and during the latter half of the race a mere child had ridden the Cossack."

The horses here engaged were of the breed, or a closely allied one, to those of the Ukraine, which Byron so beautifully paints in *Mazeppa*:—

"A trampling troop: I see them come,
In one vast squadron they advance!
I strove to cry—my lips were dumb.
The steeds rush on in plunging pride,
But where are they the reins who guide?
A thousand horse and none to ride!
With flowing tail and flying mane,
Wide nostrils—never stretch'd by pain—
Mouths bloodless to the bit or rein,
And feet that iron never shod,
And flanks unscarr'd by spur or rod—
A thousand horse, the wild, the free,
Like waves that follow o'er the sea.
On came the troop.....
They stop—they start—they snuff the air,
Gallop a moment here and there,
Approach, retire, wheel round and round,
Then plunging back with sudden bound;
They snort, they foam, neigh, swerve aside,
And backward to the forest fly."

II.—THE PERSIAN HORSE.

The Persian horse is of high antiquity. His figure appears in the Assyrian sculptures. Alexander the Great received a Persian horse as a most valuable and acceptable present. From this, and the allied Toorkman horse, some of our earliest improvements of our breed are due. It may be observed, that an immense race of horses was early known in Dongola, in Africa; and that these, with a cross of the Barb, may have produced the more noble breed known as the Persian horse, *par* excellence, for there were several breeds in that country.

It is by no means improbable that the chariot of Xerxes was drawn by Persian horses. We are told that they were from

Armenia, and the noblest and stateliest which his extensive empire could furnish.*

Under Cyrus the Persians became renowned for the beauty of their horses and the splendour of their caparisons; and in later days it was deemed unbecoming for a Persian of any pretension to rank to be seen in public except on horseback. Athenæus, the historian, however, tells us that they were more desirous of sitting at their ease than to prove themselves dexterous and bold horsemen. The stature of the Persian horse is often noted by ancient writers.

Down to the year 1800 no political mission had visited Persia for a century, but the fame of the English as soldiers had spread from India, and with a Persian until within the last twenty years a horseman and a warrior were convertible terms. An officer of one of the frigates which conveyed Sir John Malcolm's mission, who had gone on shore at Abusheher, and was there mounted on a spirited horse, afforded no small entertainment to the Persians by his bad horsemanship. The following day the man who supplied the ship with vegetables, and who spoke a little English, met him on board, and said, "Don't be ashamed, sahib: nobody knows you bad rider. I tell them you, all English, ride very well, but that time they see you, *you very drunk.*" The worthy Persian thought it would have been an indelible reproach for a man of a warlike nation not to ride well, but none for an European to get drunk.

As a pendant to the Persian horse, we may give the following two anecdotes, from Sir John Malcolm's *Sketches of Persia*, premising that Sir John always applies the term Arab to all the horses of the territory washed by the Euphrates, and even those of Asia Minor:—

"When the envoy, returning from his former mission, was encamped near Bagdad, an Arab rode a bright bay mare of extraordinary shape and beauty before his tent, until he attracted his attention. On being asked if he would sell her;—'What will you give me?' was the reply: 'That depends upon her age; I suppose she is past five?' 'Guess again,' said he. 'Four?' 'Look at her mouth,' said the Arab, with a smile. On examination she was found to be rising three. This, from her size and symmetry, greatly enhanced her value. The envoy said, 'I will give you fifty tomans' (a coin nearly of the value of a pound sterling). 'A little more if you please,' said the fellow, apparently entertained. 'Eighty. A hundred.' He shook his head and smiled. The offer at last came to two hundred tomans! 'Well,' said the Arab, 'you need not tempt me further; it is of no use. You are a rich elchee (nobleman). You have fine horses, camels, and mules, and I am told, you have loads of silver and gold. Now,' added he, 'you want my mare, but you shall not have her for all you have got.'"

"An Arab sheik, who lived within fifty miles of Bussorah, had a favourite breed of horses. He lost one of his best mares, and could not for a long while discover whether she was stolen or had strayed. Some time after, a young man of a different tribe, who had long wished to marry his daughter, but had always been rejected by the sheik, obtained the lady's consent and eloped with her. The sheik and his followers pursued, but the lover and his mistress, mounted on one horse, made a wonderful march, and escaped. The old chief swore that the fellow was either mounted with the devil, or the favourite mare he had lost. After his return he found the latter was the case; that the lover was the thief of his mare as well as of his daughter, and that he stole the one to carry off the other. The chief was quite gratified to find he had not been beaten by a mare of another breed; and was easily reconciled to the young man, in order that he might recover the mare, which appeared an object about which he was more solicitous than about his daughter."

Sir John Malcolm says—"A variety of horses are produced in Persia. The inhabitants of the districts which border on the Gulf still preserve pure those races of animals which their ancestors brought from the opposite shore of Arabia. In Fars and Irak they have a mixed breed from the Arabian, which, though stronger, is still a small horse compared with either Toorkman or Khorassan breeds, which are most prized by the soldiers of Persia. Both these latter races have also a great proportion of Arabian blood."

The Persian horse and its management is thus described by Sir Robert Ker Porter:—"The Persian horses never exceed 14 or 14½ hands high;* yet certainly, on the whole, are taller than the Arabs. Those of the desert and country about Hillah seem very small, but are full of bone, and of good speed. General custom feeds and waters them only at sunrise and sunset, when they are cleaned. Their usual provender is barley and chopped straw, which, if the animals are picketed, is put into a nose-bag, and hung from their heads; but, if stabled, it is thrown into a lozenge-shaped hole, left in the thickness of the mud wall for that purpose, but much higher up than the line of our mangers, and there the animal eats at his leisure. Hay is a kind of food not known here. The bedding of the horse consists of his dung. After being exposed to the drying influence of the sun during the day, it becomes pulverized, and, in that state, is nightly spread under him. Little of it touches his body, that being covered by his clothing, a large *nummud*, from the head to the tail, and bound firmly round his body by a very large surcingle. But this apparel is only for cold weather; in the warmer season the night clothes are of a lighter substance, and during the heat of the day the animal is kept entirely under shade.

"At night he is tied in the courtyard. The horses' heads are attached to the place of security by double ropes from their halters, and the heels of their hinder legs are confined by cords of twisted hair, fastened to iron rings and pegs driven into the earth. The same custom prevailed in the time of Xenophon, and for the same reason, to secure them from being able to attack and maim each other, the whole stud generally consisting of stallions. Their keepers, however, always sleep in their rugs amongst them, to prevent accident; and sometimes, notwithstanding all their care, they manage to break loose, and

* Berenger's *Horsemanship*, vol. i.

* This is only true of one of the modern races.

then the combat ensues. A general neighing, screaming, kicking, and snorting, soon raise the grooms, and the scene for awhile is terrible. Indeed, no one can conceive the sudden uproar of such a moment, who has not been in Eastern countries to hear it; and then all who have must bear me witness that the noise is tremendous. They seize, bite, and kick each other, with the most determined fury; and frequently cannot be separated before their heads and haunches stream with blood. Even in skirmishes with the natives, their horses take parts in the fray, tearing each other with their teeth, while their masters are in similar close quarters on their backs."

We have the following description of a Persian race, by the same author:

"My curiosity was fully on the spur to see the races, which I could not doubt must have been chosen from the best in the nation, to exhibit the perfections of its breed before the sovereign. The rival horses were divided into three sets, in order to lengthen the amusement. They had been in training several weeks, going very often over the ground during that time; and when I did see them I found so much pains had been taken to sweat and reduce their weight, that their bones were nearly cutting the skin. The distance marked for the race was a stretch of twenty-four miles; and that his Majesty might not have to wait when he had reached the field, the horses had set forward long before by three divisions from the starting point (a short interval of time passing between each set) so that they might have to come in a few minutes after the King had taken his seat. The different divisions arrived in regular order at the goal, but all so fatigued and exhausted, that their former boasted fleetness hardly exceeded a moderate canter when they passed before the royal eyes."

III.—THE TOORKMAN HORSE.

A beautiful breed of horses has long been known in Turkistan and South Tartary on the shores of the Caspian. They are large, stately, and strong, standing from fifteen to sixteen hands. The best breed of Turkish horses is descended from the Barb through the Arab and Persian horse; but these Toorkmans greatly exceed the horses of both those countries in point of size. The body is longer than the Arabian, and the croup more elevated. They have contributed materially to the improvement of the English breed.

This noble breed of horse appears to have been indigenous to Khorassan, thence westward through Mazanderan, to the south of the Caspian, in Armenia, Karamania, and Anatolia. He seems probably the progenitor of those Cappadocian horses so famed in ancient history for stature and stateliness. Vegetius expressly mentions that the horses of the Parthians were lighter and hardier than those of the Cappadocians or the Medes. Old Blundeville too says, from the inspection of many sculptures, these horses had larger heads than those of the Parthians. Oppian says of them, as is the case still with horses of large stature, "when young they are delicate and weak; but strength comes with years, and, contrary to other horses, they are better and more powerful when advanced in age." In which the ancient goes a little too far.

When, at the end of the eighth century, the Saracens overrun a great part of Syria, Asia Minor, and Europe, they brought with them a force of two hundred thousand cavalry, far superior to the Goths and Huns of former ages. These horses, crossed with the Persian, seem to have given them size and weight.

Of the modern Toorkman horse we may observe that, right or wrong, since the Moslem faith and language have spread over the land, everything wonderful and beautiful is traced from the land of the Prophet; every first-rate animal to a dash of the blood of one of "the sacred mares," sanctified by the ownership of Mahomet himself. With how much historic truth the reader may easily imagine.

Captain Fraser thus relates the impression which they made upon him, in his *Journey to Khorassan*—the reader bearing in mind that the gallant Captain's ideal standard was our English blood horse. "They are deficient in compactness. Their bodies being long in proportion to their bulk.* They are not well ribbed up. They are long on the legs—deficient in muscle—falling off below the knee†—narrow-chested, long-necked, head large and not well put on. Such was the impression I received from the first sight of them, and it was not for some time that their superior valuable qualities became apparent to me."

Captain Fraser's experience in many a long ride subsequently convinced him of the truth that horses "go well in all forms."

Sir John Malcolm must again be our authority for the Toorkman's capabilities. He says, "This horse is regularly trained by the Toorkmans preparatory to their plundering expeditions. Before proceeding on a foray, these wild people knead a number of small hard balls of barley-meal, which, when wanted, they soak in water, and which serves as food both for themselves and their horses. It is a frequent practice with them in crossing deserts where no water is to be found, to open a vein in the shoulder of the horse and drink a little of his blood, which, according to their own opinion, benefits rather than injures the animal. It is confidently stated, that when in condition their horses have gone one hundred and forty miles within twenty-four hours; and it has been proved that parties of them were in the habit of marching from seventy to one hundred and five miles for twelve or fifteen days together without a halt."

During Sir John's first mission to Persia, he, when riding one day near a small encampment of Afshar families, expressed doubts to his Mehmander, a Persian nobleman, as to the reputed boldness and skill in horsemanship of their females. The Mehmander immediately called to a young woman of handsome appearance, and asked her in Turkish, if she was a soldier's daughter. She said she was. "And you expect to be a mother of soldiers?" She smiled. "Mount that horse,"

* This is just the fault an Arab cross would remedy. *Raison de plus* for the originality of the Toorkman race.

† See description of Arab, *post*

said he, pointing to one with a bridle, but without a saddle, "and show this European Elchee the difference between a girl of a tribe and a citizen's daughter." She instantly sprang upon the animal, and setting off at full speed, did not stop till she had reached the summit of a small hill in the vicinity, which was covered with loose stones. When there she waved her hand over her head, and came down the hill at the same rate at which she had ascended it. Nothing could be more dangerous than the ground over which she galloped; but she appeared quite fearless, and seemed delighted at having the opportunity of vindicating the females of her tribe from the reproach of being like the ladies of cities.

IV.—THE TURKISH HORSE.

This variety is one rather of admixture of breeds than having a distinct and indigenous origin. He partakes more or less of the Barb, the Arab, the Persian, the Toorkman, and, in some parts, of the Tartar horse in different localities. The Turkish horse possesses valuable qualities. Some of our best blood is due to the Turkish horse. The Byerley Turk, (brought from the Levant in 1685); the Acaster Turk; the Belgrade Turk (taken by General Mercée at the siege of that place in 1720); the Lister Turk (brought from Buda by the Marshal Duke of Berwick, temp. James II.); the Helmsley Turk, and others, will suggest themselves.

The author of *Sylva*, old Evelyn, thus enthusiastically paints a Turkish horse sent over to England in the second Charles's reign:—

"I never beheld so delicate a creature; somewhat of a bright bay, two white feet, a blaze; such a head, eyes, ears, neck, breast, belly, haunches, legs, pasterns, and feet, in all respects beautiful, and proportioned to admiration; spirited, proud, nimble, making halt, turning with that swiftness, and in so small a compass, as was admirable."

The Turkish horses are likewise remarkable for their extreme docility, which is thus accounted for by Busbequius, who was ambassador at Constantinople in the seventeenth century; and it would be well, if both masters and grooms would learn a lesson from the wisdom and humanity of this truly worthy and benevolent writer.

"Nothing," writes Busbequius, "can surpass the gentleness of the Turkish horses; and their obedience to their masters and grooms is very great. The reason is, they always treat them with great kindness. I myself saw when I was in Pontus, passing through a part of Bithynia called Axilos, towards Cappadocia, how gentle the country people were to young colts and how kindly they used them soon after they were foaled.

"They took them into their own habitations, cleansed, combed, and caressed them, with as much affection as they would their own children. They hang something like a jewel about their necks, and a broad ribbon which was full of amulets against poison, which they are most afraid of. They never strike them, the grooms that dress them being as gentle as their masters. In return for this treatment these animals naturally acquire a great attachment to man, and are always most tractable and easily managed.

"But, alas! our Christian grooms' horses go on at another rate. They never think them rightly curried till they thunder at them with their voices, and let their clubs or horse-whips, as it were, dwell on their sides. This makes some horses even tremble when their keepers come into their stable; so that they hate and fear them too. But the Turks love to have their horses so gentle, that at the word of command they may fall on their knees, and in this position receive their riders.

"They will take up a staff or club upon the road with their teeth, which their rider has let fall, and hold it up to him again; and when they are perfect in this lesson, then, for credit, they have rings of silver hung on their nostrils as a badge of honour and good discipline. I saw some horses when their master was fallen from the saddle stand stock still without wagging a foot till he got up again. Another time I saw a groom standing at a distance in the midst of a whole ring of horses, and I saw some horses when their master was at dinner with me in an upper room prick up their ears to hear his voice, and when they did so they neighed for joy."

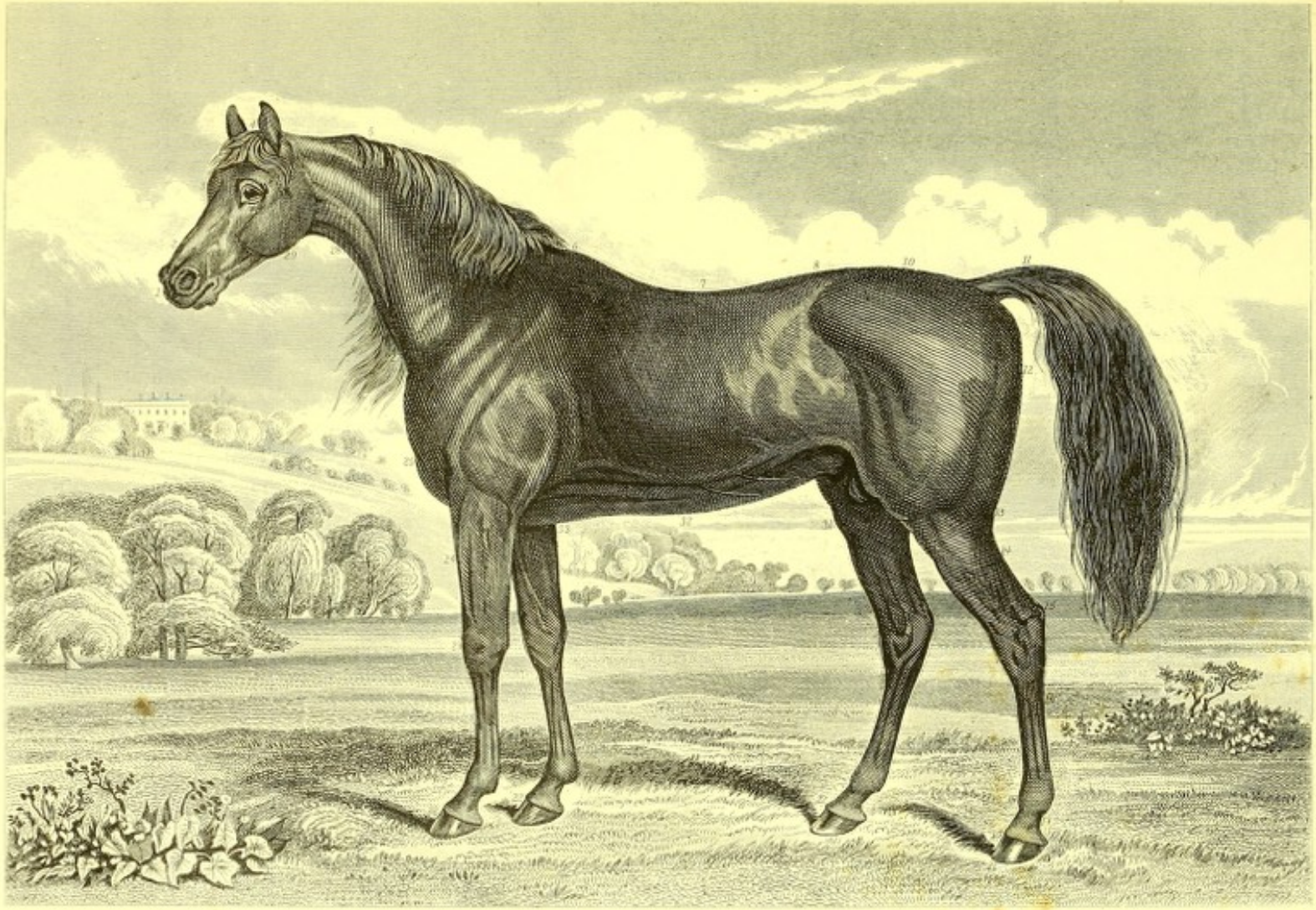
It may be worthy of note, that while the Arab horse is remarkable for uniformity of colour, and firm, flat, black legs; these larger horses, Persian, Toorkman, and Turkish have shown a disposition towards a white leg, and sometimes, as in the celebrated racer, Whitestockings, to a pair of them. We have already said Bucephalus was a skewbald; and a white leg —against which there is a traditional prejudice among English grooms—has often marked the finest of this race. A writer in the "Sporting Magazine" thus attacks this prejudice:—

"Turn to the banks of the Euphrates, to the decayed but once splendid seats of the Caliphs of the Black Banner, to the cradle of the Arabian tales; to the queen of the east, Bagdad, the beloved capital of the great Haroun al Raschid, and there we have a breed of horses uniting the fire of the Persian with the symmetry and enduring qualities of the Desert breed. Go further to the southward, cross the great river, roam among the settled tribes who have pitched their tents on the very verge of civilization, near unto the great cities, the dwellings of slaves, as they are not inaptly termed by the Bedouins, and you may lay your hand on the flowing manes of a race of horses — all chesnut, with the starting prominent eye, like an ember glowing, 'full of fire and full of bone,' and all singularly and invariably stamped with the peculiar distinctive marks of their caste; the white blazed face, and white legs (generally three) white up to the knee, perhaps the ancestors of the great Eclipse; a chesnut also with these remarkable marks, and which sometimes breaks forth in his most distinguished descendants—to wit, Sultan, his son Beiram, Harkaway, and a number of winners of our greatest stakes.

"The prejudice against white legs is strong; yet my experience, and it justifies me in the assertion, has proved that the chesnut horse with the white legs up to the knee is one of the hardiest, cleanest-limbed, fastest, and most honest of all the breeds; none bear so much rattling. I speak not of one, but of many of this kind."

We shall have more, however, to say of this in another place. Good authorities have much *per contra*.

ARAB-TOORKMAN CHARGER (FROM SYRIA)



TERMS USED IN HORSEMANSHIP

1. The Muzzle.
2. . Face.
3. . Forehead.
4. . Poll.
5. . Crest.
6. . Withers.
7. . Back.
8. . Loins.
9. The Hip.
10. . Croup.
11. . Dock.
12. . Quarter.
13. . Thigh or Gaskin.
14. . Hamstrings.
15. Point of the Hock.
16. The Cannon.
17. The Fetlock.
18. . Large Pastern.
19. . Small Pastern.
20. . Bars.
21. . Toe.
22. . Coronet.
23. . Knee.
24. . Arm.
25. The Chest.
26. . Point of the Shoulder.
27. . Windpipe.
28. . Gullet.
29. . Jowl.
30. . Flank.
31. . Stifle.
32. . Girth.
33. The Elbow.

WILLIAM MACKENZIE, LONDON, EDINBURGH & GLASGOW.

V.—THE CIRCASSIAN HORSE.

There is little to be said of this breed, except that it is smaller than the Persian, and somewhat larger than the northern Tartar breeds. Vast numbers of horses and sheep are reared in the valleys of the Tcherkesses, and they and the slaves which, up to a few years since, were a prime article of commerce with the Turks, formed the wealth of this bold nomadic race. The most valuable breed, marked with a pale horseshoe, was in the possession of the reigning family—reigning now no longer in the Caucasus; the fall and captivity of Schamyl, having placed the country in the power of the Russian invader. The Circassian horses have a good repute for stoutness and speed.

VI.—THE HORSES OF INDIA.

Retracing our steps to the far East and South, we come to the vast peninsula, the scene of so much glory, so much suffering, and so much triumph for England and Englishmen. The native horses of India are diminutive in size, so much so that the Persian or Arab cross is absolutely necessary to bring them up to the standard of general utility. They are divided by writers on India into several classes. The *Tazee*, the *Toorkee*, the *Iranee*, the *Kozakee*—the three last names sufficiently indicate their supposed origin; the Mahratta horse, so called from that warlike people of Central Hindostan; and the *Tattoo*, or native Indian pony. Of these the *Tazee* seems to have the most claim to originality. It is low and rather hollow in the back, but easy in its paces, and has the drawback of being generally vicious and violent.

India is now well supplied with various breeds: many Arabian horses, bred for the purpose, are yearly imported from Muscat and the eastern coast of Arabia. Thorough-bred English horses are often sent from England to Bombay, Calcutta, and Madras, as well as to Australia, where the East India Company formerly had a stud for the mounting of the cavalry in their service. Mr. Moorcroft, a veterinary surgeon of high reputation, undertook the management of this enterprise, and the result has been that the cavalry horses of India have rapidly improved.

To return. The second-named horse, the *Toorkee*, originally derived from a Toorkman or Persian strain, perhaps both, is the noblest race for spirit, size, and beauty. With an elevated crest, lofty action, and withers quite or nearly fifteen hands high, they make showy horses for the parade. They are, however, what is called "tied in under the knee," showing a deficiency of volume in the flexor tendons, a fault seldom seen in the Arab or the Barb. There is also apparently a disproportionate smallness of bone below the knee joint and about the hocks.

The *Iranee* is stouter and better limbed, has powerful loins and quarters, with the drawbacks of a coarsehead, lopping ears, and a sluggish temperament.

A writer on the horses of India, in the *Sportsman's Magazine*, says:—

"Those from Guzerat and Cutch* are certainly endowed with greater amiability of disposition, but are more calculated for purposes of display and parade than anything else. The natives are very partial to this breed, and give long prices for them, frequently as much as two or three thousand rupees. They blow them out to an enormous size, by feeding them on a composition which must be any thing but agreeable to the palate of the horse, viz., a kind of paste, made of pounded grain and sheep's head, wherewith the poor devil is crammed like a turkey. The end of the flowing tail, generally reaching the ground, is dyed of a deep red colour, a cruelly sharp bit is put into his mouth, he is buried under a ton of bedding covered with crimson cloth, doing duty for saddle, and, thus caparisoned, he is deemed fit to carry one of the 'Pillars of the State.' It is a pretty sight to see a procession, accompanied by a cavalcade thus mounted, and taking every opportunity of displaying their horsemanship, a cavalier occasionally darting from the crowd at the top of his speed, and as suddenly pulling his horse on his haunches in the midst of his headlong career, then wheeling about, and still at full speed, describe in an incredibly small space, the difficult figure of eight, with all the apparent ease of a graceful skaiter."

The *Kozakee* is a hardier and more patient animal. He has a deep girth and a good forearm, but betrays his origin by a large head and what are called "cat-hams." Nevertheless he is enduring, hardy, and capable of long journeys.

Next we have the Mahratta horse, the product of half-blood Arab and the native Tazee. These horses are thus not very complimentarily described by the writer we have already quoted:—

"The Mahratta horse is an active, serviceable little beast, but, in ten cases out of twenty, extremely vicious, but will often make a capital hunter, in fact, being the only horse in India worth his keep, the larger horses from Hindostan being adapted only for the capering of a native Sowar; they are leggy, under-limbed, and, as far as vice goes, regular man-eaters."

These were the horses who carried that formidable race who ruled in Central India from sea to sea, across the south of the Deccan, and whose rule was broken by the fall of Seringapatam and the death of Tippoo Sultaun. The Mahratta army consisted almost entirely of cavalry. The Mahratta, when not on horseback, may be said to be almost constantly employed in shampooing his horse. It is properly so called, for he rubs him violently with his wrists and elbows, as well as his hands, and moulds and bends his limbs in every direction. The Mahrattan way of riding is a singular and, according to European notions, a very ungraceful one. His knees are as high as his horse's back; he holds on with his heels, and clings with his hands either to the mane or the peak of the saddle. With such aids, his seat is more secure than at first sight it would appear to be. The peak of the saddle rises in the form of a crane's neck, and is said to have been

* These are Persian horses, or nearly so, spoilt by unnatural treatment for purposes of pomp.—Ed.

borrowed from the Moguls. A crupper and a martingale are almost indispensable accompaniments of the Mahratta horse-furniture. It is a singular kind of crupper, however, not projecting from the centre of the saddle, but attached to both sides. The *tobsa*, or leathern vessel out of which the horse eats his corn, is also attached to the crupper; and this part of the trappings is generally ornamented with silver knobs, or with silk tassels or embroidery.

Their horses, like most of those of the East, are picketed, not only during the day, but very frequently in the night. A rope is carried from the headstall on each side to a peg driven into the ground. A rope, or thong, is also tied round the fetlocks behind, and carried backwards twenty or thirty feet, and fastened to a peg. This pulls the horse back, and keeps him, when standing, on the stretch, but does not prevent him from lying down. When they are thus tethered, their eyes are covered, that they may not be alarmed at any object that passes. They are also clothed, in order that the beautiful, glossy appearance of their coat may be preserved.

They use the snaffle-bridle, but it is so jagged and pointed that the animal may be punished to the full content of any barbarian that may ride him. The headstall is usually ornamented, and from the rein a thong descends by which the horse may be occasionally reminded of his duty. The horseman has neither whip, switch, nor spur, but the horse is controlled, if he is disposed to rebel, by the cruel argument of the bit.

The breast of the Mahratta horse is more splendidly ornamented than any other part. Numerous coins, of different size and value—rupees and double rupees—are formed into plates more or less highly ornamented, and which in time of war form a rich booty for the conqueror. The mane, too, is generally plaited with silk-braids, and silver knobs attached to them, with a beautiful top-knot between the ears. If the rider has distinguished himself in war, some curious tails, said to be taken from the wild cow, dangle on either side.

The imported horses of India occupy a prominent place in a consideration of this subject. We have already alluded to the several sources of supply. Colonel Markham,* in his lively volume, bears testimony to the goodness of the horses brought from Muscat and the Persian Gulf. He says:—"The centre point of attraction (at Calcutta,) was the Arab stables of Sheik Ibrahim, who deserves to be commemorated were it only for his honesty. Filled with the best bred horses to be found in India, many an hour did I pass there; companionable as other horses may be, there are none to compare for sociality with high caste Arabs. Four thousand pounds did the old Sheik take from the regiment, with an air of the most perfect indifference, and wonderful to say, not a bargain was repented of in after times."

A writer who describes a sale of these horses, crossed with the Iranee, from the now defunct Company's stud at Bala Hissar, is by no means so complimentary to this class of animal, in a second or third descent—"There were not less than one thousand horses shown. They were all above fourteen hands and a half in height, high-crested, and showy-looking horses. The great defect seemed a want of bone below the knee, which is indeed general to all the native horses throughout India; and also so great a tendency to fulness in the hocks, that, in England, it would be thought half of them had blood spavins."

Both Arab and native crosses have, however, succumbed to the imported English horse. In 1829, Arab horses having previously been matched against English on race-courses at the various stations, Meerut, Cawnpore, Calcutta, Barrackpore, &c., &c., the question was thought to be brought to issue by the race of the English-bred horse Recruit, against Pyramus, a pure Arabian. The race was two miles over the Barrackpore course; in this the English horse was an easy victor. Another English race-horse, Constance, however, was shortly after defeated by a selected Arab, and this balanced the account, say the advocates of the Arab. Why then place penalties on every imported horse on every race-course in India? the question answers itself.

Lest, however, we should seem to do injustice to the Arab, on this point, we subjoin a table of time and distance, made by Captain Gwatkin, of the H. E. I. C. service, of the best performances of the Arab horses then in India:—

Years.	Name.	Weight.	Time.	Distance.
		st. lbs.	*m. s.*	
	Patrician	9 0	5 34	280 yds., less three miles.
1807	Antelope	9 0	6 4	2¼ miles.
1809	Patriot	9 6	6 46	3 miles, 325 yards.
	Sulky	9 0	8 25	3 miles, 325 yards.
1818	Sir Lowry	7 4	4 0	2 miles.
1820	Nimrod	8 10	4 8	2 miles.
	Sultan (not 14 hands)	8 12	6 16	3 miles.
1826	Paragon	11 0	4 20	2 miles.
	Esterhazy	11 7	3 42	1¾ mile.
	Cavalier (not 14 hands)	8 7	4 4	2 miles.
1827	Champion	11 7	3 44	1¾ mile.
1828	Barefoot	8 4	6 7	Second heat of three miles.
	Chapeau de Paile	8 3	2 53	1¼ mile.
	Red Gauntlet	9 3	5 6	2¼ miles.
	Botherem	9 3	2 58	1¼ mile.

The speed and endurance in the Arabian therefore are not, according to the above report, diminished; and, as Captain Gwatkin observes, when we consider the average height of these diminutive racers (fourteen hands, one inch), and the want of tenacity in the sandy soil of India, we cannot but be struck with their performances.

We may refer the reader who seeks further details to the pages of the Sporting Magazine and *Asiatic Journal*, which from time to time contain accounts of Racing in India.

A remarkable instance of the confidence of a horse in a firm rider, and his native courage, was conspicuously evinced in the case of an Arab, mentioned by Colonel Hamilton Smith. General Sir Robert Gillespie happened, when mounted on this animal, to be present on the race-course of Calcutta during one of the great Hindoo festivals, when several hundred thousand people were assembled. On a sudden an alarm was given that a tiger had escaped from his keepers. Sir Robert

* *Shooting in the Himalayas.* A Journal of Sporting Adventures and Travel in Chinese Tartary, Ladak, Thibet, Cashmere, &c., by Col. Fred. Markham, C.B. Bentley, 1854.

immediately snatched a boar spear, and rode to attack this formidable enemy. The tiger was probably confounded by the crowd, but the moment he perceived Sir Robert, he crouched to spring at him. At that very instant, the gallant soldier, on his gallant steed, leapt right over him; Sir Robert striking the spear through the animal's spine! This was a small grey, but he possessed another horse who has become almost historical. It was a favourite black charger, bred at the Cape of Good Hope, and carried with him to India. When the noble soldier fell at the storming of Kalunga, this charger was put up for sale, and after great competition was knocked down to the privates of the 8th Dragoons, who actually contributed their prize-money, to the amount of £500, to retain this memorial of their beloved commander. The beautiful charger was always led at the head of the regiment on a march, and at the station at Cawnpore, took his ancient post at the colour stand, where the salute of passing squadrons were given at drill, and on reviews. When the regiment was ordered home, the funds of the privates running low, he was bought by a gentleman, who provided funds and a paddock for him, where he might pass the remainder of his days in comfort; but when the corps had departed, and the sound of the trumpet was heard no more, the gallant steed pined, refused his food, and on the first opportunity being led out for exercise, he broke from his groom, galloped to his ancient station on parade, neighed loudly again and again; and there, on the spot where he had so often proudly borne his beloved master, he dropped down and died!

Bishop Heber thus describes the docility of his Indo-Arabian horse. He says: "My morning rides are very pleasant. My horse is a nice, quiet, good-tempered little Arab, who is so fearless, that he goes, without starting, close to an elephant; and so gentle and docile that he eats out of my hand, and has almost as much attachment and as many coaxing ways as a dog. This seems the general character of the Arabian horses, to judge from what I have seen in this country. It is not the fiery, dashing animal I had supposed, but with more rationality about him, and more apparent confidence in his rider than the majority of the English horses."

VII.—THE ARAB.

The incomparable and improved breed of the noblest of quadrupeds, which takes its name from the country of the Ishmaelite, has certainly a high, if not the highest, claim to the admiration of every lover of the horse.

Mr. Youatt, in addition to many reasons which we have before given, as proving the Arab, like the British blood horse, a product of judicious crossing, training, and sedulous culture, notes that, "in a curious record of the commerce of the second century, among the articles exported from Egypt to Arabia, horses are mentioned, as presents to princes; while in the fourth century the Roman Emperor sent two hundred Cappadocian* horses as the most acceptable present he could offer to a powerful prince of Arabia."

We have before noted the poverty of Mahomet in horses, and that at the close of the great campaign against the Koreish, though he drove off 24,000 camels and 40,000 sheep, and carried off 24,000 ounces of silver, horses are not in the list of plunder.

These and other circumstances sufficiently confute the notion of an original Arab horse, and show that he has been comparatively recently naturalized in that country. Indeed, the Arabs themselves lend countenance to this; for when, within the last hundred years, they found how eagerly their horses were sought, they pretended to no higher pedigree for their Kohlani than tracing the animal to one of the four mares on which Mahomet and his four immediate successors, fled from Mecca to Medina, in the night of the Hejira (July 15th, 622).

We will now say a few words on the country which gives birth to this beautiful animal.

The extensive country of Arabia, celebrated in all ages for its roving tribes, is situated at the south-western extremity of Asia. It is bounded on the south-west by the Red Sea and the Isthmus of Suez; on the north-east by the Persian Gulf and the lower course of the Euphrates; on the north-west by Syria, the Euphrates, and the intervening desert; and on the south-east by the Indian Ocean. The country may be described as a vast collection of rocky and precipitous mountains, encircled by a border of low, barren, and sandy plains, which differ widely in their climate, soil and productions. The plains consist either of bare rocks or of hard or loose sand, and suffer from an almost constant drought, there being no rivers; consequently the deep wells and springs scattered at distant intervals, and which are generally surrounded by a small margin of the most refreshing verdure, form the sole resource of the fainting traveller. The temperature of other tropical climates is moderate in comparison with the heat of these deserts, where the thermometer is frequently above 100° during the night, in the sun 180°, and in the course of the day often rises to 110° in the shade. The mountainous tracts immediately behind these dry and sandy deserts stretch backwards from the sea shore, and contain numerous valleys of remarkable fertility, forming the celebrated region called by the ancients Arabia Felix.

The dry air and soil of Arabia seem peculiarly adapted to produce hard muscular fibre; accordingly we find the Arabian horse in the highest, and other Eastern breeds in an inferior, degree, possess a firmness of anatomical organization unequalled except by the English thorough-bred horse. The nature and character of what is popularly called the horse of the desert particularly adapted him to beget an animal which, as in the case of the race horse, is called upon to put its physical power to the severest trial to which nature, aided by art, can

* The peculating bacon-factor, and fraudulent army contractor, known as St. George of Cappadocia, and distinguished as a horse-riding saint, is especially the tutelary patron of cavalry. When our Crusaders went to the East in 1096, they found him in the Calendar as a warrior-saint, with the title of "Victorious." It seems that, at the siege of Antioch, St. George helped the English knights! Hence his adoption by Edward III. as patron of the Garter, and the cry of "St. George for England!" so long the echo of the shout, "St. Denis for France!" The dragon is, according to one of the church-historians, merely the emblem of "the Incarnation of Evil," which this not very reputable saint is fabled to have slain.

submit. These advantages, which he derives from climate, and the great care exercised in breeding and rearing him by his Arab master, arise from the possession of larger muscles and smaller, harder bones than any other horses—muscles and sinews constituting the powers of action; and on these depend the lasting qualities of an animal going at the top of his speed. Bones, being the weight to be lifted, serve only to extend the parts; and it is obvious that such as are small, but highly condensed, like those of the deer and the Arabian horse, are, by occupying less space, and containing less weight, more easily acted upon by muscular force than such as are large and porous, and for a greater duration of time, without fatiguing the active powers.

But the excellence of the horse of the border of the Desert does not end with his condensed bone and flat, wiry leg, so much valued by real judges. On reference to eminent writers on the anatomy of the horse, we find all the muscles, and fibres, and sinews of his frame described as driven into closer contact than those of any other breed—always excepting our own thorough-bred horse; and from the membranes and ligaments being composed of a firmer and thinner substance, he possesses the rare union of strength with lightness, so essential to the endurance of fatigue in all quick motions; and when to these qualifications are added the peculiar and deer-like elegance, the broad squareness of forehead, the short fine muzzle, the prominent and brilliant eye, the small ear, and the beautiful course of the veins, he appears to furnish all the requisites of a race-horse.

The following tradition of the origin of the Kohlani, or Kailhani, the noblest race of horses, whose genealogy, with true Eastern exaggeration, has sometimes even been traced to the stud of Solomon, is from Burckhardt. The author relates that the Arabian prophet, wishing to set aside from his stud the best mares, in order to form a distinct and perfect breed, had them all kept for two entire days and nights without water. On a sudden, when almost mad with thirst, the mares are released, and gallop with the swiftness of the wind to the well-known spring. When in view of the refreshing waters, by a preconcerted signal, the trumpets sound a war charge. At this well-known sound five of the mares, forgetting in a moment the agonies of their thirst, leave untasted the waters of the spring, and gallop to the imagined war; and from these five mares the author fables the noblest breed to have descended.

Another writer, upon whose statements we shall hereafter remark, asserts that the greatest care is exercised in breeding the Kohlani, or Kailhani. Much ceremony takes place as well at the union of these animals as at the birth of the foal; and a certificate is made out and properly authenticated within seven days after that event.* It is generally believed that pedigrees of the noble race of horses exist of not less than five hundred years, with sire and dam distinctly traced. The following pedigree is mentioned by Weston, in his *Fragments of Oriental Literature:* it was found hanging round the neck of an Arabian horse purchased by Colonel Ainslie during the English campaign in Egypt against the first Napoleon.

"In the name of God, the merciful and compassionate, and of Seyd Mohammed, agent of the High God, and of the companions of Mohammed and of Jerusalem. Praised be the Lord, the omnipotent Creator. This is a high-bred horse, and its colt's tooth is here in a bag about his neck, with his pedigree, and of undoubted authority, such as no infidel can refuse to believe. He is the son of Rabbaing, out of the dam Lahadah, and equal in power to its sire, of the tribe of Zazhalah. He is finely moulded, and made for running like an ostrich, and great in his stroke, covering much ground. In the honours of relationship he reckons Zaulah, sire of Mahat, sire of Kallack, and the unique Alket, sire of Manasseh, sire of Alshek, father of the race down to the famous horse the sire of Lakalala; and to him be ever abundance of green meat, and corn, and water of life, as a reward from the tribe of Zazhalah, for the fire of his cover; and may a thousand branches shade his carcase from the hyena of the tomb, from the howling wolf of the desert; and let the tribe of Zazhalah present him with a festival within an enclosure of walls; and let thousands assemble at the rising of the sun, in troops, hastily, where the tribe holds up, under a canopy of celestial signs within the walls, the saddle, with the name and family of the possessor. Then let them strike the hands with a loud noise incessantly, and pray God for immunity for the tribe of Zoab, the inspired tribe."

Burckhardt has some sensible remarks on the exaggeration of these pedigrees. In the interior the Bedouin does not trouble himself with them, as they know the genealogy of their horses as well, if not better, than that of their own families. The Arab horsedealer, however, with that acuteness which seems born of the profession, who goes with his stock to Damascus, or Bagdad, or eastward to Bussorah, supplies himself with a written pedigree, duly made out, for the edification of the purchaser. In these the animal is as gloriously furnished with an ancestry, as ever was parvenu by herald or king-at-arms. Some of these call on the credulity of the buyer to an immense extent. They trace the descent of the terrible high-bred animal, not only from one of the "four mares" of Mahomet, who figure like "the royal mares" in our stud-book, but might make paler Europeans blush, bringing them down in a direct line from the stud of Solomon, the son of David. This suggests a curious inference: the Arab, the child of tradition, with 2500 years of oral history, goes back to the stud of Solomon, who, we need hardly repeat, "brought up horses out of Egypt" a phrase equivalent to all Northern and Eastern Africa. The Bedouins of the Desert, unless, of course, they are "dealing," laugh at the idea of a horse's pedigree.

It is a prevalent error that the Arab is bred in the arid desert; and equally unphilosophical to suppose that he owes his undoubted powers of endurance in his adult state to the

* M. de Portes, who was sent by the French Government into Syria, seemingly contradicts this: but the customs of the tribes vary.—See pages 23-24 *post*.

hardships inflicted upon him in his youth. The real fact is, the Arabs select for their breeding places some of those beautiful spots, known only in such countries, where, though all may be dry and barren around, there is pasture, and the smaller sort of cereal grasses, saccharine dates, and various succulent herbs, remarkable for nutritious and sub-aromatic properties. The powers of the animal are developed in the natural way by exercise sufficient for health, and by hard work, when undergoing that exercise. Once only is a cruel, and sometimes ruinous exertion, imposed upon the animal, as we shall presently note.

In Nedjed the horses are regularly fed on dates, and the fragments of any provisions that may be used by the inhabitants; and some writers have even asserted, that flesh, raw, as well as boiled, is given them by the wealthy people, a practice in the prevalence of which we are not inclined to place much faith. Very little water is given, as the Arabs conceive (and justly) that much liquid injures the horse's shape and affects his wind.

The colt is mounted after its second year, when the Arab, on all other occasions so kind to his horse, puts it to a cruelly severe trial. The colt, or filly, is led out to be mounted for the first time; its master springs on its back, and rides at full speed for perhaps forty miles, over sand and rock of the burning desert, without one moment's respite. He then plunges it into water enough to swim, and if immediately after this, it will eat as if nothing had happened, its purity of blood and staunchness are considered incontrovertible.

Count Rcziousky gives the following account of the docility and sagacity of the Kohlan, translated by an English writer, which we give as curious, although extremely exaggerated both in style and matter:—

"Above all horses in the world," writes the Count, "the Kohlan is distinguished for the goodness of his quality and the beauty of his form. He possesses uncommon mildness of temper, an unalterable faithfulness to his master, a courage and intrepidity as astonishing as they are innate in his noble breast, an unfailing remembrance of the places where he has been, and of the treatment he has received. Not to be led, not to be touched but by his master, in the most dreadful confusion of battle cool and collected, he never forgets the place he came from, and, though mortally wounded, if he can gather up sufficient strength he carries back his desponding rider to his defeated tribe.

"His intelligence is wonderful; he knows when he is sold, or even when his master is bargaining to sell him. When the proprietor and purchaser meet for that purpose in the stables, the Kohlan soon guesses what is going on, becomes restless, gives from his beautiful eye a side glance at the interlocutors, scrapes the ground with his foot, and plainly shows his discontent. Neither the buyer nor any one else dares to come near him; but the bargain being struck, when the vendor, taking the Kohlan by the halter, gives him up to the purchaser with a slice of bread and some salt, and turns away, never more to look at him as his own—an ancient custom of taking leave of a horse, and his recognizing a new master—it is then that this generous and noble animal becomes tractable, mild, and faithful to another, and proves himself immediately attached to him whom his passion, a few minutes before, might have laid at his feet, and trampled under his hoofs.

"This is not an idle story; I have been a witness of, and an actor in the interesting scene, having bought three Kohlans from Turkish prisoners. I made the bargain in the stables, and received personally, and led off the most fierce but intelligent animals, which before the above mentioned ceremony I should not have dared to approach. The fact has been confirmed to me by all the Turkish and Arab prisoners, and by several rich Armenian merchants who deal in horses, and go generally to the desert to buy them. The Kohlans also evince great warlike qualities."

M. de Chateaubriand, in his *Travels in the East*, relates the feat of an Arab mare, who died to save her master:—

"When I was at Jerusalem a feat of one of these steeds made a great noise. The Bedouin to whom the animal, a mare, belonged, being pursued by the governor's guards, rushed with her from the top of the hills that overlooked Jericho. The mare scoured at full gallop down an almost perpendicular declivity without stumbling, leaving the pursuers lost in admiration and astonishment. The poor animal, however, dropped down dead on entering Jericho, and the Bedouin, who would not quit her, was taken weeping over the body of his faithful companion. This mare," he continues, "has a brother in the desert who is so famous that the Arabs always know where he is, what he is doing, and how he does."

Sir John Malcolm has two anecdotes to the same purpose, but of a more amusing nature.

"When the British envoy, returning from his former mission, was encamped near Bagdad, an Arab rode a bright bay mare, of extraordinary shape and beauty, before his tent, until he attracted his attention. On being asked if he would sell her—'What will you give me?' was the reply. 'That depends upon her age; I suppose she is five off?' 'Guess again,' said he. 'Four.' 'Look at her mouth,' said the Arab, with a smile. On examination she was found to be rising three. This, from her size and symmetry, greatly enhanced her value. The envoy said, 'I will give you fifty tomans' (a coin nearly of the value of a pound sterling. 'A little more, if you please,' said the fellow, apparently entertained. 'Eighty—a hundred.' He shook his head and smiled. The offer at last came to two hundred tomans. 'Well,' said the Arab, 'you need not tempt me further; it is of no use; you are a rich elchee (nobleman); you have fine horses, camels, and mules, and, I am told, you have loads of silver and gold. Now,' added he, 'you want my mare, but you shall not have her for all you have got.'" *

"An Arab sheik, or chief, who lived within fifty miles of Bussorah, had a favourite breed of horses. He lost one of his best mares, and could not for a long while discover whether

* *Sketches of Persia*, vol. i. p. 49.

she was stolen or had strayed. Some time after, a young man of a different tribe, who had long wished to marry his daughter, but had always been rejected by the sheik, obtained the damsel's consent and eloped with her. The sheik and his followers pursued, but the lover and mistress, mounted on one horse, made a wonderful march, and escaped. Upon this the old chief swore that the fellow was either mounted upon the devil, or the favourite mare he had lost. After his return he found the latter was the case; that the lover was the thief of his mare, as well as of his daughter, and that he stole the one to enable him to carry off the other. The sheik was quite gratified to think he had not been beaten by a mare of another breed; and was easily reconciled to the young man, in order that he might recover the mare, about which he was more solicitous than about his daughter."*

Lieutenant Welstead relates an adventure in his *Travels in Arabia* which illustrates the importance of being well-mounted in that wild land:—"On my return from Obri to Suweit, contrary to the wish of the Bedouins, who had received intelligence that the Wahabees were lurking around, I left the village where we had halted, alone, with my gun, in search of game. Scarcely had I rode three miles from the walls, when suddenly turning an angle of the rocks, I found myself within a few yards of a group of about a dozen horsemen, who lay on the ground, basking listlessly in the sun. To turn my horse's head away was the work scarcely of an instant; but hardly had I done so, when the whole party were also in their saddles, in full cry after me. Several balls whizzed past my head, which Sayyid acknowledged by bounding forward like an antelope: he was accustomed to these matters, and their desire to possess him unharmed alone prevented my pursuers from bringing him down. As we approached the little town, I looked behind me; a sheik, better mounted than his followers, was in advance, his dress and long hair streaming behind him, while he poised his long spear on high, apparently in doubt whether he was sufficiently within range to pierce me. My good stars decided that he was not; for reining up his horse he rejoined his party, whilst I gained the walls in safety! The day before Sayyid came into my hands he had been presented to the Imaum by a Nedji sheik. Reared in domesticity, and accustomed to share the tent of some Arab family, he possessed, in an extraordinary degree, all the gentleness and docility, as well as the fleetness, which distinguish the pure breed of Arabia. To avoid the intense heat and rest their camels, the Bedouins frequently halted during my journey for an hour about midday. On these occasions Sayyid would remain perfectly still while I reposed on the sand, screened by the shadow of his body. My noon repast of dates he always looked for and shared. Whenever we halted, after unsaddling him and taking off his bridle with my own hands, he was permitted to roam about the encampment without control. At sunset he came for his corn at the sound of my voice; and during the night, without being fastened, he generally took up his quarters at a few yards from his master. During my coasting voyages along the shore, he always accompanied me; and even in a crazy open boat from Muscat to India. My health having compelled me to return to England overland, I could not in consequence bring Sayyid with me. In parting with this attached and faithful creature, so long the companion of my perils and wanderings, I am not ashamed to acknowledge that I felt an emotion similar to what is experienced in being separated from a tried and valued friend."

M. de Chateaubriand, in his florid and poetic style, gives the subjoined apocryphal illustration of the affection of the Arab for his steed:—

"An Arab and his tribe had attacked in the desert the caravan from Damascus with complete success, and the Arabs were occupied in packing their booty, when the horsemen of the Pacha of Acre, who had come to meet the caravan, rushed suddenly on the victorious Arabs, of whom they killed a considerable number, and made the others prisoners; and, having tied them with cords, took them to Acre, as presents to the Pacha.

"Abon el Masseh, the hero of this story, had received a ball in his arm during the engagement, but as his wound was not mortal, the Turks had tied him upon a camel, taking his horse also with him.

"The evening of the day of their approach to Acre, the party encamped with their prisoners upon the Mountain of Safhadt. The legs of the wounded Arab were tied together by a leathern belt, and he was laid near the spot where the Turks slept. Kept awake during the night by the pain of his wound, he heard his horse neigh among others picketed round the tents, according to the Eastern custom. Recognising its voice, he could not resist the desire to go once more to the former companion of his life. He crawled with great difficulty, with the help of his hands and knees, and reached his steed. 'My poor friend (addressing him), what canst thou do among these Turks? thou wilt be imprisoned under the roof of a khan, with the horses of an Aga or Pacha. The women and children will no longer bring thee camel's milk* or barley, or doura in their palms. Thou wilt no more course the desert like the wind from Egypt. No more wilt thou divide with thy chest the refreshing waves of Jordan. O that, if I remain a slave, I could render thee at least free! Let me try! There, go! return to our tents, tell my wife that Abon el Masseh returns to it no more, and lick the hands of my four children.'

"Thus speaking, Abon had gnawed with his teeth the goat's hair which had served to fasten the Arab horse, and the animal became free; but seeing his master manacled and bound at his feet, the faithful and intelligent creature was taught by instinct what no language could have taught it. He bent his head, seized his master, and taking him up by his teeth by the leathern girdle round his body, set off in a gallop, and carried him to his tent. Arriving there, and

* Id. vol. i. p. 45.

* See *post.* in "Horses of Africa," on this singular nutriment for the horse.

throwing his master on the sand, at the feet of his wife and children, the horse expired from fatigue.

"The whole tribe wept his loss—poets sang his merits, and his name is constantly in the mouths of the Arabs who inhabit the country about Jericho."

Of this interesting and wonderful account we can only say —"Si non è vero e ben trovato."

M. de Portes, another French writer, of a much earlier date than Chateaubriand, is much more prosaic and reliable. He tells us that although this nomadic people (the Arabs) possess the finest race of horses known to us, such a farrago of nonsense has been written, that it is difficult to clear the mists of untruth, and separate the actual from the invented. He tells us, that "the Arabian horses are commonly called Nedj.* A more noble race is called Kohlan, divided into five different families, or noble sherifs, which five races, as the legend goes, originated from the five blessed mares of the prophet, and are named Tonaisse, Gilpha, Manegine, Seydie, and Seelani. Besides these, there are a number of other families too difficult to enumerate. I must own there are *no* certain signs by which one can ascertain whether a horse is Nedj or Kohlan, for I have conversed with many intelligent Arabs, and they all assured me they could not distinguish them unless the origin of the dam was known to them, and for that reason they kept their mares unstained by the leap of an inferior stallion, which is considered one of the principal sins of the Koran; and this command of their religion they at least follow to the very letter. If by chance the contrary should happen, the Bedouin does not value the foal the least, and, however handsome and promising it may be, he will part with it for a mere trifle. If a Kohlan mare is stinted to a Nedj stallion, the foal is a Kohlan; but if only to a Genesidek, the foal also is only Genesidek; and a foal only of a Nedj mare by a Kohlan stallion is Nedj, and for that reason you will meet amongst the latter, though an inferior race, many horses at least as handsome as the first, and even the Arabs cannot distinguish them without knowing the dam's race.

"The Arabs have no stud-book as is generally asserted, nor do they call together a number of witnesses when the covering act is performed, or when the foal is born: all this is false; for I have often had opportunities to observe a leap in the night, where scarcely any and but casual witnesses were present. They choose the best horses among their own or a neighbouring tribe for a covering stallion, which travels about, as in Europe, and it is very difficult to purchase him, at least during the covering season—the horse serving three mares daily at about 5*s*. (English currency) each, and travelling from tribe to tribe, sometimes to a great distance. They allow them to cover as early as two years old, and frequently the mares are not older. It happens, however, not unfrequently in this torrid climate that they are worthless at four or five years old. Stallions, mares, and foals all graze together."

The Arab generally rides without a bridle: a halter with a nose-band covered with iron like a cavesson, serves him for that purpose; and, instead of a saddle, these fiery coursers have merely a piece of wadded cloth, often ragged and always dirty, with two loops for stirrups attached on the back. They seldom have the hind-feet shod, an omission yet to be seen in some parts of Germany. The practice of firing is an oriental one: man and beast are subject to it, and complaints of the most anomalous nature are subjected to the actual cautery.

In a recent work, *Horse-buying in Syria in* 1854, the writer of which went to Damascus *viâ* Beyrout, and thence to the borders of the Arabian Desert, for the purpose of purchasing remounts for our cavalry in the Crimea, we have an interesting account of the present state of the Anaze horses and their owners. M. de Portes, however, speaks slightingly of them. He describes them as much inferior to the Nedji. The same writer states that the Arabs are indifferent about the formation and shape of their stallions: "if he runs well, is of the proper origin, and has no *superstitious* marks, they use him as such, and would put him without hesitation to their best mares; whereas, the most splendid stallion, if his origin is doubtful, and the marks ill-favoured, would not get the worst mare, I shall speak of their superstition—the Evil Eye —hereafter. In candour I must own, that though the stallions may possess great faults in their shape, they at the same time have extraordinary qualities, for as soon as they are mounted, all defects vanish: it would be almost impossible to detect any, so noble is their appearance. I saw many stallions with ugly hind quarters, the tail put on very low; but when mounted, they carry their tails erect, so that one doubted whether it was the same horse. A few of the finest horses had much the appearance of English thorough-breds, but were much more active and pleasant to ride, when broken in a little in the European fashion; for, raw from the Desert, not knowing bridle or spur, which latter is never used by the Arabs, they walk terrified on any pavement, and can only with difficulty be got into a trot, as they jump out of a walk into a full gallop, and stop as suddenly; but being very docile, they are easily broken-in properly."

It has already been stated that the five principal races are said to originate from the five favourite mares of the Prophet, and these only deserve the name of Kohlan, and are mostly met with at Bagdad and Orfa. Those on the Euphrates are taller and stronger, but their muscles are not so finely developed. Some European judges prefer the Nedj to the Kohlan, as one often finds amongst them grander horses; but the Oriental prejudice always returns to the Kohlan, as their race is bred more in and in, like our race-horses. It is difficult to say with any sort of certainty whether a horse is Nedj or Kohlan: the former have somewhat of a Roman nose and high forehead: a true Kohlan, with a genuine certificate, has a nose drawn inwards, like a jack or pike, large eyes, wide nostrils, a broad front, and a beautiful head. One may buy without difficulty a stallion; but an Arab seldom parts with a mare, and, if pressed by necessity, they manage as follows. First, the price is agreed upon: the

* This case, properly, only applies to the district of Jebel (the Hills), otherwise called Nejd, Nedj, or Nejed (the Highlands), the mountainous and central portion of Arabia.

purchaser then begins to use the mare, and the first and second foal is delivered to the seller, who, if he likes, has the right to deliver in return one foal for the dam. These conditions often vary, for at times the owner will not sell above a fourth of the mare, which in the Arabian language is called purchasing "one foot."

We have alluded above to "superstitious marks;" these vary with different tribes. The "Evil Eye" is as rife among the Arabs of the present day as with the Highlanders of two centuries or three centuries ago. In dread of this, many tribes are loth to show their horses—but more especially their mares—to strangers; and never omit to fortify the animal against it by a prayer to "Mashallah." If a horse falls ill after such a visit, they immediately call in a sort of wizard, who, uttering some cabalistical words, breaks an egg on the frontal-bone of the patient, who, nevertheless, generally dies. The wizard then gravely says, "God ordained it so," or, "It was written so." But a French veterinary surgeon, under these circumstances, thought proper to administer a smart dose of physic, which saved his horse, whereas that attended by the Arab died in spite of the egg, the magical words, and the golden ring. Some of the prophecies of Mahomet are sheer nonsense, particularly those about colour: others coincide with observations of the present age. If Mahomet were inspired, our wives would do well never to permit their husbands to ride horses who carry the tail on one side, as they are sure to be soon repudiated; and maidens ought to be in awe against bachelors on stallions with white spots on the thighs.

Burckhardt, the celebrated Asiatic traveller, says, in a letter to Professor Sewell—and this accords with the most recent travellers—that the "tribes richest in horses are those who dwell, during the spring of the year at least, in the fertile plains of Mesopotamia; for, notwithstanding all that is said of the desert horse, plenty of nutritious food is absolutely requisite for its reaching its full vigour and growth. The numerous tribes in the Red Sea, between Akaba and Mecca, and as far as Yemen, have very few horses; but the Kurds and Bedouins in the East, and especially in Mesopotamia, possess more horses, and more valuable ones than all, the Arabian Bedouins; for the richness of their pastures easily nourishes the colts and fills their studs." These observations are very important, and evidently founded on truth. He adds, that "the number of horses in Arabia is not more than 50,000; a number far inferior to that found in any part of Europe or Asia on an equal extent of ground.

"During the Wahabee government, horses became scarcer every year among the Arabs. They were sold by their masters to foreign purchasers, who carried them to Yemen, Syria, and Bussora, which latter place supplies India with Arabian horses, because they were afraid of having them seized upon by their chiefs, it having become the custom, upon every slight pretext of disobedience or crime, to declare the most valuable Bedouin mare forfeit to the public treasury."

Such are the accounts handed down to us by respectable authorities, who in their turn received them from the Arabs themselves; but much allowance should be made for the proneness to exaggeration for which all eastern nations are remarkable, especially the Arabians; and glorying, as they justly do, in the prowess of their beautiful steeds, it is not to be wondered at if they should sometimes enlarge upon their attributes and exploits.

The Imaum, or Sultan of Muscat, Syed Said, doubtless, during his long reign, from 1806 to 1856, sent to England the most genuine specimens of the Arab horse. His dominions, lying on the east of Nedjid, and south of the Persian Gulf, have, from their position, a more unadulterated Arab, *pur sang*, than the horse-dealing Anazes, Toorkmans, and the Syrian "copers," who are all interested in palming off their cross-breeds as Arabs. The monarch above mentioned, on more than one occasion, sent as royal presents to George IV., William IV., and her present Majesty, horses of surpassing beauty, according to the Arabian standard. One of these appears in our engraving of the "Barb and the Arabian," as a specimen of the contrasted qualities of the two races: the one the genuine North African horse—progenitor of some breeds of the Spanish, and many of our early racers—and the other the Oriental stock, to which also our turf owes deep obligations

It will be curious and interesting to the reader to peruse an accurate description of two of these undoubted Arabs, written by a gentleman of unquestionable turf-experience; and to compare their points with those of an English race-horse, of which our frontispiece is a model:—"The first that was shown me was a black stallion, standing 14 hands 3 inches high, and branded 'M' on the off-quarter. This horse is the more esteemed of the two, this colour in Arabs of the highest class being rarely or ever met with. Years, I was given to understand, were consumed in selecting the pair, and no limit put upon the price. Great as the difficulty has ever been to convey a just idea of the horse with the pencil, to put upon paper words to effect such a purpose is ten times a more hopeless affair. The first impression that the sight of this little unpretending animal made upon me was anything save in accordance with my anticipations as I entered his box. The issue was precisely such as we experience in contemplating a highly-finished picture; the more you gaze upon it, the more its beauties are developed. In this country we are by no means familiar with the Arab; many have not even seen one: I do not even think above a score have come within my own notice; but I must say, that if the portraits with which every sportsman is acquainted of the Darley and Godolphin Arabians be faithful delineations of the animals they profess to represent the whole model of the Arab horse, as I have seen it, differ, *toto cælo* from them.* Here I had before me one, selected by a Prince whose subjects have ever been celebrated for trafficking in the purest blood of the Desert: I could not doubt his claim to legitimacy. I have said his height is 14 hands 3 inches; his form so angular that at the first glance it seems

*We need hardly iterate that this proceeds upon the popular assumption that those historical stallions were Arabs. They were both African horses. See *post*.

to defy all claim to symmetry. The whole character of shape and bearing is closely allied to that of the deer. When you come to a minuter examination of the parts, individually, then you are convinced how pure the fountain must have been whence such blood was obtained. The head of this horse can be likened to nothing but exquisitely chiselled marble; there is literally *no* flesh upon it; it is marble too to the touch. The eye is small, but clear to transparency; the cheek-bones are prominent; and there is a fixedness about the ears that helps you to think you are really looking upon the work of the sculptor. The jaws stand very far asunder; the nostrils are large and high; and the wind-pipe is of an extraordinary size. The neck is light, and set on similar to the deer's; the shoulders more fleshy and upright than suits our taste; but below the knee the legs are perfection: you find quite as much bone as in the largest sized English blood-horse, and the tendons are in your grasp like iron. His carcase, without being very full of substance, is round and tolerably deep; his quarters what we express by vulgar. His thighs are very thin and sinewy, his loins narrow, the hocks perfectly clean, and slightly inverted; he is what we call 'cat-ham'd.' The tail is well set on, the dock small, the hair fine and scant, giving it the appearance of a mule's more than that of a horse. His shanks are short, and hard as adamant, the pasterns flexible, the hoofs singularly hard, but healthy, and the feet open and roomy. You read his temper in his eye; he is a light-hearted animal, without the slightest taint of vice."

The other stallion, a bright bay, is described almost in the same words. "His head is less perfect, and his bone smaller, but his quarters are fuller and more softened down by the swell of the muscles. His back, which, like the other, is rather inclined to be hollow, is not more than eight or ten inches from hip to shoulder: I never saw a pony's so short. His height is as near as possible the same as the black; in middle piece he has the advantage. They were both brought out for me, and I saw them in all their paces. In their action, as in their lean spare forms, you detect nothing superfluous: it is quiet and graceful, and entirely without any expression of exuberant exertion. Utility is the characteristic of the Arab horse. I can imagine them going for days together without fatigue: Nature intended them, and she has fitted them, for endurance. The impression of their extraordinary speed was long a vulgar error, which is now fast exploding. No Arab that ever trod the sand could live in company with an English race-horse, weight for inches, or after any fashion you will: with the size of a galloway you cannot have the stride essential to great velocity. Speed, regular and long sustained, no doubt they possess: the blight of degeneracy is yet unknown to the Desert-bred." A writer, who remarks upon the discrepancy here mentioned as to the Godolphin and Darley barbs, gravely suggests that these were "small Arabs;" the others, horses of "considerable size and power, whose immediate descendants became racers;" which certainly leaves the matter just where it stood.

It is much to be regretted that at the death of William IV., who, though himself no sportsman, lost no opportunity of promoting the national amusements of the turf and the chase, these beautiful specimens of the true Arab should have been sold into the hands of foreigners. Mr. Christie Whyte, in his "History of the Turf," vol. ii., p. 389, thus notices the discreditable event.

"Nothing could exceed the general indignation of all parties throughout the kingdom, when it became publicly known that this noble appendage to royalty was to be broken up and sold off, for the benefit of foreigners. But, notwithstanding the remonstrances of members of both houses of the legislature, without distinction of political party, the sale was persevered in."

The following memorial on this subject was presented to her Majesty's government from the leading members of the Jockey Club.

"'We, the undersigned, have heard, with great concern, of the probability of a dissolution of the royal stud at Hampton Court. We think that the great and permanent attraction of the annual stud sale, by producing competition, enhances the value of thorough-bred horses, and thus promotes the improvement of the breed throughout the kingdom. We trust, therefore, that her Majesty's government may be induced to advise the Queen to retain the establishment; and we have the less scruples in expressing this hope, because we are persuaded that, under judicious management, the proceeds of the sale would be found, upon an average, to cover all the expense of maintaining the stud.

"Beaufort,	G. Anson,	G. Bentinck,
S. Batson,	Chesterfield,	H. Biggs,
Clarendon,	G. Byng,	Dorset,
C. C. Greville,	Richmond,	Wm. Hallett,
Suffield,	W. Powlett,	Tavistock,
G. Rush,	Uxbridge,	J. R. Udney,
Wilton,	H. S. Waddington,	Dorset,
Oxford,	C. Wilson."	

The splendid stud was sold by Messrs. Tattersall, in the paddocks at Hampton Court, on Wednesday, the 25th of October, 1837; and drew together an immense concourse, including many influential noblemen and gentlemen connected with the turf, agents from France, Germany, Russia, and Prussia, and an immense collection of trainers, breeders, and others interested in the sale, or drawn thither by curiosity.

The general product of the sale was:—brood mares, 9,568 gs.; colt foals, 1,471 gs.; filly foals, 1,109 gs.; the stallions and two half-bred colts, 3,541 gs.; total, 15,692 gs. Most of the lots were purchased by commission; Baron Maltzahn acting for the government of Prussia, and M. Lupin for that of France.

It would be irrelevant here to give the items of the sale, farther than the Arabians are in question:—

	Guineas.
A Grey Arabian Mare of the purest caste; covered by the Colonel..	50
A Grey ditto of the purest caste, from the Imaum of Muscat; covered by the Colonel.....	150

	Guineas.
A Grey ditto of the purest caste, from the Imaum of Muscat; covered by Actæon	105
Belvoirina, the dam of Elizabeth, Maria, &c., by Stamford—Mercury—Herod, &c.; covered by the Black Arabian, horse untried	55
Brown Colt by the Colonel out of the first Arabian mare	71
A Chesnut Filly by Actæon out of the second Arabian mare, mare untried	58
A Bay Filly by the Colonel out of the third Arabian mare, mare untried	76
The Black Arabian of the purest caste, from the Imaum of Muscat.	580
The Bay Arabian of the purest caste, from the Imaum of Muscat...	410

Of these the Black Arabian was bought for the king of Wurtemburg, and his stock have become celebrated in Germany. The others went to France and Prussia.

The following lines, supposed to be from the pen of Thomas Campbell, appeared in the *New Monthly Magazine*, suggested by a visit to Hampton Paddocks.

THE ARABIAN.—*A Sketch from Nature.*

All breathing things delight in the green world!
Behold in yon small paddock a fair steed,
Arabian shaped, sleek limbed, eyes that beam fire—
In action graceful as the swimming swan—
The mould and model of his kind—as proud
And glorious a thing as eyes can see.
Fixed, statue-like, he stands, like Parian stone,
Chiselled by art to the similitude
And attitude of life!—But greater hands
Than human hands have made him what he is—
The beautiful, the buoyant thing, whose speed
Could tire the shadows coursing o'er this ground;
A creature that we love, while to our will
We bend his nature down, and teach him fear
—But he must leave the field in which he fed,
And joyful run his own impulsive race.
See where the groom, with sieve thin spread with corn,
Presented oft, oft seen, as oft refused
(For the shy creature knows that the decoy
Covers the thralling rein, and more prefers
Freedom uncurbed, and his own wanton play),
Comes now to snatch him from his heaven of ease.
He stands a moment only, as if caught;
The coaxing groom believes his task is done,
And wonders where his freakishness is fled.
Almost his hand has clutched the dangling mane—
Almost the rein is slipped upon his head,
When, ere an eye can turn, with playful prance,
Short, snuffling snort, and instantaneous spring,
As if in mockery of the powers of man
Away he flies, swift as an eagle shoots
The shrinking air, and scours his prison bounds,
Till the air thunders as his frantic feet
Strike with strong clatter on the hollow ground.
—Breathless, but patient, still the dodging man
Follows the dodging beast, soothes the coy thing,
Calls him by name, whistles, and lastly, swears,—
"That *first* infirmity of noble *grooms*;"
Now reddens with fierce rage, and now, once more,
Comes whispering wheedling words into his ear.
He knows and hears him, and seems fairly won;
Too sure he has him, and too slow when sure—
He's gone again, straight as an arrow flies,
As hopeless to pursue. Down drop the sieve
And jingling rein; and now the savage whip
With shrilly threatenings thrills along the air:
He heeds it not, and still his race he runs.
Now, tired of play, or else instinctive fear,
Or more instinctive love, tames the wild thing,
And makes him docile. He has had his will,
And now resigns the mastery to man;
For suddenly he turns in his mid flight,
And stands a prisoner, willing to be bound.

A writer in the *Sportsman* (vol. iii. p. 253) gives the following summary of the divisions of Arabia and the character of their horses, which is, in the main, sufficiently accurate as a generalization:—

"Taking the comparative excellence of the different races, Nejed (between the desert of Syria and Yemen, and now in the possession of the Wahabees) is generally reckoned to produce the noblest, grandest horses; Hedjaz (extending along the Red Sea, from Mount Sinai to Yemen, and including in it Medina and Mecca) the handsomest; Yemen (on the coast of the Red Sea and the Indian Ocean, and the most fertile part of Arabia) the most durable; Syria the richest in colour; Mesopotamia the most quiet; Egypt the swiftest; Barbary the most prolific; and Persia and Koordistan the most warlike."

The Arab, in his influence on our thorough-bred stock, will receive due notice when we come to treat of the varieties of the English horse.

CHAPTER III.

THE HORSES OF AFRICA.—I. THE BARB: II. THE DONGOLA, NUBIAN AND ABYSSINIAN HORSE: III. THE EGYPTIAN HORSE: IV. THE HORSE OF THE CAPE OF GOOD HOPE.

THE HORSES OF AFRICA.

That this quarter of the globe possessed numerous distinct and original varieties of the horse, in form, size, and qualities is evident, despite the theory of a common origin for all breeds of that valuable quadruped—a theory which has led to such violent absurdities, in the endeavour to reconcile incongruous facts, and to force them into agreement with preconceived prejudices.

We have already shown that Media, Persia, and Assyria were not countries of the subjugated horse at a period long posterior to what is called the historic era; and that these countries manifestly derived the horses which multiplied therein in subsequent ages not from the South (or Arabia), but from the great "officina equorum," on the north. So also did the people of Northern Syria derive the horses with which they encountered Joshua from the same source: for there were then no horses in Southern Syria. Asia Minor, from the earliest times, was a country of horses, derived from the North and East; but Egypt, it is proved by all history, sacred and profane, derived its horses from the vast continent of which it forms a part, and not from a tract on which the horse *did not* exist in the first ages. "We may rather believe," says Professor Low, "that Egypt derived the horses she so early possessed from regions in which horses existed from the earliest times, and which we have as much reason to consider indigenous to Africa, as those which people the plains of Tartary are to Asia." To our minds this disposes of the claims of the Arabian, and transfers to the Barb, or true African horse, the patriarchal honours, as regards our own incomparable English breed, so long usurped by the Ishmaelitic parvenu. It appears to be the old case of an Americus Vesputius supplanting a Christopher Columbus. We need not resort to Scripture to show that the "Howden" or "Horncastle" of the Israelites and Egyptians was on the banks of the Nile, and that "the Ethiopians were a huge host with very many chariots and horsemen."* The horse that drew their chariots yet exists in Abyssinia, Dongola, and Darfour, which possess a larger and a coarser horse than the finer breed of Arabia; while in various parts of North and Eastern Africa are breeds easily distinguishable from the Asiatic horse. Even at this day, deep in the interior, Major Denham tells us, "at Mandura a beautiful and powerful breed of horses is found;" and Mr. Tully further tells us "the horses of Bornou are excellent; they unite all the valuable properties of the Barb and the Arabian."

* 2 Chron. chap. xvi., v. 8.

We will, however, quit general considerations, and confine ourselves to the leading specialties of the African breeds.

I.—THE BARB.

The country known as Barbary may be considered, for the purpose of the present enquiry, as comprising all North Africa, from Egypt westward along the coast of the Mediterranean; Tripoli, Tunis, Algeria, and Morocco, falling within its boundaries, which reach southward to the Sahara or Great Desert. Here was found that original breed known as the Barb, to which this island owes the early improvement of its coarse unwieldy horse, which we had derived, possibly, through the European continent from Central or Northern Asia—though we must confess we can see no solid reason against, but much strong presumption in favour, of an indigenous British horse.*

For the North African horse too may be claimed an improving cross, which produced the handsomer breeds of Spain, still bearing the traces, in the Andalusian "barbs," and "jennets," of their Moorish original; while in yet earlier times, when Egypt was the granary of the Mediterranean countries, and Carthage held her head high against Rome, Africa gave "blood" to the horses of Thessaly, Italy, and the Northern shores of that inland sea.

In the historic period of English racing, the Barb figures largely as the ancestor of our thorough-breds. The Godolphin Barb, (popularly and erroneously called the Godolphin "Arabian") was the origin of much of our best racing blood, while several of our greatest modern "flyers" trace their descent from the "African mares" imported by Charles II. This subject is treated *in extenso* in the Supplement on Horse Racing. The following are given by Berenger as the characteristic "points" of the Barb of Morocco, Fez, and the interior of Tripoli.

"It seldom exceeds fourteen hands and a half in height. Its countenance is indicative of its spirit, and the facial line, in direct contradistinction to that of the Arabian, is often rounded: the eyes are prominent; the ears, though frequently small and pointed, are occasionally rather long and drooping; the crest is generally fine, but prominent, and not overladen with mane. The neck is of a good length; the shoulders flat and oblique; the withers prominent, and the chest almost invariably deep; the back is moderately curved and the carcase somewhat round; the arms and thighs are muscular and strongly marked; the knee and hock are broad and low-placed; the back-sinews singularly distinct and well-marked from the

* See History of the Horse, pp. 7, 8, *ante*.

knee downwards; the pasterns rather long, the feet firm, and but moderately open at the bars. The croup, as compared with the Arab, is perhaps a little too long,* but the quarters are muscular and well-developed.

The Barb is mounted at two years old, but never castrated, for "a Mussulman would not mutilate or sell the skin of the beast of the Prophet." The horses, with the Moors and Kabyles, are used for the saddle, and the mares kept for breeding. While no Arab mounts a stallion on his excursions, their descendants in Africa, and the Moors, never ride mares. The reason of this is, that the Arabs, constantly at war and plundering, endeavour to surprise their enemies in the grey of the morning or at the dawn of day. A stallion no sooner smells the stale of the mare in the enemies' quarters than he begins to neigh, which would, of course, give the alarm to the party to be surprised. This cannot happen when riding mares only. The African Arab, on the contrary, trusts to superior force. He fights in an open plain country, where an enemy can be discovered at many miles' distance: such stratagem is therefore useless to them. The Moorish method of cavalry exercise, and the training of their chargers, greatly consists in galloping at the top of speed for a mile or more, then suddenly stopping while the rider hurls his lance, fires his musket, or goes through some other feat of assault or defence. By way of exercise, however, the lance is launched or the espingarda fired when at full gallop. The best-trained Barbary horses will stand still for hours when quitted by their riders. The usual food of the Barb is barley or chopped straw, and grass when to be found; hay as a winter feed, in our acceptation of the term, is unknown to him. The Barb requires more excitement to call out his powers than the Arabian, but when sufficiently stimulated his speed and endurance are equal, while the superior strength of loin and forehand makes him master of the greater weight of the two.

It would be unpardonable here to pass over the Godolphin Barb, whose blood ran through Cade—Matchem—Conductor—Trumpator—Sorcerer—Doctor Syntax; through Eclipse, and a line of winners, by Bay Middleton to the Flying Dutchman; through Hambletonian, Highflyer, to his great opponent and Voltigeur; while Nutwith, West Australian, Sir Tatton Sykes, Tomboy, Melbourne, Surplice, Chanticleer, and a host of first class animals, trace their "blood" to this glorious Barb.

The Godolphin Barb, (whose figure accompanies the Royal Arab on *Plate* IV.) was sent, together with eight other horses, as a present from the Bey of Tunis to Louis XV. of France, on the conclusion of a treaty of commerce with that potentate by the Viscount de Manty, Admiral of the French fleet.

The Godolphin Barb was of a brown bay colour, with some white on the off heel behind. He was supposed to have been foaled in 1724, but this is conjectural. He was above the stature of the Arab, standing 15 hands. So slight was the value set upon him in France, where his points were by no means understood, that he was degraded to the drudgery of drawing a wood-cart in Paris. There is a tradition that he was sold from the royal stables for ungovernable temper. He was brought to England by Mr. Coke, who presented him to Mr. Roger Williams, then proprietor of the St. James's Coffee House, near Charing Cross. As the most celebrated horses of modern times partake of his blood and that of the Darley "Arabian,"—a crossed Toorkman horse from Aleppo—we shall have further occasion to refer to him in this respect. By Mr. Williams he was presented to Lord Godolphin, in whose possession, at Hog-Magog, in Cambridgeshire, he remained as a private stallion until his death.

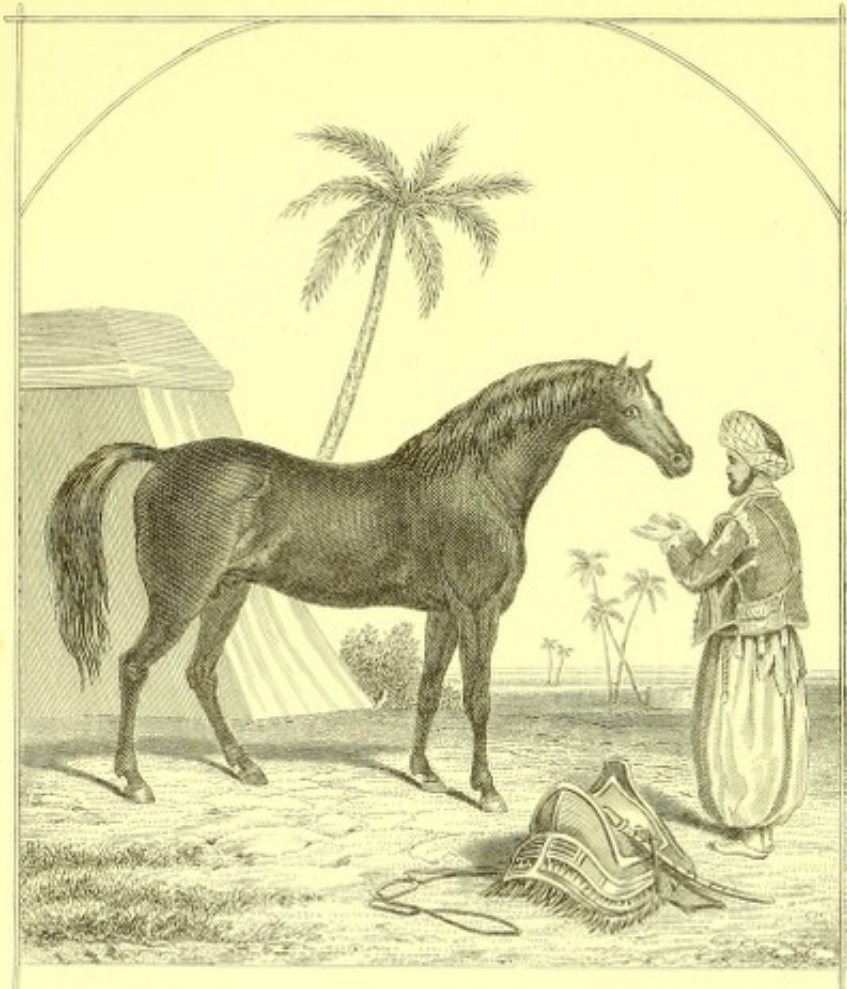
In 1731, Hobgoblin, a then celebrated stallion, refusing to cover Roxana, she was sent to the Godolphin Barb, and from that leap came the celebrated Lath, the first horse from the so-called "Arabian."

Lath was one of the very best racers of his day, and superior to any horse preceding him except Flying Childers. The Godolphin Barb was sire to 38 colts and 20 fillies between 1732 and 1753, Lath being the first and Mr. Panton's Matchless the last of his stock.

The Godolphin Barb died at Hog-Magog, Cambridgeshire, in December, 1753, being supposed to be then in the 29th year of his age. He lies buried in a covered passage, leading to the stables, with a flat stone over him without inscription. At his interment there was a gathering, and a gift of cakes and ale, as afterwards at that of his celebrated descendant Eclipse. There is an original portrait of this remarkable horse, by Seymour, in the collection of the Marquis of Cholmondeley, at Houghton Hall, Norfolk, and another picture of him with his favourite cat, in the Library at Gog-Magog, Cambridgeshire. He is represented in the prints of the day with his attendant cat, between whom and himself a warm attachment for many years subsisted. So great indeed was it, on the part of poor puss, that we have it upon the best authority the cat pined away, refused its food, and died of grief at the loss of its companion. Mr. Holcroft, the celebrated dramatic writer, who in early youth was a Newmarket stable-lad, relates a similar mutuality of affection between a race-horse and a cat, which the horse would place on his back or in the manger, by taking her in his mouth without hurting her.

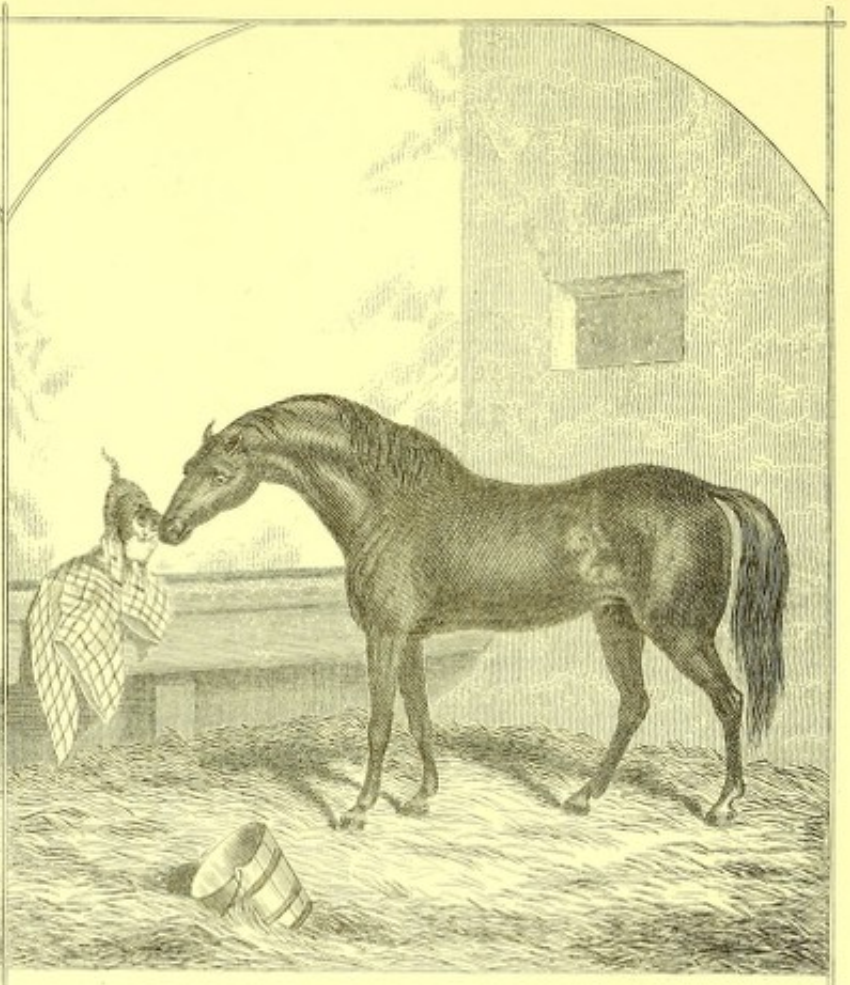
The crest of the Godolphin, preternaturally prominent, distinguishes him from every other horse. The Duke of Portland, however, had a Barb but little less lofty in this respect. It will be seen too, from the plate, which is a copy of his portrait, that his withers, from their almost humpish rise, give the effect of a sudden fall in the back, while there is a corresponding elevation of the spine towards the loins. Eclipse, with a straighter back, shared this peculiarity, almost to deformity. The Godolphin's muzzle was uncommonly fine, his head beautifully set on, his shoulders deep and oblique, his loins wide, and his quarters symmetrically powerful and well let down. The greater proportion of both colts and fillies from this celebrated horse were bay, like himself. His descendants,

* This is a defect, if it be one, which is shared with the Barb by all our very best horses.



PURE ARABIAN.

PRESENTED TO HER MAJESTY BY THE IMAUM OF MUSCAT.



THE GODOLPHIN BARB.

ANCESTOR OF THE MOST CELEBRATED RACERS ON THE BRITISH TURF.

WILLIAM MACKENZIE, LONDON, EDINBURGH & GLASGOW.

by crossing, have been of every colour. The Wellesley "Arabian" is neither Barb nor Arabian, but most probably a cross of Barb and Toorkman. "This horse," says Mr. Youatt, "has been erroneously selected as the pattern of a superior Arabian." The same remark will apply here as to the Darley Arabian. (See *ante*, p. 24.)*

The fullest and most interesting account of the Barb of modern Algeria has been written by General Daumas, and its value is greatly enhanced by containing a letter on the subject, written entirely by the celebrated Abd-el-Kader, and a very remarkable document it is. According to this high authority, a perfectly sound Barb horse can, without difficulty, travel nearly thirty miles daily for three or four months, without resting a single day; and such a horse can accomplish fifty *parasangs*—not less than two hundred miles—in one day. When Abd-el-Kader was with his tribe at Melonia, they made *razzias* in the Djeb-el-amur, pushing their horses at a gallop for five or six hours without drawing bridle, and they accomplished their expeditions in from twenty to twenty-five days. During all this time their horses ate only the corn carried by their riders, amounting to about eight ordinary meals. They often drank nothing for one or two days; and on one occasion were three days without water. The Arabic language is very epigrammatic, and the Arabs assign the reasons for instructing their horses early, in these proverbs:—"The lessons of infancy are graven in stone; but those of age disappear like the nests of birds." "The young branch without difficulty straightens itself; the large tree never." Accordingly the instruction of the horse begins in the first year. "If," says the Emir, "the horse is not mounted before the third year, at the best he will only be good for the course; but that he has no need of learning—it is his natural faculty."

The Arabs thus express the idea:—"*Le djuad suivant sa race.*" ("The high-bred horse has no need of learning to run.")

The esteem of the Arab for his horse is conveyed in the following sentiment of the sage and saint, Ben-el-Abbas, which has been handed down from generation to generation:—"Love thy horses; take care of them; spare thyself no trouble: by them comes honour, and by them is obtained beauty. If horses are abandoned by others, I take them into my family; my children share with them their bread; my wives cover them with their veils, and wrap themselves in their housings; I daily take them to the field of adventure; and, carried away by their impetuous course, I can fight with the most valiant."

General Daumas thus describes a combat between two tribes, drawn from life, for he enjoyed many opportunities for witnessing such scenes:—"The horsemen of the two tribes are in front, the women in the rear, ready to excite the combatants by their cries and applause: they are protected by the infantry, who also form the reserve. The battle is commenced by little bands of ten or fifteen horsemen, who hover on the flanks and seek to turn the enemy. The chiefs, at the head of a compact body, form the centre.

"Presently the scene becomes warm and animated—the young cavaliers, the bravest and best mounted, dash forward to the front, carried away by their ardour and thirst for blood. They uncover their heads, sing their war-songs, and excite to the fight by these cries, 'Where are those who have mistresses? It is under their eyes that the warriors fight to-day. Where are those who by their chiefs always boast of their valour? Now let their tongues speak loud, and not in those babblings. Where are those who run after reputation? Forward! forward! children of powder! Behold these sons of Jews—our sabres shall drink their blood—their goods we will give to our wives!' These cries inflame the horsemen—they make their steeds bound, and unsling their guns—every face demands blood—they mingle in the fray, and sabre cuts are everywhere exchanged.

"However, one party has the worst of it, and begins to fall back on the camels which carry the women. Then are heard on both sides the women—on the one animating the conquerors by their cries of joy—on the other, seeking to stimulate the failing courage of their husbands and brothers by their screams of anger and imprecation. Under these reproaches the ardour of the vanquished returns, and they make a vigorous effort. Supported by the fire of the infantry who are in reserve, they recover their ground, and throw back their enemy into the midst of the women, who in their turn curse those whom just before they had applauded. The battle returns to the ground

* Long since the above views were formed and committed to press by the writer, he had the gratification of finding them confirmed by the high authority of Admiral Rous, in a series of papers in *Baily's Magazine of Sports and Pastimes*, Nos. 1, 2, *et seq.*, for March, April, and following months of 1860. The Admiral, though still adopting the looseness of epithet, which made our forefathers apply the term "Arabian" to almost all horses from the East or South, thus bears testimony to the deep obligation we owe to that breed:—

"The Stud Book contains no horse's name which cannot prove a pure descent from Barbs, Arabians, Turkish, or Persian stallions, and from Barb, Arabian, or Royal mares.

"With respect to Turkish blood, I have no doubt that our patriarchs of this denomination, such as Helmsley Turk, Byerley Turk, Place's White Turk, D'Arcey's White Turk, the Selaby Turk, and others, were Arabian horses bought in Constantinople or Hungary, either captured in war or purchased from Turkish pachas.

"The Barbary stallions were very numerous and very successful, especially the Dodsworth, Curwen and Bay Barb, Greyhound, the Compton Barb, the Thoulouse Barb; but the most prominent forefathers of the turf are the Darley Arabian (?), sire of Flying Childers, and the Godolphin Arabian (Barb), whose blood has been transmitted to every first class horse now in training. I can discover no Persian stallions on the register; but Bonny Black, the best mare of her day for a long distance in 1719, (whose owner, the Duke of Rutland, challenged all the world to run sixteen miles for £1000), was by Black Hearty, a son of the Byerley Turk, out of a mare by a Persian stallion.

"A great difference of opinion exists respecting the pedigrees of the Royal mares. Some were purchased in Hungary in the reign of Charles II.; *but I have no doubt that a great majority of the Royal mares were imported from Morocco when Tangiers was under the British flag*, and that the superior Barbs were brought by the Saracens in the sixth century from Arabia, when they conquered northern Africa, and that they are of the purest breed of the Desert."

In the last sentence the gallant Admiral, having started from the false premiss that the Arabian Deserts were well supplied with horses in the sixth century, has proceeded, as must needs follow, to an utterly false deduction. The historical slip is venial. Admiral Rous's acumen perceived how much these animals differed from the Arab type, but the popular traditional and accustomed phrase led him to overlook the true African origin of the race.

which lies between the females of their tribes. At last the party who have suffered most in men and horses, who have sustained the greatest loss, and have seen their bravest chiefs fall, take flight, in spite of the exhortations and prayers of those bold men who, trying to rally them, fly right and left, and try to recover their victory. Some warriors still hold ground, but the general rout sweeps them off. They are soon followed by their women—then each seeing that all is lost, occupies himself in saving that which is dearest; they gain as much ground as possible in their flight, turning from time to time to face the pursuing enemy. The conquerors might ruin them completely if the intoxication of their triumph did not build a bridge of gold for the vanquished, for the thirst of pillage disbands them. One despoils a foot-soldier—another a horseman. This one seizes a horse—that a negro. Thanks to this disorder the bravest of the tribe save their wives, and frequently their tents."

A touching incident is mentioned by Mungo Park as having occurred whilst he, friendless and forlorn, was pursuing his weary journeyings far in the interior of Africa. The simple narrative tells its own tale of accumulated misery:—"July 29th. Early in the morning my host, observing that I was sickly, hurried me away, sending a servant with me as a guide to Kea. But though I was little able to walk, my horse was still less able to carry me, and about six miles to the east of Modiboo, in crossing some rough clayey ground, he fell; and the united strength of the guide and myself could not place him again upon his legs. I sat down for some time beside this worn-out associate of my adventures; but finding him still unable to rise, I took off the saddle and bridle, and placed a quantity of grass before him. I surveyed the poor animal as he lay panting on the ground, with sympathetic emotion, for I could not suppress the sad apprehension that I should myself in a short time lie down and perish in the same manner of fatigue and hunger. With this foreboding I left my poor horse, and with great reluctance I followed my guide on foot along the bank of the river until about noon, when we reached Kea, which I found to be nothing more than a small fishing village."

Torn with doubt and perplexity, heavy of heart and weary in body, the unhappy traveller returned westward to Modiboo, after two days' journeying in company with a negro carrying his horse accoutrements. "Thus conversing," says he, "we travelled in the most friendly manner, until unfortunately we perceived the footsteps of a lion quite fresh in the mud near the river side. My companion now proceeded with great circumspection, and at last, coming to some thick underwood, he insisted that I should walk before him. I endeavoured to excuse myself by alleging that I did not know the road, but he obstinately persisted; and after a few high words and menacing look, threw down the saddle, and went away. This very much disconcerted me, for as I had given up all hopes of obtaining a horse, I could not think of encumbering myself with a saddle; and taking off the stirrups and girths, I threw the saddle into the river. The Negro no sooner saw me throw the saddle into the water, than he came running from among the bushes where he had concealed himself, jumped into the river, and by help of his spear brought out the saddle, and ran away with it. I continued my course along the bank, but as the wood was remarkably thick, and I had reason to believe that a lion was at no great distance, I became much alarmed, and took a long circuit through the bushes to avoid him. About four in the afternoon I reached Modiboo, where I found my saddle; the guide, who had got there before me, being afraid that I should inform the king of his conduct, had brought the saddle with him in a canoe. While I was conversing with the dooty, and remonstrating with the guide for having left me in such a situation, I heard a horse neigh in one of the huts, and the dooty inquired with a smile if I knew who was speaking to me. He explained himself by telling me that my horse was still alive, and somewhat recovered from his fatigue." The happiness with which Park met his lost and faithful Barb may be conceived, for in him he had one friend left in the world.

Another of our many victims to African travel thus touchingly laments a grievous misfortune which befel him. Returning from an excursion to Kouka, Major Denham writes:—"I was not at all prepared for the news which was to reach me on returning toour enclosure. The horse that had carried me from Tripoli to Mourzuk and back again, and on which I had ridden the whole journey from Tripoli to Bornou, had died a very few hours after my departure for the lake. There are situations in a man's life in which losses of this nature are felt most keenly, and this was one of them. It was not grief, but it was something very nearly approaching to it; and though I felt ashamed of the degree of derangement which I suffered from it, yet it was several days before I could get over the loss. Let it, however, be remembered, that the poor animal had been my support and comfort—may I not say, companion?—through many a dreary day and night,—had endured both hunger and thirst in my service with the utmost patience,—so docile, that he would stand still for hours in the desert while I slept between his legs, his body affording me the only shelter that could be obtained from the powerful influence of a noonday sun: he was the fleetest of the fleet, and ever foremost in the race."

There are few who have not seen Stubbs's world-famed picture of the "Horse frightened by the Lion," which all sorts of describers—scorning even to reflect for a moment on the actual *locale* of the adventure—have spoken of as "an Arab;" nay, his "crest" has been charged with exaggeration, and one of the great points of exactitude and truthfulness treated as extravagant. In an obituary notice of Stubbs, who died in 1808, I find the following:—"Having remained in Italy the time necessary for his improvement, Mr. Stubbs embarked for England; and during his passage he became acquainted with a gentleman, a native of Africa, whose taste and pursuits in life were similar to his own. This gentleman had been to Rome, and was returning to his family; he was liberally educated, and spoke the English language with accuracy. His information made him a delightful companion to Stubbs, who often

expressed how much it would add to his gratification if he could but behold the lion in its wild state, or any other wild beast. His friend, on one occasion, gave him an invitation to the paternal mansion he was about to visit. The offer was accepted with pleasure, and Stubbs landed with his friend at the fortress of Ceuta.* They had not been on shore many days when a circumstance occurred most favourable to the wishes of our painter. The town where his friend resided was surrounded by a lofty wall and a moat. Nearly level with the wall a capacious platform extended, on which the inhabitants occasionally refreshed themselves with the breeze after sunset. One evening, while Stubbs and his friend were viewing the delightful scenery, and a thousand beautiful objects, from this elevation, which the brilliancy of the moon rendered more interesting, a lion was observed at some distance, directing his way, with a slow pace, towards a white Barbary horse, which was grazing not more than two hundred yards distant from the moat. Mr. Stubbs was reminded of the gratification he had so often wished for. The orb of night was perfectly clear, and the horizon serene. The lion did not make towards the horse by a regular approach, but performed many curvatures, still drawing nearer towards the devoted animal, till the lion, by the shelter of a rocky situation, came suddenly upon his prey. The affrighted Barb beheld his enemy, and, as if conscious of his fate, threw himself into an attitude highly interesting to the painter. The noble creature then appeared fascinated, and the lion, finding him within his power, sprang in a moment, like a cat, on the back of the defenceless horse, threw him down, and instantly tore out his bowels."

On his return to England, Mr. Stubbs became exceedingly attentive to his profession, and met with great patronage, and to him we are indebted for the portraits of many of the most celebrated race-horses of his day. His anatomy of the horse was held in the highest estimation, both in this country and abroad; and his sporting pictures yet retain their places in the galleries of our nobility and gentry.

We may here note, incidentally, that the celebrated "White Arabian," the favourite charger of Napoleon Bonaparte, which was kept for many years in the Jardin des Plantes—of which many portraits are extant—betrayed all the chief characteristics of the Barb. He came from Egypt, we know, wherever bred; but his broad open heels, round barrel, and low set-on of the dock, as extant in pictures by Isabey, the elder Vernet, and others, are against his Arabian origin.

Among the Maugrabins of the West, on the skirt of the Sahara Desert, is a renowned breed of Barbs, known as the Shrulzt-ur-reech, or "Drinkers of the wind." They are lean as greyhounds—a mere bag of bones—but their spirit and endurance of fatigue are prodigious. On one occasion the chief of a tribe was robbed of a favourite fleet animal of this race, and the camp went out in pursuit eight hours after the theft. At night, though the horse was not yet recovered, it was ascertained that the pursuers had headed his track, and would secure him before morning. The messenger who returned with this intelligence had ridden sixty miles in the withering heat of the desert without drawing bit. These animals are stated by Mr. Davidson to be fed only once in three days, when they receive a large jar of camel's milk; this, with an occasional handful of dates, is their only food.

These animals, we are told by Jackson, are principally employed in hunting the antelope and the ostrich. This author says nothing about the dates, but informs us that he will eat nothing but barley or wheat; oats are unknown to the African horse. The account is yet further embellished by the statement that if he is taken from the Desert, and can no longer get a supply of his favourite camel's milk, he loses speed and wind, and perishes miserably. *Credat Judæus!* Yet farther in Central Africa, we are told by Mr. Tully (*History of Tripoli*), is a grand breed, of noble stature, uniting the qualities of the Barb and the Arabian with superior height.

II.—THE DONGOLA, NUBIAN, AND ABYSSINIAN HORSE.

Travellers in Dongola, Sennaar, Nubia, Abyssinia, Darfour, and the north-eastern countries of the African continent, agree in the existence of an indigenous horse of superior stature and coarser form than either the Barb or Arab. The degenerate Egyptian horse is probably a descendant of this race, which very possibly may have figured in the heavier chariots of the Pharoahs. Bruce, in his *Travels in Abyssinia*, bears testimony to their stature and their distinctness from the horse of Tripoli, Tunis, Algeria, and Morocco. He says—"What figure the Nubian breed of horses would make in point of swiftness is very doubtful, their form being so entirely different from that of the Arabian; but if beautiful and symmetrical parts, great size and strength, the most agile, nervous, and elastic movements, great endurance of fatigue, docility of temper, and, beyond any other domestic animal, seeming attachment to man, can promise anything for a stallion, the Nubian is, above all comparison, the most eligible in the world. Few of them stand less than sixteen hands high."

Ludolph, who travelled in Abyssinia in the 17th century, bears the like testimony. He says that "the horses of this country (Ethiopia) are powerful and active, spirited and mettlesome, and most of them of a black colour. They are used only in war and for hunting. They are not fatigued by travelling long journeys, for the labour of drawing loads and of carrying burdens devolves upon the mules." A native of Abyssinia, who accompanied Ludolph to Europe, was both astonished and pained when he saw, for the first time, a horse in a heavy cart, and loudly expressed his disgust at the cruelty of degrading so noble an animal to so base a drudgery. He was surprised that the animals should submit to it, saying that in his country they would rebel against such cruel tyranny, and rend those who endeavoured so to ill-use them.

Bosman, another intelligent, and more modern traveller, expresses his admiration of the horse of these regions:—"The

* A fortress on the coast of Africa, situated on a peninsula eastward of Tangier, and opposite to Gibraltar, belonging to Spain, who, in 1860, has extended her territories, after a short war with the Moors, and at present holds Tetuan.

Dongola horses are the most perfect in the world, being beautiful, symmetrical in their parts, nervous in their movements, and docile and affectionate in their manners. One of these horses was sold in 1816, at Grand Cairo, for a sum equivalent to one thousand pounds." He further describes them as usually black, though there are a few bright bays and sorrels.

Some of these animals, which have been recently brought northwards by way of the Nile valley to Cairo, have been seen by Europeans travelling by the overland route. They are agreed upon their noble appearance and fine lofty action, their elevated crest and high withers; but there is a deficiency of substance in the quarters, and an undue length below the hock —sure indications of a lack of stoutness and of sustained speed. Nevertheless, as modern intercommunication with these once mysterious countries is now comparatively facile, some attention to the horse of Dongola might repay the trouble. That he has many of the requisites of a grand horse for show or state purposes, and perhaps for a charger, seems probable. The reason why his endurance is not tried more severely in his native land is, perhaps, that they have not the art of shoeing. Ludolph says, when they come on stony ground they dismount and get upon mules, leading their horses, that so, having no burden to bear, they may tread the more lightly.*

Mr. Salt, for many years English Consul in Egypt, and one of the most diligent collectors of antiquities in that ancient land, made a journey towards the sources of the Nile. He also describes these horses as of noble stature and action, their accoutrements as good, and the natives as first-rate horsemen.

III.—THE EGYPTIAN HORSE.

We need not here repeat that Egypt was of old the source of the supply of horses to the countries immediately adjacent. Foremost in arts and arms, her chariots† were renowned five centuries before Herodotus wrote of the royal *haras* of Babylon, and its 1,400 horses, which were undoubtedly derived from the northern breeds. The modern Egyptian horse, like the modern Egyptian himself, has wretchedly degenerated. The cruel tyranny of their oppressors and conquerors, Arab and Turkish, led the wretched tillers of the soil to avoid as a danger the possession of a handsome horse, suited for war purposes, inasmuch as the least evil that might befal him might be its seizure by the Mamelukes or by the Turkish ruler of the district. We are further told by travellers, that so strongly did this fear operate on the mind of the wretched fellah, that it became a custom to disfigure and mutilate the horses used by them, lest they should be robbed of them by the Pasha or his followers. The effect of this system in "the land of the horse," is borne testimony to by General Sir Robert Wilson, who tells us, in his relation of the expedition to Egypt under Sir Ralph Abercrombie, that the body-guard of the Pacha were so miserably mounted, that "although their horses seldom pass out of a walk into a gallop for more than a hundred yards or so, most of them are foundered; and none, if quickly trotted for ten miles, would be able from want of wind and stamina to go farther."

Since Sir Robert wrote, however, a new era has dawned in Egypt. Mehemet Ali, seeing the importance of a judicious liberality in encouraging the improvement of the horse, not only imported many Barbs and Toorkman horses, but in 1828 established a veterinary school at Abou-Zabel, of which an interesting account will be found in *The Veterinarian*, (vol vii, p. 549, 1834,) and subsequent numbers. A *haras*, or breeding establishment, was also founded, both under the care of French veterinary surgeons. An anecdote of an exploit of an Arab robber in Egypt, from "the Adventures of Giovanni Finati," shall close this brief account of the Egyptian horse.

"While some of the Mamelukes were encamped about Minieh, a thief set his mind on carrying off the horse and robe of one of their Beys. With this intent, at dead of night, he contrived to slip unperceived into the tent, where, as it was winter time, embers were burning, which showed him the rich clothes of the Bey lying close at hand. The thief, as he squatted down by the fire, drew them softly to him, and put them all on; and then, after filling a pipe and lighting it, went deliberately to the tent door and tapping a groom, who was sleeping near, with the pipe end, made a sign to him for the horse, which stood picketted in front. It was brought; he mounted and rode off. On the morrow, when the clothes of the Bey could no where be found, none could form a conjecture as to what could become of them, until the groom, on being questioned, maintained to his fellow servants that their master was not yet returned from his ride! and told them how he had suddenly called for his horse in the night, which at last seemed to give some clue to what really happened. Upon this the Bey, anxious to recover his horse, as well as curious to ascertain the particulars, ordered it to be published abroad, that if the person who robbed him would, within two days, bring back what he had taken, he should not only be freely pardoned, but should receive also the full value of the animal and of the suit of clothes.

"Relying on the good faith of this promise, and possibly, too, not a little vain of his exploit, the Arab presented himself, and brought his booty; and the Bey also, on his part, punctually kept his word; but since, besides the loss, there was something in the transaction that placed the Bey in rather a ludicrous light, it went hard with him to let the rogue depart so freely, and he seemed to be considering what he should do; so that, to gain time, he was continually asking over and over again fresh and more circumstantial accounts of the manner in which the stratagem had been conducted: the other was too crafty not to perceive that no good might be preparing for him, and began to feel anxious to get safe out of the scrape. He showed no impatience, however, but entered minutely into every detail, accompanying the whole with a great deal of corresponding action; at one time sitting down

* *Berenger's Horsemanship*, vol. i.

† There is not more than a single representation of a mounted man in the Egyptian frescoes and relievi. There are warriors in chariots innumerable.

by the fire, and making believe as though he were slyly drawing on the different articles of dress, so as to throw the Bey himself, and all who saw and heard him, into fits of laughter. When he came at last to what concerned the horse, 'It was,' he said, 'brought to me, and I leaped upon his back;' and so in effect flinging himself again into the saddle, and spurring the flanks sharply with the stirrup-irons, he rode off with all the money that he had received for the animal in his pocket, and had got much too far, during the first moments of surprise, for any of the bullets to take effect that were fired at him in his flight, and nothing further was ever heard of him or the horse."

The country to the south of the great Sahara, we find a kindred race to the Barb among the Foulahs, Jaloffs, Dahomans, Ashantees, and inhabitants of Benin. As we approach the torrid zone, however, the horse much deteriorates; and although we are told by authorities that the single nation of Foulahs can muster sixteen thousand cavalry, the horses are undersized. Bosman, in his account of the Coast of Guinea, says, "they are ill-shaped, and that they hang the ear and head like the ass, that they are slow and obstinate, and so low that a tall man sitting on their backs can touch the ground with his feet." At Elmina, on the Slave-coast, he bought half a dozen of these, but they were of little use in his inland journey. In these wretched and savage regions, desolated by the ferocious passions engendered by the slave-traffic, man and the useful animals are equally debased and degenerate. It is, however, certain that tropical heat and the lack of wholesome grasses are barriers to the due developement of the horse, and that in temperate climes alone does he combine grandeur of stature with beauty of form, courage, spirit, and endurance.

IV.—THE HORSE OF THE CAPE OF GOOD HOPE.

The original horse of South Africa would appear to have been a hardy, undersized, strong animal, presenting few qualities beyond endurance and slow strength.

Montgomery Martin, in that part of his history of the British colonies which treats of the Cape of Good Hope, has the following observation respecting its horses:—"The horse is not generally large, but it is extremely hardy. I have ridden one upwards of twenty miles without ever going out of a canter—the usual pace of the animal." A much fuller account of the Cape horse might have been given than this, and certainly something far more interesting.

In its breed, in its shape, in its colour, and in its temper, the horse of the Cape is very different from the English horse of any kind. A century ago, possibly, the difference was greater even than it now is; but, since the time when Lord Charles Somerset was governor of the colony, the old Arab blood has been more mixed with English than it was previously; and, now that the best of English blood is being yearly imported there, it may be expected that in time the peculiarities of the Cape horse will disappear, and, as has been the case with English horses, from an admixture of blood, something excellent in its kind will be at length obtained.

Mr. Surtees, a good authority, tells us, that at the time of the capture of the Cape, in 1806, the breed of horses there was probably a cross between the Barb of North Africa and the Persian or Arab: the latter must have been introduced by the Dutch East India Company, but as to the time of introduction of the former there is nowhere any record; still there can be no doubt that the Cape horse was in many respects Barb-bred. In many points he yet resembles the horse of Spain, which partakes of an African origin, and in no respect does he more approximate him than in his paces—the amble and the easy canter are in both alike. It was during the administration of Lord Charles Somerset as governor that the English horse was first imported to any extent; and, owing to the interest which that excellent sportsman took in the matter, much good has been the result, not only in the immediate improvement of blood, but also in the general interest that was then created on the subject, and has never since subsided. In May, 1844, Middleham, the winner of the Liverpool St. Leger in 1840, arrived at Cape Town; and where could be found better blood, or stouter, than that of Muley Moloch? He has been followed by a large number of blood and half-bred English horses.

The roan—or skimmel, as it is termed at the Cape—was a colour scarcely, if at all, known before the days of Lord Charles. It is now very common, and whether the blue or red, it is supposed to be the healthiest and hardiest colour for horses. The skimmel—or Lord Charles's colour, as it is also called—is usually attended with black legs, and the hue (if such a term is allowable) is generally extremely vivid; but as every why has its wherefore, and every beauty some drawback, so is this colour either sure to be accompanied with ragged hips or clumsy head, or in some way a want of symmetry. Another singular colour to be met with at the Cape is the flea-bitten bay, or bay with white spots, which are in most cases on the quarters; but what is especially curious respecting this is, that all horses possessing it are natives of the same place. The flea-bitten bay is known as the bay of the Burg river. It is in shape and make, or, what are termed the good points of a horse, that the Cape horse is so far inferior to the English. Such a thing as good fore-legs are very rarely seen in the colony; yet this might easily be amended were more care taken of the horse when young. A most detestable practice is in vogue at that time of his life of tying one of his legs and his head nearly close together, to prevent escape from the large tracts of pasture in which he feeds: the consequence of this is that, when first taken up for use, he is crippled in his fore-legs, and to the end of his days will be a stumbler. To add to this defect before, the probability is, he has a heavy, straight shoulder—nothing is more common amongst all, even the best, Cape horses. The principal imperfection of those animals is, without doubt, their fore-legs: a good-thighed horse may often be met with, but a long arm, with a short, good leg, rarely. A flat, open foot, too, is a thing unfrequent; yet foot-lameness is not common unless from thrushes; and these are engendered by the shameful way in which the horse is neglected when young, and the marshy state of the pasture

during the rainy seasons. In the distant parts of the settlement, and amongst the farmers, who are the principal breeders, such a thing as a horse-shoe is seldom used; but in the vicinity of Cape Town this is not the case—the horse is shod there as elsewhere, and, not unfrequently, he is shod all round.

Of the diseases and unsoundness which the Cape Horse is subject to, the writer of this lately gained much information from an officer of the 7th Dragoon Guards, who preceded his regiment to the Cape to purchase their regimental horses. No one could have been more indefatigable than this gentleman in his duties, and when the price to which he was limited (£26) is considered, no one could have been more successful. For some weeks he scoured the country for horses far and near; he had, therefore, many opportunities of *picking up* many useful hints, and improving them by his own observation. A species of glanders has been occasionally very prevalent; but, as an epidemic, it is nothing now to what it has been. A few years back, several thousand horses fell victims to its ravages; these have been partially stopped, but the disease has not been eradicated. Such a thing as a spavined horse he never once saw, but curbs often; and yet—will it be believed?—the removal of such things by the iron is unknown: and as to firing, if it has been ever heard of by the farmer, it has assuredly never been attempted. Such a thing as a pied horse is not to be met with in the colony. But great is the want of veterinary knowledge, and most lamentable is the ignorance of everything connected with the modern treatment of the horse as practised in England.

The temper of the Cape horse is its great recommendation: it is rarely vicious, and this is best proved by the fact of geldings being unfrequently used, as compared with the number of entire horses. Now, as in the days of chivalry was the practice in Europe, mares are kept for the stud, and no one thinks of riding a mare. As, too, in those good "auld days lang syne," the amble is a common pace; that and the canter are the best paces of the Cape steed—the latter is particularly easy, yet it is not so graceful to an English eye as the canter of the English horse; the step is shorter and the pace is more shuffling; but, were the animal properly broken, his paces of course might be greatly improved.

Although the English groom would have much to teach the Hottentot, yet the former would be much surprised if he saw a team driven by the latter. When the word team is used a team of six and even eight in hand, as well as four, is intended. The ribbons are tolerably handled, but it is in the use of his whip that the Hottentot coachman is mainly a proficient: with a whip-handle of a long bamboo, *sans* the pliant top that in a good whip is so serviceable, will a Cape Jehu completely manage his foremost leaders, and, avoiding uneven ruts, drive over extremely bad roads with great adroitness.

Captain Brown, in his "Biographical Sketches of Horses," gives the following interesting account of a circumstance that occurred at the Cape of Good Hope. In one of the violent storms that often occur there, a vessel was forced on the rocks, and beaten to pieces. The greater part of the crew perished miserably, as no boat could venture to their assistance. Meanwhile a planter came from his farm to see the wreck, and knowing the spirit of his horse and his excellence as a swimmer, he determined to make a desperate effort for their deliverance, and pushed into the thundering breakers. At first both disappeared, but were soon seen on the surface. Nearing the wreck, he caused two of the poor seamen to cling to his boots, and so brought them safe to shore. Seven times did he repeat this perilous feat, and saved fourteen lives; but alas! the eighth time, the horse being fatigued, and meeting with a formidable wave, the gallant fellow lost his balance, and was overwhelmed in a moment. He was seen no more, but the noble horse reached the land in safety.

The importation of English thorough-bred stallions at the Cape, and the institution of the Cape Town races have rapidly improved the breed of first-rate horses, which now furnishes many fine animals for Indian service.

CHAPTER IV.

I.—THE AUSTRALIAN HORSE: II.—THE HORSE OF SOUTH AMERICA: III.—THE HORSE OF NORTH AMERICA

THE AUSTRALIAN HORSE.

The sporting spirit of the Anglo-Saxon race has not degenerated at the antipodes; and the vast continent of Australasia, but yesterday boasting no quadrupeds more important than the dingo, the kangaroo, or the ornithorynchus, now shows what can be effected in the way of improving the ordinary imported breeds of the horse, under favourable circumstances of soil, climate, and treatment.

On the discovery of Tasmania, or New Holland, and afterwards of the larger continent, part of which was long designated New South Wales, there was no indigenous specimen of the larger quadrupeds. The first horses in Australia were procured from the Cape of Good Hope and a few from India. These animals appear to have been got without selection, and to have been but sorry brutes. Atkinson, writing as recently as 1824, says:—"They are but nags in size, and bred without much care; by no means sightly in appearance, being narrow-chested and sharp-backed, as well as deficient in the quarters. They have an incurable habit of shying, and are by no means surefooted." The unfavourable description of Atkinson might, it seems, up to that period, be applied to Van Diemen's Land and all other parts of Australasia where the horse had been introduced. Adelaide, in South Australia, seems to have been about the earliest place in which regular races for public money were advertised in this land since so famous for its "diggings." Up to a comparatively recent period, says a local writer, the whole of the racing stock in the colony might be traced to three or four imported horses: an Arab—Abdallah—brought from Calcutta by Mr. Gleeson; the stallion Actæon, bred in France by Lord Henry Seymour; and Kiah-Khan-Kreuse and Forlorn Hope, both imported from England by Mr. Philcox in 1841. These, with one or two horses from Sydney, at a later period, complete the then list of South Australian stud horses. The Arab's stock has proved but moderately good, and showed to little advantage as young ones; being deficient in stride they were easily cut down by the produce of the English thorough-bred horse.* This was soon found to be the case here as well as at Calcutta, for a few "whalers," as the sporting men in Adelaide call horses from New South Wales, being sent there, took all the crack stakes from the Arabs.

Cattle, especially sheep, thriving so well, made the Australian farmer soon ashamed of his horse, and the sporting instinct carried him farther in the career of improvement. The ordinary saddle and gig horse, too, shared in the advance. "Bay Cameron, an English stallion standing near Sydney, netted for his owner, for the first season or two, more than six hundred pounds per annum, and good horses rose twenty per cent. in value. Two hundred pounds were given in the capital for a horse of fine figure and power, and nothing good for saddle or harness could be got for less than fifty pounds." The colony of West Australia seems to be peculiarly adapted for the breeding of the horse, and seems likely to prove the nursery for the supply of our cavalry in India; an important stud formed by the now defunct East India Company has been removed from Van Diemen's Land to that colony.

Mr. Peter Cunningham (*Two Years in New South Wales*), says of the native bred horses that they are remarkably hardy, and can undergo considerable fatigue. "The greatest fault is a heaviness of the head, with a considerable degree of obstinacy and sulkiness—as much, however, the fault of education as of natural disposition."

Mr. Barton in his *Excursions in New South Wales*, adds, speaking of a heavier animal for draught, "the breed is rapidly improving, from the importation of some of the Cleveland breed from England." The true dray-horse, however, was yet to be found, and could not be procured from any of the native horses, not even with the assistance of the Cleveland. The mixture of English blood had not lessened the endurance of the native breed; for at the hottest time of the year, with the thermometer at times as high as ninety-six degrees in the shade, the writer says he has ridden the same animal fifty miles a day for three successive days. "They will all go through a vast deal of work, but they would have more endurance if they were not broken in for the saddle and for harness so young. It is no unusual thing to ride them sixty miles in less than seven hours, and immediately turn them out to pick up what scanty herbage they can find."

Mr. Widowson (*State of Van Diemen's Land*, p. 194) tells us that there are some diseases to which the horse is subject in England, which are as yet unknown in New South Wales. Glanders has never made its appearance there. Greasy heels, the almost peculiar disease of Britain, have not been seen. Strangles, however, are prevalent, and, the author of the present work learns from a communication to the Veterinarian, unusually severe.

In Van Diemen's Land the breed of horses, originally derived from India, is good. A valuable race of cart-horses is beginning to be formed. The riding-horses are small, but they are hardy. Horses of every kind are sixty per cent. dearer in Van Diemen's Land than in New South Wales; because the colony is smaller, and the number of horses that are bred is comparatively small. Their treatment is not so good as in the larger colony. Many of them know not the taste of corn, and, when it is given to them, it is usually in the straw.

* *The Turf in Australia.* By a Pilgrim Sportsman. In *The Sportsman* for May 1857, p. 317.

It would appear from a few sentences in the series of papers contributed by Admiral Rous to *Baily's Magazine*,* that the gallant Admiral is an advocate for a less tender and luxurious treatment of the horse, as tending to improve his hardihood and stamina, and to render him less susceptible of disease from slight vicissitudes of temperature and weather. The experience of Australia and of America would appear to support this opinion.

A writer in *The Sportsman*, already referred to, says, apropos of the racing stock in Australia, and the encouragement to breeders:—"£350 was given in 1852 in Van Diemen's Land for a horse to run for the Adelaide Town Plate. This very horse, Swordsman, was, however, beaten easily by an Adelaide colt." South Australia, also seems to be well adapted for a feeder for our Indian empire in respect of this noble and useful animal, it being, with the exception of Swan River or the Sound, the nearest point for importations; while the poisonous grasses which exist in these two last named quarters must always be a bar to their being brought into any competition for this object.

The course at Adelaide is situated on the park lands to the south of the city; it is an oval in shape. It boasts of a commodious stand; always sure to be well-filled, as the inhabitants are "racing mad," and on the day of a meeting, business is almost suspended. "When the Queen's guineas were run for the first year, there was a great sensation, and a very laudable ambition to have them. It was not with men alone, however, that this exhilaration was evident; for the winner, Minna, went to the post for the last heat as drunk as a lord, or rather as any young lady might hope to be, having taken at least two bottles of sherry to the health of Her Majesty."

By way of giving some notion as to the pace at which the imported Australian race-horse can travel, we give a tabular summary of a year's meeting.

The Race.	The Distance.	The Time. Min.	Sec.	Won by
The Maiden Stakes	A mile and a distance	2	3	Mr. Baker's Jupiter, 2 yrs., 6st. 11lb.
The Town Plate	Two mile heats.			
1st heat		4	4	Mr. Coylin's Swordsman, 6 yrs., 10st. 7lb.
2nd "		4	0	Mr. Vansittart's Lucifer, 4 yrs., 9st.
3rd "		4	12	
The Queen's Plate	Heats, once round, about a mile and a half—			
1st heat		3	8	Mr. Robinson's Reindeer, 5 yrs., 9st. 6lb.
2nd "		3	7	Mr. Coylin's United Irishman, 5 yrs., 9st. 6lb.
3rd "		3	12	
The Ladies' Purse	Heats once round and a distance—			
1st heat		3	8	Mr. Robinson's Fidget, 5 yrs., 10st. 5lb.
2nd "		3	9	
Coppin's Cup	Three-mile heats—			
1st heat		6	33	Mr. Paxton's Vandyke, aged, 12st.
2nd "		6	42	
The Brewers' Purse	Three miles	6	20	Mr. Baker's Abd-el-Kader 4 yrs., 9st.
The Hurdle Race				
1st Heat		3	34	Mr. Robinson's Fidget, 11st. 7lb.
2nd "		3	32	
The Beaten Stakes	Three miles	6	24	Mr. Coylin's Lady Young, 2 yrs.
The Hack Stakes				
1st heat		3	12	Mr. Worley's Young Jangler.
2nd "		3	8	Mr. Baker's Goody-Two-Shoes.

Jangler ran second to Mr. Penny's Nimrod for the third heat of the Hack Stakes, but the latter being disqualified, the stakes were given to Jangler.

* See *Baily's Magazine of Sports and Pastimes*, for April, 1860.

The formation of race courses throughout Queensland, in the vicinity of Melbourne, Sydney, and all other considerable towns, indeed wherever the requisite support is offered, is yearly progressing. Steeplechasing, too, is extending in popularity. The importation of English thorough-breds is increasing, so that Australia is yearly making a turf history of her own. The great Australasian continent seems destined to become the breeding stud of our new Indian Empire.

II.—THE HORSES OF SOUTH AMERICA.

Although the vast American continent has been destitute, during the historic period, of the horse, fossil remains prove him to have been a denizen of those regions at some remote era—most probably one preceding the introduction of man upon the earth. Professor Owen, in his "British Fossil Mammals," remarks as follows on Fossil Equidæ:—"The species of *Equus* which existed during the Miocene periods of geology in both North and South America, appears to have been blotted out of the Fauna of those continents before the existence of man. The aborigines whom the Spanish conquistadores found in possession of Peru and Mexico had no tradition or hieroglyphic indicative of such a quadruped and the horses the invaders imported from Europe were viewed with astonishment and alarm. The researches of Mr. Darwin and Dr. Lund have indisputably proved that the genus *Equus* was represented during the Pliocene period by a species (*Equus curvidens*), which is shown to be distinct from the European fossils, and also from the existing species. Fossil remains of the horse have been found also in North America. The geographical range of the genus *Equus* was therefore more extensive at the Pliocene period than that of the Rhinoceros, of which both the fossil and the existing species are confined to the Old World of the geographers. The horse, in its ancient distribution over both hemispheres of the globe, resembles the Mastodon, and appears to have become extinct in North America at the same time with the *Mastodon giganteus*, and in South America with the *Mastodon* of the Andes and the Megatherium. Well may Mr. Darwin say, 'it is a marvellous event in the history of animals, that a native kind should have disappeared, to be succeeded in after ages by the countless herds introduced with the Spanish conquerors.'"

The New World is indebted for the myriads of wild horses which swarm upon the Pampas of the South and the Prairies of the North, to the Spanish stock carried by Cortez to Mexico, and to Peru by Pizarro. In genial climates it was natural that, with abundant herbage and few dangerous enemies, animals of such power and intelligence should increase and multiply with great rapidity. Dr. Rengger notes the first horses in Paraguay to have been imported from Spain and the Canaries in 1537, and Azara found, in the archives of Ascension, a document, proving that Irala, in 1551, bought a Spanish horse for the sum of fifteen thousand florins.

According to Herrera, the Spanish historian, horses were objects of the greatest astonishment to the people of New Spain. At first they imagined the horse and his rider,

like the Centaurs of the ancients, to be a horrible animal of a compound form, and supposing that their food was that of men, brought flesh-meat and bread to propitiate them. Even after they discovered their mistake they believed the horses devoured men in battle, and, when they neighed, thought they were demanding their prey. A curious incident occurred when Pizarro was on one occasion in great straits, being hemmed in by a body of ten thousand men of resolute bearing, and eager to drive the invaders into the sea. As the Spaniards were making their way, hotly pressed, one of the cavaliers was thrown from his horse. This, which at first sight might seem an untoward event, was the salvation of the party, for the Indians were so astonished at this spontaneous separation of what they supposed to be one and the same being, that not knowing what would happen next, they instantly took to flight, and left the coast clear for the Spaniards to reach their ships.

The inhabitants of the Isle of Peten listened attentively to the preaching of the Franciscan friars who accompanied the expedition of Cortez, and consented to the instant demolition of their idols and the erection of the Cross upon their ruins. How far these hurried conversions were founded on conviction is shown by the following anecdote. Cortez on his departure left among this friendly people one of his horses who had been disabled by an injury in the foot. The Indians felt a reverence for the animal as in some way connected with the mysterious power of the white men. When their visitors had gone, they offered flowers to the horse, and, as is said, prepared for him many savoury messes of poultry, such as they would have administered to their own sick. Under this extraordinary diet the poor animal pined away and died. The Indians raised his effigy in stone, and placing it in one of their temples, did homage to it as to a deity. In 1618, when two Franciscan friars came to preach the Gospel in these regions, then scarcely better known to the Spaniards than before the time of Cortez, one of the most remarkable objects which they found was this statue of a horse, receiving the homage of the Indian worshippers as the God of thunder and lightning!

The admirable skill of the South Americans as horsemen is everywhere acknowledged, and has been described by many writers; the following account, however, by Mr. Darwin, is so spirited that it conveys the best idea of their exploits. "One evening a 'domidor' (subduer of horses) came for the purpose of breaking in some colts. I will describe the preparatory steps, for I believe they have not been mentioned by other travellers. A troop of wild young horses is driven into the corral or large enclosures of stakes, and the door is shut. We will suppose that one man alone has to catch and mount a horse which as yet had never felt bridle or saddle. I conceive, except by a Guacho, such a feat would be utterly impracticable. The Guacho picks out a full grown colt; and, as the beast rushes round the circus, he throws his lasso so as to catch both the front legs. Instantly the horse rolls over with a heavy shock, and whilst struggling on the ground the Guacho, holding the lasso tight, makes a circle so as to catch one of the hind legs just beneath the fetlock, and draws it close to the two front. He then hitches the lasso so that the three legs are bound together, then sitting on the horse's neck, he fixed a strong bridle, without a bit, to the lower jaw. This he does by passing a narrow thong through the eyeholes at the end of the reins, and several times round both jaw and tongue. The two front legs are now tied closely together with a strong leathern thong fastened by a slip knot; the lasso which bound the three together being then loosed, the horse rises with difficulty. The Guacho, now holding fast the bridle fixed to the lower jaw, leads the horse outside the corral. If a second man is present (otherwise the trouble is much greater), he holds the animal's head, whilst the first puts on the horse cloths and saddle and girths the whole together. During this operation, the horse, from dread and astonishment at being thus bound round the waist, throws himself over and over again on the ground, and till beaten is unwilling to rise. At last, when the saddling is finished, the poor animal can hardly breathe from fear, and is white with foam and sweat. The man now prepares to mount by pressing heavily on the stirrup, so that the horse may not lose its balance; and at the moment he throws his leg over the animal's back he pulls the slip knot and the beast is free. The horse, wild with dread, gives a few most violent bounds, and then starts off at full gallop.* When quite exhausted, the man by patience brings him back to the corral, where, reeking hot and scarcely alive, the poor beast is let free. Those animals which will not gallop away, but obstinately throw themselves on the ground, are by far the most troublesome.

All travellers, who have crossed the plains extending from the shores of La Plata to Patagonia, have spoken of the numerous droves of wild horses, the descendants of the Spanish horses of Cortez, Pizarro, and their successors. Some affirm that they have seen ten thousand in one troop. They appear to be under the command of a leader, the strongest and boldest of the herd, and whom they implicitly obey. A secret instinct teaches them that their safety consists in their union and in a principle of subordination. The panther, the tiger, and the leopard are their principal enemies. At some signal, intelligible to them all, they either close into a dense mass and trample their enemy to death, or placing the mares and foals in the centre, they form themselves into a circle and welcome him with their heels. In the attack their leader is first to face the danger, and, when prudence demands a retreat, they follow his rapid flight.

In the thinly inhabited parts of South America it is dan-

* The manufacture of the Guacho's boots is somewhat singular:—"The boots of the Guachos are formed of the ham and part of the leg-skin of a colt reeking from the mother, which is said to be sacrificed for the sole purpose, just at the time of bearing, when the hair has not begun to grow. At this stage the skin strips off easily, and is very white and beautiful in texture and and appearance. The ham forms the calf of the boot; the hock easily adapts itself to the heel; and the leg above the fetlock constitutes the foot; the whole making a neat and elegant half boot, with an aperture sufficient for the great toe to project through."—*Andrew's Journey in South America*, vol. i. p. 26.

gerous to fall in with any of these troops. The wild horses approach as near as they dare: they call to the loaded horse with the greatest eagerness, and, if the rider be not on the alert, and have not considerable strength of arm, and sharpness of spur, his beast will divest himself of his burden, take to his heels, and be gone for ever.

Sir F. B. Head gives the following account of a meeting with a troop of wild horses, where the country is more inhabited. Some poor captured animals are supposed to be forced along by their riders at their very utmost speed:—"As they are thus galloping along, urged by the spur, it is interesting to see the groups of wild horses one passes. The mares, which are never ridden in South America, seem not to understand what makes the poor horse carry his head so low, and look so weary.*

"The little innocent colts come running to meet him, and then start away frightened: while old horses, whose white marks on the flanks and backs betray their acquaintance with the spur and saddle, walk slowly away for some distance, then, breaking into a trot as they seek their safety, snort and look behind them, first with one eye and then with the other, turning their noses from right to left, and carrying their long tails high in the air."

The same pleasing writer describes the system of horse-management among the rude inhabitants of the plains of South America. They have no stables, no fenced pastures. One horse is usually kept tied at the door of the hut, fed scantily at night on maize; or at other times several may be enclosed in the corral, which is a circular space surrounded by rough posts, driven firmly into the ground. The mares are never ridden, or attempted to be tamed, but wander with their foals wherever they please.

Miers, in his "Travels in Chili," thus describes the lasso, simple in its construction, but all-powerful in the hands of the Guacho.

"The lasso is a missile weapon used by every native of the United Provinces and Chili. It is a very strong plaited thong of equal thickness, half an inch in diameter, and forty feet long, made of many strips of green hide, plaited like a whip-thong, and rendered supple by grease. It has, at one end, an iron ring above an inch and a half in diameter, through which the thong is passed, and this forms a running noose. The Guacho, or native Peon, is generally mounted on horseback when he uses the lasso. One end of the thong is affixed to his saddle girth: the remainder he coils carefully in his left hand, leaving about twelve feet belonging to the noose-end, in a coil, half of which he holds in his right hand. He then swings this long noose horizontally round his head, the weight of the iron ring at the end of the noose assisting in giving it, by a continued centrifugal motion, of sufficient force to project it the whole length of the line.

"When the Guachos," says the same writer, "wish to have a grand breaking-in, they drive a whole herd of wild horses into the corral. The corral was quite full of horses, most of which were young ones, about two or three years old. The capitar (chief Guacho), mounted on a strong steady horse, rode into the corral and threw his lasso over the neck of a young horse, and dragged him to the gate. For some time he was very unwilling to leave his comrades; but the moment he was forced out of the corral his first idea was to gallop away: however, a timely jerk of the lasso checked him in the most effectual way. The peons now ran after him on foot, and threw a lasso over his fore-legs, just above the fetlock, and twitching it, they pulled his legs from under him so suddenly that I really thought the fall he got had killed him. In an instant a Guacho was seated on his head, and with his long knife, and in a few seconds, cut off the whole of the horse's mane, while another cut the hair from the end of his tail. This they told me was a mark that the horse had been once mounted. They then put a piece of hide into his mouth, to serve for a bit, and a strong hide halter on his head. The Guacho who was to mount arranged his spurs, which were unusually long and sharp, and while two men held the horse by his ears he put on the saddle, which he girthed extremely tight. He then caught hold of the horse's ear, and in an instant vaulted into the saddle; upon which the man who held the horse by the halter threw the end to the rider, and from that moment no one seemed to take any further notice of him.

"The horse instantly began to jump in a manner which made it very difficult for the rider to keep his seat, and quite different from the kick or plunge of an English horse: however, the Guacho's spurs soon set him going, and off he galloped, doing everything in his power to throw his rider.

"Another horse was immediately brought from the corral, and so quick was the operation, that twelve Guachos were mounted in a space which I think hardly exceeded an hour. It was wonderful to see the different manner in which different horses behaved. Some would actually scream while the Guachos were girding the saddle upon their backs; some would instantly lie down and roll upon it; while some would stand without being held—their legs stiff, and in unnatural positions, their necks half bent towards their tails, and looking vicious and obstinate; and I could not help thinking that I would not have mounted one of those for any reward that could be offered me, for they were invariably the most difficult to subdue.

"It was curious to look around and see the Guachos on the horizon, in different directions, trying to bring their horses back to the corral, which is the most difficult part of their work; for the poor creatures had been so scared there that they were unwilling to return to the place. It was amusing to see the antics of the horses—they were jumping and dancing in different ways, while the right arm of the Guachos was seen flogging them. At last they brought the horses back, apparently subdued and broken in: the saddles and bridles were taken off, and the young horses trotted off towards the corral, neighing to one another."

* An Englishman once attempted to ride a mare, but he was hooted and pelted by the natives, and thought himself fortunate to escape without serious injury. Sir John Carr, in his "Northern Summer," states that it is only in more modern times that mares began to be ridden in Russia.

When the Guacho wishes to take a wild horse, he mounts one that has been used to the sport, and gallops over the plain. As soon as he comes sufficiently near his prey, "the lasso is thrown round the two hind legs, and as the Guacho rides a little on one side, the jerk pulls the entangled horse's feet laterally, so as to throw him on his side, without endangering his knees or his face. Before the horse can recover the shock, the rider dismounts, and snatching his poncho or cloak from his shoulders, wraps it round the prostrate animal's head. He then forces into his mouth one of the powerful bridles of the country, straps a saddle on his back, and bestriding him, removes the poncho; upon which the astonished horse springs on his legs, and endeavours by a thousand vain efforts to disencumber himself of his new master, who sits quite composedly on his back, and, by a discipline which never fails, reduces the horse to such complete obedience, that he is soon trained to lend his whole speed and strength to the capture of his companions."

These animals possess much of the form of the Spanish horse, from which they sprung; they are tamed, as has been seen, with far less difficulty than could be thought possible; and, although theirs is the obedience of fear, and enforced at first by the whip and spur, there are no horses who so soon and so perfectly exert their sagacity and their power in the service of man. They are possessed of no extraordinary speed, but they are capable of enduring immense fatigue. They are frequently ridden fifty or sixty miles without drawing bit, and have been urged on by the cruel spur of the Guacho, more than a hundred miles, and at the rate of twelve miles in the hour.

Like the Arab horses, they know no intermediate pace between the walk and the gallop. Although at the end of a day so hard their sides are horribly mangled, and they are completely exhausted, there is this consolation for them—they are immediately turned loose on the plains, and it will be their own fault if they are speedily caught again. The mare is occasionally killed for food, and especially on occasions of unusual festivity. General San Martin, during the war of independence, gave a feast to the Indian allies attached to his army, at which mares' flesh, and the blood mixed with gin, formed the whole of the entertainment.

On such dry and sultry plains the supply of water is often scanty; and then a species of madness seizes on the horses, and their generous and docile qualities are no longer recognized. They rush violently into every pond and lake, savagely mangling and trampling upon one another; and the carcases of many thousands of them, destroyed by their fellows, have occasionally been seen in and around a considerable pool. This is one of the means by which the too rapid increase of this quadruped is, by the ordinance of Nature, prevented.

In Chili a horse is not considered perfectly broken till he can be brought up standing in the midst of his full speed on any particular spot; for instance, on a cloak thrown on the ground; or again, will charge a wall, and, rearing, scrape the surface with his hoofs. I have seen," says Mr. Darwin, "an animal bounding with spirit, yet merely reined by a forefinger and thumb, taken at full gallop across a court-yard, and then made to wheel round the post of a verandah with great speed, but at so equal a distance that the rider, with outstretched arm, all the while kept one finger rubbing the post, then making a *demi-volte* in the air with the other arm outstretched in a like manner, he wheeled round with astonishing force in the opposite direction. Such a horse is well broken; and although this at first may appear useless, it is far otherwise. It is only carrying that which is daily necessary into perfection. When a bullock is checked and caught by the lasso, it will sometimes gallop round and round in a circle, and the horse being alarmed at the great strain, if not well broken, will not readily turn like the pivot of a wheel. In consequence many men have been killed; for if a lasso once takes a twist round a man's body, it will instantly, from the power of the two animals, almost cut him in twain. On the same principle the races are managed. The course is only two or three hundred yards long, the desideratum being, to have horses that can make a rapid dash. The racehorses are trained not only to stand with their hoofs touching a line, but to draw all four feet together, so as at the first spring to bring into play the full action of the hind quarters. In Chili I was told an anecdote, which I believe was true, and it offers a good illustration of the use of a well broken animal. A respectable man riding one day met two others, one of whom was mounted on a horse, which he knew to have been stolen from himself. He challenged them; they answered by drawing their sabres and giving chase. The man on his good and fleet beast kept just ahead; as he passed a thick bush he wheeled round it, and brought up his horse to a dead check. The pursuers were obliged to shoot on one side and ahead. Then instantly dashing on right behind them, he buried his knife in the back of one, wounded the other, recovered his horse from the dying robber, and rode home!

Animals are so abundant in these countries that humanity is scarcely known. Mr. Darwin was one day riding in the Pampas with a very respectable "Estanciero," when his horse being tired, lagged behind. The man often shouted to him to spur him, when I remonstrated that it was a pity, for the horse was quite exhausted; he cried: "Why not?—never mind. Spur him—it is *my* horse!" When, after some difficulty, he was made to understand that it was for the horse's sake that the spurs were not used, he exclaimed with great surprise: "Ah! Don Carlos, *qui cosa!*" The idea had never before entered his head.

In England the powers of horses in swimming are but little tested, but in South America the case is different, as shown by an incident mentioned by Mr. Darwin. "I crossed the Lucia near its mouth, and was surprised to observe how easily our horses, although not used to swim, passed over a width of at least six hundred yards. On mentioning this at Monte Video, I was told that a vessel containing some mountebanks and their horses being wrecked in the Plata, one horse swam seven miles to the shore. In the course of the day I was amused by the dexterity with which a Guacho forced a

restive horse to swim a river. He stripped off his clothes and jumping on his back, rode into the water till it was out of its depth; then slipping off over the crupper he caught hold of the tail, and as often as the horse turned round, the man frightened it back by splashing water in its face. As soon as the horse touched the bottom on the other side the man pulled himself on, and was firmly seated, bridle in hand, before the horse gained the bank. A naked man on a naked horse is a fine spectacle. I had no idea how well the two animals suited each other. The tail of a horse is a very useful appendage. I have passed a river in a boat with four people in it, which was ferried across in the same way as the Guacho. If a man and horse have to cross a broad river, the best plan is for the man to catch hold of the pommel or mane, and help himself with the other arm."

We have already said that the wild horses of South and North America retain the size and form of the well-bred horse, after three centuries. A collateral testimony against the theory of an entire change, such as we see in the extreme varieties of this animal, having been the result of domestication on the one hand, or a relapse to a state of nature on the other.

The French introduced the horse into the Falkland Islands in 1764, and since that period they have wonderfully multiplied. The horses in these islands are always found on the eastern side of East Falkland, although there is no natural boundary, and that part of the island is by no means more fertile than the rest. The predominant colours of these horses are roan and iron grey. Mr. Darwin says they are rather small-sized, but are generally in good condition.

In South America the horse was first landed at Buenos Ayres in 1537, and the colony being for a time deserted it ran wild. In 1580, forty-three years after, horses were found wild at the Straits of Magellan; horses, too, that showed plainly their Spanish origin.

Of the multitudes now ranging the Pampas we may form some estimate by the fact that in 1850-1854 Monte Video and Buenos Ayres exported annually 90,000 lbs. of hides, and 9,500,000 lbs. of horsehair. The natives of Terra del Fuego are now well-stocked with horses, each man having six or seven, and all the women and children each their own horse. The horse is now found over the whole continent of America. Sir John Richardson, in his *Fauna Boreali-Americana*, says it is numerous among the wandering Indians who hunt the buffalo in the Paskatchewan and on the Missouri.

III. THE HORSES OF NORTH AMERICA.

Of the several varieties of the horses of North America, the most prominent are:—the *Canadian*, the *Conestoga*, and the *English* horse.

The Canadian is a hardy animal, and found, as its name denotes, in the northern states. It is an excellent sledge-horse, and well adapted for light-wheeled vehicles. One of them has been known to draw a light waggon over the ice a distance of ninety miles in twelve hours. He is small of stature but compact, and grows a furry coat in winter time, when his shoes are "roughed" by the insertion of two or three steel screws to give him foothold. The Canadian horse is most willing at collar, and altogether a serviceable and staunch animal. He is generally supposed to be of French origin, which is probable, as he shows no remarkable "points." He is much neglected, fares hardly, and is seldom groomed, in the English sense. With a cross of the English horse this breed has produced some of the celebrated trotters, with which the Yankees have challenged and beaten the world in that peculiar pace. But this we shall defer speaking of at length till we come to "The Paces of the Horse."

The Conestoga horse is a tall and somewhat leggy animal, light in the carcass, found principally in Pennsylvania, where he is bred for carriage-purposes. Some of these horses stand 17 hands high. We suspect them to be originally an English, Flemish, or Dutch importation. As some of our readers may remember Mr. Carter "the Lion King's" mammoth horse, "General Washington," standing nineteen hands, exhibited in London a few years since, we may observe that, to the writer's knowledge, the "General" was bred in this country at Northampton. When of good form and close ribbed up, the Conestoga horse fetches a long price, and has been used in the hunting field.

The horses of the United States present every variety of the Old World; crosses of the English thorough-bred and of the Eastern horse being frequent. Much attention is paid in the States to the improvement of the breed. In the northern States horse races have been established and the usages of the British turf adopted. Indeed, our American cousins have improved their racehorses to a degree equal to our own, by sticking to the same blood. The renowned Shark is ancestor of many of the best Virginian horses; Tallyho by Highflyer figures in the pedigrees of the racers of New Jersey; while more recently they have had the discrimination to buy the very best produce, as well as some of our very first stallions, such as Precipitate, Diomed, Priam, Trustee, Glencoe, &c. They adhere too to the principles adopted by our earlier turf-men, of breeding only from stallions who could stay a distance; "and very naturally," says Admiral Rous, "seeing that all their great prizes and matches vary from two to four miles. We did the same until the commencement of the present century, when, the great stakes being made for shorter distances, it was soon ascertained that the sons of the stout old stallions could not win a 2,000 guineas stake against the blood of Rubens, Castrel and Selim. But if the Americans have bred for stoutness, we cannot blind ourselves to the fact, that though the American mare Prioress was the best four-mile *mare* in England in 1859, one half of the American racers brought to this country to *do a good thing* cannot last more than three quarters of a mile: such is the lottery of breeding race-horses. The comparative stoutness of the American and English racehorse has yet to be decided." The spirited Mr. Ten Broeck, and other transatlantic sportsmen may give us, ere long, more to say on this subject in another place.

The breeds of the West Indies are from England or the mainland, those of Cuba from Spain.

Professor Low,* incidentally speaking of the horses of North America, observes:—"North America seems as well adapted to the temperament of the horse as any similar countries in the old continent. The Mexican horses are derived from, but somewhat deteriorated by, a less careful management. Mexican horses have likewise escaped into the woods and savannahs, and although they have not multiplied, as in the plains of the Plata, thence they have descended northward to the Rocky Mountains, and the sources of the Columbia. The Indians of the country have learned to pursue and capture them, employing them in hunting, and transporting their families from place to place—the first great change that has taken place for ages in the condition of the Red Man of the North American woods. The highest ambition of the young Indian of these northern tribes, is to possess a good horse for the chase of the buffalo. The Osages form large hunting parties for the chase of horses in the country of the Red Canadian River, using relays of fresh horses, until they have run down the wild herds. To steal the horse of an adverse tribe, is considered as an exploit almost as heroic as the killing of an enemy, and the distances that they will travel and the privations they will undergo in these predatory excursions are scarcely to be believed."

Among the North American Indians the Camanchees take the first rank as equestrians; racing is with them a constant and almost incessant exercise, and a fruitful source of gambling. Among their feats of riding is one described by Mr. Catlin, as having astonished him more than anything in the way of horsemanship; and it is a stratagem of war familiar to every young man of the tribe. At the instant he is passing an enemy he will drop his body on the opposite side of the horse, supporting himself with his heel on the horse's back. In this position, lying horizontally, he will hang, whilst his horse is at his fullest speed, carrying with him his shield, bow and arrows, and lance, fourteen feet long, all or either of which he will wield with the utmost facility, rising and throwing his arrows over the horse's back, or under his neck, throwing himself up to his proper position, or changing to the other side of the horse if necessary. The actual way in which this is is done is as follows:—A short hair halter is passed under the neck of the horse, and both ends tightly braided into the mane, leaving a loop to hang under the neck and against the breast. Into this loop the rider drops his elbow suddenly and fearlessly, leaving his heel to hang over the back of the horse to steady him and enable him to regain the upright position.

The following very singular custom prevails among the tribe of North American Indians known as the "Foxes." Of it Mr. Catlin was an eye-witness: "When," says he, "General Street and I arrived at Kee-o-kuk's village, we were just in time to see this amusing scene on the prairie, at the back of his village. The Foxes, who were making up a war-party to go against the Sioux, and had not suitable horses enough by twenty, had sent word to the 'Sacs' the day before, according to ancient custom, that they were coming on that day, at a certain hour, to 'smoke' that number of horses, and they must not fail to have them ready. On that day, and at the hour, the twenty young men who were beggars for horses were on the spot, and seated themselves on the ground in a circle, where they went to smoking. The villagers flocked round them in a dense crowd, and soon after there appeared on the prairie, at half a mile distance, an equal number of young men of the Sac tribe, who had agreed each to give a horse, and who were then galloping them round at full speed, and gradually, as they went around in a circuit, coming nearer to centre, until they were at last close around the ring of young fellows seated on the ground. Whilst dashing about thus, each one with a heavy whip in his hand, as he came within reach of the group on the ground, selected the one to whom he decided to present his horse, and as he passed gave him the most tremendous cut with his lash over the naked shoulders: and as he darted round again, he plied the whip as before, and again and again with a violent 'crack,' until the blood could be seen trickling down over his naked shoulders, upon which he instantly dismounted, and placed the bridle and whip in his hands, saying, "Here, you are a beggar; I present you a horse, but you will carry my mark on your back.' In this manner they were all, in a little while, 'whipped up,' and each had a good horse to ride home and into battle. His necessity was such that he could afford to take the stripes and the scars as the price of the horse, and the giver could afford to make the present for the satisfaction of putting his mark on the other, and of boasting of his liberality."

Mr. Catlin gives an interesting account of his faithful horse "Charley," a noble animal of the Camanchee wild breed, which had formed as strong an attachment for his master as his master for him. The two halted generally on the bank of some little stream, and the first thing done was to undress Charley, and drive down the picket to which he was fastened, permitting him to graze over a circle limited by his lasso. On a certain evening, when he was grazing as usual, he managed to slip the lasso over his head, and took his supper at his pleasure as he was strolling round. When night approached, Mr. Catlin took the lasso in hand, and endeavoured to catch him, but he continually evaded the lasso until dark, when his master abandoned the pursuit, making up his mind that he should inevitably lose him, and be obliged to perform the rest of the journey on foot. Returning to his bivouac, in no pleasant state of mind, he laid down on his bear-skin and went to sleep. In the middle of the night he awoke whilst lying on his back, and, half opening his eyes, was petrified at beholding, as he thought, the huge figure of an Indian standing over him, and in the very act of stooping to take his scalp! The chill of horror that paralysed him for the first moment held him still till he saw there was no need of moving; that his faithful horse had played shy till he had filled his belly, and had then moved up from feelings of pure affection, and taken his

* Domestic Quadrupeds of the British Islands. Longmans.

position with his fore feet at the edge of his master's bed, and his head hanging over him, in which attitude he stood fast asleep.

When sunrise came the traveller awoke and beheld his faithful servant at a considerable distance, picking up his breakfast among the cane brake at the edge of the creek. Mr. Catlin went busily to work to prepare his own, and having eaten it, had another half-hour of fruitless endeavours to catch Charley, who, in the most tantalizing manner, would turn round and round, just out of his master's reach. Mr. Catlin, recollecting the evidence of his attachment and dependence afforded by the previous night, determined on another course of proceeding, so packed up his traps, slung the saddle on his back, trailed his gun, and started unconcernedly on his route. After advancing about a quarter of a mile he looked back, and saw Master Charley standing with his head and tail very high, looking alternately at him and at the spot where he had been encamped, and had left a little fire burning. Thus he stood for some time, but at length walked with a hurried step to the spot, and seeing everything gone, began to neigh very violently, and, at last, started off at fullest speed and overtook his master, passing within a few paces of him, and wheeling about at a few rods distance, trembling like an aspen leaf. Mr. Catlin called him by his familiar name, and walked up with the bridle on his hand, which was put over Charley's head as he held it down for it, and the saddle was placed on his back as he actually stooped to receive it. When all was arranged, and his master on his back, off started the noble animal, as happy and contented as possible.

Many of the American prairies swarm not only with buffaloes, but with numerous bands of wild horses, proud and playful animals, rejoicing in all the exuberance of freedom, and sweeping the earth with their flowing manes and tails. The usual mode of taking them by the North American Indians is by means of the lasso. When starting for the capture of a wild horse, the Indian mounts the fleetest steed he can get, and coiling the lasso under his arm, starts off at full speed till he can enter the band, when he soon throws the lasso over the neck of one of the number. He then instantly dismounts, leaving his own horse, and runs as fast as he can, letting the lasso pass out gradually and carefully through his hands, until the horse falls half suffocated, and lies helpless on the ground. The Indian now advances slowly towards the horse's head, keeping the lasso tight upon his neck until he has fastened a pair of hobbles upon his fore feet; he now loosens the lasso, and adroitly casts in a noose round the lower jaw, the animal, meanwhile, rearing and plunging. Advancing warily hand over hand, the man at length places his hand over the animal's eyes, and on its nose, and then breathes into its nostrils, on which the horse becomes so docile and thoroughly conquered, that his captor has little else to do but to remove the hobbles from his feet, and ride or lead it into camp.

CHAPTER V.

THE HORSES OF EUROPE.—TURKEY, GREECE: SOUTHERN AND WESTERN RUSSIA: HUNGARY: POLAND, PRUSSIA: DENMARK AND HOLSTEIN: NORWAY, SWEDEN, FINLAND AND LAPLAND: AUSTRIA, BAVARIA: HOLLAND, BELGIUM: FRANCE: ITALY: SPAIN AND PORTUGAL.

We shall not dwell at great length on the horses of Europe, inasmuch as the original races of that quadruped are, except in some few isolated instances, almost without a history; and in more modern times, the continual intercourse among the more civilized countries of the continent has so blended and toned down the distinctive characteristics of race, as to make absolute and clear lines of demarcation impossible. Nevertheless, a few brief paragraphs, arranged systematically, and travelling westward until, in our next chapter, we shall reach our own "tight little island," are necessary to our plan, and we begin with

TURKEY IN EUROPE.

Our general notice of the Barb, Toorkman, and Arab, in "the Horses of Africa and Asia," dispenses with the necessity of much remark on the Turkish horse. The term "Turk" for two centuries was a general one, meaning any horse that came from the Sultan's or even the Shah's dominions. The Byerley, Helmsley, Acaster, Belgrade, and other "Turks" thus came from Buda (in Hungary), Belgrade (Servia), Constantinople, Syria, Tunis, Tripoli and Morocco; a sufficiently wide range to have furnished us with horses bearing the same name, but of widely different parent stock.

The modern Turkish horse originally, would be the Greek horse of the countries once comprised in the Lower Empire. The irruption of the Turks into Europe in the thirteenth and fourteenth centuries brought with that nation of cavalry the Asian horse in myriads, while the African horse, in like way, made, under the fierce followers of Islam, a similar invasion of the Spanish peninsula. Though fine and stately horses are seen in various parts of Turkey, they are, from the neglect of the European Turk of the first principles of breeding, generally importations from Asia or Africa. The horses of the Northern provinces—Wallachia, Moldavia, and on the banks of the Pruth—partake more of the Cossack character, though of better size and roundness, owing to superior and more persistent natural pasturage.

GREECE.

In ancient times the horses of Greece stood high in esteem; witness the numerous representations of horsemen on friezes of their temples: that of the temple of Minerva, in the Acropolis of Athens, is the best known. We may observe, *en passant*, that while the sculptured representations of the men are perfect, if these horses are faithful, they were heavy animals, with poor quarters as compared with their forearms, preternaturally heavy forehand, the shortest of short necks, and a long barrel. They bear a resemblance in many points to the German horse of the middle ages. It is probable these were exaggerations of the bad points of the Thessalian horses, so much lauded in ancient writers. The modern Greek horse has not kept pace with his improvement in other countries, and has merely the credit of being a surefooted animal with considerable strength.

SOUTHERN AND WESTERN RUSSIA.

Of late years the indigenous breeds of this portion of the empire have been greatly improved, especially in the characteristics of blood for the saddle, and size for the heavy cavalry of the "crack" regiments; this has been effected by the importation of stallions from England, Prussia, and Holstein—the two latter furnishing the cross for the heavier animal, and England the blood, speed, and bottom.

The late Emperor Nicholas established races in different parts of his vast empire for the improvement of the Cossack and other horses. On the 20th of September, 1836, the races at Ouralsk took place. The distance to be run was eighteen versts, or about four and a half French leagues—rather more than ten miles. Twenty-one horses of the military stud of the Cossacks of Oural started for the first heat, and which was won in twenty-five minutes and nineteen seconds by a horse belonging to the Cossack Bourtche-Tchurunief. The second race was disputed by twenty-three horses of the Kirghese Cossacks, and which was won in twenty-five minutes and five seconds by the horse of the Cossack Siboka-Isterlai. On the following day the winners of the two first heats strove for the point of honour. The course was now twelve versts—three French leagues, or about six miles and three quarters. It was won in fifteen minutes by the horse of the Cossack Bourtche-Tchurunief. The Russian noblemen who were present, admiring the speed and stoutness of the horse, were anxious to purchase him; but the Cossack replied that "All the gold in the world should not separate him from his friend, his brother."*

In Southern and Western Russia, and in Russian Poland, the breeding of horses has lately occupied the attention of the land proprietors, and has constituted a very considerable part of their annual income. There is scarcely now a seignorial residence to which there is not attached a vast court, in four large divisions, and surrounded by stables. In each of the angles of this court is a passage leading to beautiful and extensive pasture-grounds, divided into equal compartments, and all of them having convenient sheds, under which the horses may shelter themselves from the rain or the sun. From these studs a larger kind of horse than that of the Cossacks is principally supplied, and more fit for the regular cavalry troops, and also for pleasure and parade, than common use. The remounts of the principal corps in Germany are derived hence; and from the same source the great fairs in the different states of the German empire are occasionally supplied.

The stud of the Russian Countess Orloff Tshesmensky, in the province of Valonese, contains thirteen hundred and twenty horses, Arabs, English, natives, and others. The ground attached to it amounts to nearly eleven hundred acres; and the number of grooms, labourers, and others, is more than four thousand. The sum realised by the sale of horses is of considerable annual amount; and they are disposed of not only on the spot itself, but in the regular markets both of St. Petersburgh and Moscow.

Of the most recent improvers of the Russian horse, foremost stands Baron Ippolyte Petroffski, who with Mr. Aveson as his stud-groom, and George Dockeray as his trainer and jockey, has given of late years an immense impetus to racing among the Russian nobility. A recent writer thus sketches the Baron and his stud:—

Sixty-three summers (written in March, 1859), have done little to blanch his hair, dim his eye, or bend his light wiry frame erect, as becomes a captain of the Imperial Guard.

The English Stud Book is his Koran, and in his library may also be found every Racing Calendar and Sporting Magazine that has ever seen the light. He is himself an author, and has been at the pains of publishing, in the Russian language, a most complete synopsis of the celebrated stallions in England from 1811. It enters with the greatest accuracy into the number of years they were in the stud, the price at which they covered, and the dams of their most celebrated winners. Upwards of 135 paintings or engravings of racers and sporting subjects adorn his rooms; and if there was an alarm of fire, we are afraid that his gallery of old Dutch and Italian masters would be left to take their chance, till those well-loved forms of Derby and Leger renown were safe out of harm's way.

His views upon racing are best told in his own simple way; but we must premise that Elliot, Robinson, Dockeray, Ford, Yates, &c., have wrought a wondrous change in training, and have no greater admirer than himself. "You like the horses of old stock," he says, in writing to a friend, "and old form, which I also prefer to the new-fashioned, who win great prizes on a short distance. Our Russian men are quite ignorant in training. The English who come here are mostly grown-up boys, too heavy for riding, and also inexpert. They cannot understand yet the difference between our climate and the English. We have only two months to prepare horses for the races, that is May and June. The horses are led 500 versts,* with all the road inconveniences. They change water

* *Journal des Haras*, Jan. 1837, p. 266.

* A verst is two-thirds of a mile.

and food, and suffer much before they come to the racing place. All that is not easy for a racing horse to endure. Our prizes are not worth carrying food and water, and the horse itself in equipage. It would be supportable yet, for once, to travel 500 versts, but they go again 200 versts and run, and then again 500 versts, and then 200 versts, and run again."

The Baron breeds his horses at one of his estates, and trains at another, where his string do their work in the winter, without shoes, on frozen snow, regularly harrowed for the purpose. The ground is, however, mostly flat, without any extent or variety of gallops. The breeding farm is bordered by a noble river of great width, and in summer, when the flies teaze the young foals to distraction, they dash in and swim, while their dams watch them placidly from the bank, and occasionally join in the sport. If a ten-stone by five-feet-eight figure is seen standing by, in a blue tunic, and trowsers tucked inside his boots, it is even betting that it is the Baron himself, meditating on Moscow or Crenavoy Meetings to come. Many of them have excellent hind-leg action, and their owner invariably attributes it to their early swimming habits. The brood mares alone number about 160, some of which are still unbroken, and most of them never trained. The blood is, strictly speaking, a cross between the Russian and Asiatic mares, and the English horses imported by Government—Memnon, General Chassé, Van Tromp, Andover, &c.; and the stock are generally browns, of great length and on short legs, having all the Arab deficiency of shoulder, but catching the Eastern character in their fine eye and small nostrils, and bearing the Sir Hercules crest.

The Baron also rather prides himself upon his breed of trotting horses, and he gave for Barklay, one of the best sires of that stamp, 11,000 roubles*. We believe that one of his best, once trotted eight versts under the sixteen minutes; and they are also used for racing in droskies on the ice, where the courses are marked out by bushes, and range from 15 to 25 versts.

A Surplice and an Irish Birdcatcher brood mare have gone out to the Baron's, along with Rifleman, who was purchased by his son for the Government. In 1859 his racing stud consisted of seventeen horses in training, fifty brood mares, twenty-five two-year olds, nearly as many yearlings and foals respectively, while Signal, Granite, and Bombardier are the principal sires. The Signals are his best racing stock. One of them out of Minerva is christened Maxfield after an English friend; but its half-brother, a four-year old grey, of singular beauty, out of Vesta by Barefoot, has never yet been trained.

The spring opens for training in April, and on June 7th the racing season begins at Moscow, where the Baron gives 500 silver roubles in prizes. The Moscow Meeting then lasts for a month; they race for three days out of the seven, and have four or five races per day. The Jockey Club, of which Baron Petroffski is an active member, have a stand of their own, and the horses are entered the night before at their rooms. There is very little betting, and that has been principally introduced by the English jockeys, who are too true to their old Tattersall's instincts. The Toola Meeting is on July 8th, and on August 18th the one at Crenavoy begins. Here the Baron has lately beat the Government on their own ground; but the advantage of home training is always so great, that the Emperor has generously refused to avail himself of the slightest advantage. Since 1863 these races have come off at Tsarskoe Selo, to give the private studs a better chance to compete. Lebedan, on September 12th, is the fourth and last meeting; and here, in 1859, the Petroffski "boy in yellow" literally carried off every prize.

Russia may well rank George Dockeray as the worthy servant of a worthy master; 11,654 silver roubles were their spoils of 1859; and the future young "Riflemen" are not likely to lessen the score.

* The rouble is 3s. 2d.

HUNGARY.

The immense plains watered by the Theiss and the tributaries of the Danube have always possessed a serviceable and valuable race of horses, light-spirited and active. We are told *(credat Judæus)* it was the practice of the Hungarian cavalry to slit their nostrils to prevent their neighing, which often proved troublesome in war.

In the early part of the present century, a wealthy nobleman named Count Hunyadi, of Urmeny, commenced breeding horses with great zeal; and having formed a stud of the very best the country could produce, he sedulously improved it by importations of the best foreign blood. He likewise established public races, and a Racing Calendar. At first these races had only the Count's own horses as competitors, but other neighbouring princes and noblemen soon saw the advantages which he had derived from his plan of breeding, and followed his example. Bright, who travelled through Hungary in 1814, saw the Hungarian Racing Calendar, and I shall give my readers a specimen of its first page, from Dr. Bright's work.

"This meeting took place May 22nd, 1814, between three mares.

Names of the Mares.	Colour and Marks.	Size.		Age.	Father.	Mother.	Name of Rider.	With what Weight.
		ha.	in.	yrs.				P. Fund.
Victoria	Light brown	15	1	3	Montedora	Roxalana	Johan Petzuch a	78½
Capria	Chesnut	14	3	3	Yescanello	Capria	Johan Hofchuth	72½
Cocoa	Iron-grey	14	3½	3	Perla, from Transylvania	Villam fm. Transylvania.	Johan Kadrij	72½

"In this case, Victoria and Capria ran the length of one English mile, or eight hundred and forty-nine Vienna klafters, in two minutes and eleven seconds; but Cocoa remained the length of six horses behind.

"That the above-described horses of this size and age, and carrying this weight, did really accomplish the distance in the time stated, we testify by our names."

(Here follows a long list of signatures of noblemen and others present at the race.)

Graf Hunyadi persevered and even increased his exertions in pursuit of this important object. "In the spring of 1816 he ran thirteen three-year-old mares of his own breeding, before an assemblage of several thousand persons. In this case the whole were divided into three allotments, each forming a separate race. In the first, Justina ran the length of the course, which is one thousand and eighty-two Vienna klafters, in three minutes and fifty-eight seconds; then after resting for an hour, the three successful mares ran against each other, and Lodoiska went over the course in three minutes and three seconds."

The Croatian horses are very like the Hungarian. Buffon asserts that they retain the marks on their teeth much longer than those of any other country, Poland excepted.

Count Hunyadi had a noble successor in Count Batthyani, whose name on the English turf, and in the "first flight" at Melton, is familiar to English ears as a "household word." The Count sent to Hungary some first-rate English blood. Races are now run in our national fashion near Buda-Pesth, and in other parts of Hungary; and the imported blood has put Hungary in possession of a breed of first-class horses.

POLAND, PRUSSIA.

Prussia has by no means halted in the race of improvement of the horse; nay, she has rather in this respect taken a lead. During the war in which she conquered France, the superiority of the German cavalry was notable. Imperial Germany has established large national breeding studs, and has bought a number of the winners of our great races at large prices.

In the marshy lands about the mouth of the Vistula there is a heavy, large, and strong breed of horses, well suited for draught and agricultural purposes.

Of late years some of our very best racers have gone to Prussia.

DENMARK AND HOLSTEIN.

The horses of Denmark, Holstein, and Mecklenburg are of the largest stature, especially the two latter. They are usually 16, and often 17 to 18, hands high. They are heavily made: the neck is too thick, the shoulders heavy, the backs too long, and the croups are narrow compared with their fore parts: but their appearance is so noble and commanding, their action is so high and brilliant, and their strength and spirit are so evident in every motion, that their faults are pardoned and forgotten, and they are selected for every occasion of peculiar state and ceremony.

Before, however, we arrive at the native country of these magnificent horses, we must glance at the attempt of one noble individual to improve the general breed of horses. In the island of Alsen, separated from the duchy of Sleswick by a narrow channel, is the habitation of the Duke of Augustenburg. His stud is attached to it, and under the immediate management of the noble owner. It contains thirty mares of pure blood, and fifteen or sixteen stallions of the same grade; and all of them selected with care from the best thorough-bred horses in England. Notwithstanding this selection of pure blood, or rather in its peculiar selection, it has been the object of the duke to produce a horse that shall be useful for the purpose of pleasure, commerce, and agriculture. Some of the stallions are reserved for his own stud; but with regard to the others, such is the spirit with which this noble establishment is conducted, and his desire to improve the race of horses in Sleswick, that he allows more than six hundred mares every year, belonging to the peasantry of the isle of Alsen, to be covered gratuitously. He keeps a register of them, and in the majority of cases he examines the mares himself, and chooses the horse which will best suit her form, her beauties, her defects, or the purpose for which the progeny is intended. It is not therefore surprising that there should be so many good horses in this part of Denmark, and that the improvement in Sleswick and in Holstein, and also in Mecklenburg, should be so rapid and so universally acknowledged.

Rae Wilson, in his *Travels in Denmark*, gives the following on the royal stables:—"The floors of the king's stables at Copenhagen are not laid with smooth pavement, but rough stones, on an inclined plane. This is said to prevent lameness,* which often happens when the animals stand in their own litter. The mangers are high and semicircular. The cribs are of iron, and the name of each animal inscribed over his stall. The horses of the king are calculated at eleven hundred. The skin of a horse is suspended from the ceiling of the Museum, in the act of flying. These animals are

"'——of mighty power,
Compact in frame, and strong in limb.'"

There is another circumstance which should not be forgotten—it is that by which alone the preservation of a valuable breed can be secured—it is that to the neglect of which the deterioration of every breed must be partly, at least, and, in many cases, chiefly traced. The duke in his stud, and the peasants in the surrounding country, preserve the good breeding mares, and will not part with one that has not some evident or secret fault about her.

There is, however, nothing perfect under the sun. This determination to breed only from horses of pure blood, although care is taken that these horses shall be the stoutest of their kind, has lessened the size and somewhat altered the peculiar character of the horse in the immediate districts; and we must go somewhat more southward for the large and stately animal of which previous mention has been made. The practice of the country is likewise to a certain degree unfriendly to the full development of the Augustenburg horse. The pasturage is sufficiently good to develope the powers of the colt, and few things contribute more to his subsequent hardihood than his living on these pastures, and becoming accustomed to the vicissitudes of the seasons: yet this may be carried too far. The Sleswick colt is left out of doors all the year round, and, except

* We should say its effect would be just the contrary.

when the snow renders it impossible for him to graze, he is, day and night, exposed to the cold, the wind, and the rain We are no advocates for a system of nursing laborious to the owner and injurious to the animal, but a full development of form and of power can never be acquired amidst neglect and privation.

NORWAY, SWEDEN, FINLAND, LAPLAND, ICELAND.

The horse of Norway is larger than the Swedish or Finland, but is equally hardy and manageable, attached to its owner, and its owner to it. The roads in Norway are the reverse of what they are in Sweden: they are rough and almost impassable for carriages, but the sure-footed Norwegian seldom stumbles upon them. Pontoppidan speaks of their occasional contests with bears and wolves, and chiefly the latter. These occurrences are now more matter of story than of actual fact, but they do sometimes occur at the present day. When the horse perceives any of these animals, and has a mare or foal with him, he puts them behind him, and then furiously attacks his enemy with his fore legs, which he uses so expertly, as generally to prove the conqueror; but if he turns round in order to strike with his hind legs, the bear closes upon him immediately and he is lost.

Of the horses of the islands of Feroe, still belonging to the Danish crown, Berenger speaks in terms of much praise. He says that "they are small of growth, but strong, swift, and sure of foot, going over the roughest places with such certainty that a man may more surely rely upon them than trust to his own feet. In Suderoe, one of these islands, they have a lighter and swifter breed than in any of the rest. On their backs the inhabitants pursue the sheep, which are wild in this island; the pony carries the man over places that would be otherwise inaccessible to him—follows his rider over others—enters into the full spirit of the chase, and even knocks down and holds the prey under his feet until the rider can take possession of it."

The Swedish horses in general, says Mr. Lloyd *(Field Sports of the North of Europe)*, "are hardy and capable of considerable exertion; their manes and tails are usually left in a state of nature; they are seldom cleaned, and when in the stable, even in the most severe weather, are rarely littered down. This treatment of their horses arises as well from ignorance as neglect, on the part of the peasants. In saying this, however, I am willing to admit that many of them are almost as fond of these animals as if they were their own children. The average price of a good horse of the description I am now speaking of, may be taken at from five to eight pounds."

Sir Capel Brooke, in his *Travels in Sweden*, thus speaks of the country horse: "He is nimble and willing, almost entirely fed on bread composed of equal parts of rye and oatmeal. To this is added a considerable quantity of salt, and, if he is about to start on a long journey, a little brandy. While changing horses we were not a little entertained at the curious group formed by the peasants and their steeds breakfasting together; both cordially partaking of a large hard rye cake. The horses sometimes belong to three or even more proprietors: it is then highly amusing to observe the frequent altercations between them, each endeavouring to spare his own horse. Their affection for their horses is so great that I have seen them shed tears when they have been driven beyond their strength. The expedition, however, with which these little animals proceed is surprising, when we consider the smallness of their size, which hardly exceeds that of a pony. The roads being universally good throughout Sweden, they frequently do not relax from a gallop, from one post-house to another."

The Finland horses are yet smaller than the Swedes; not more than twelve hands high. They are beautifully formed and very fleet. They, like the Swedes, are turned into the forests in the summer, and must be fetched thence when they are wanted by the traveller. Although apparently wild, they are under perfect control, and can trot with ease at the rate of twelve miles in the hour.

Fish is much used, both in Finland and Lapland, for the winter food of horses and cattle.

Kerguelen tells us in his *Voyage to the North*, speaking of Iceland, that there are numerous troops of horses in this cold and inhospitable country, descended, according to Mr Anderson, from the Norwegian horse, but, according to Mr. Horrebow, being of Scottish origin. They are very small, strong, and swift. There are thousands of them in the mountains which never enter a stable; but instinct or habit has taught them to scrape away the snow, or break the ice, in search of their scanty food. A few are usually kept in the stable; but when the peasant wants more he catches as many as he needs, and shoes them himself, and that sometimes with a sheep's horn.

The Lapland horse, according to Berenger, is small, but active and willing—somewhat eager and impatient, but free from vice. He is used only in the winter season, when he is employed in drawing sledges over the snow, and transporting wood, forage, and other necessaries, which in the summer are all conveyed in boats. During the summer these horses are turned into the forests, where they form themselves into distinct troops, and select certain districts, from which they rarely wander. They return of their own accord when the season begins to change and the forests no longer supply them with food.

AUSTRIA, BAVARIA.

The remarks made on the horses of Poland and Hungary will apply in a great measure to those of Austria proper. Bavaria has, especially, a valuable, but rather sluggish description of horse, answering in some respects to the old German "destrier," whereon the armour-clad knights of the middle ages were mounted: this is suitable for heavy dragoons, but would be all the better for a little more "blood."

In 1790, a very superior Arab, called Turkmainath,* was imported for the imperial stud, and his stock became celebrated, not only in Hungary, but throughout most of the German provinces. In 1859, the Archduke Maximilian, brother to the emperor, purchased some valuable racers and

* We shrewdly suspect, from other reasons than the name, that this was no Arab at all, but a Toorkman.

hunters in England, and sent them to Austria. Some of them went to the imperial establishment of which mention is hereafter made, and the others contributed materially to the improvement of the horses wherever they were distributed. Races have been established in various parts of the Austrian dominions, and particularly at Buda, in Hungary. Of the good effect which this will have on the breed of horses there can be no dispute, provided the race does not degenerate into a mere contest of superiority of speed, as exhibited in an animal that, from his extreme youth, must inevitably be injured or ruined in the struggle.

In Austria proper there is the great breeding establishment at Mezöhogyes, near Carlsburg, of which we read in the works of the Duke of Ragusa:—This is the finest establishment in the Austrian Empire for the breeding and improvement of horses. It stands on forty thousand acres of the best quality; and is surrounded in its whole extent, which is fifteen leagues, by a broad and deep ditch, and by a broad plantation sixty feet wide. It was formerly designed to supply horses to recruit the cavalry; at present its object is to obtain stallions of a good breed, which are sent to certain depôts for the supply of the provinces. To produce these, one thousand brood mares and forty-eight stallions are kept; two hundred additional mares and six hundred oxen are employed in cultivating the ground. The plain is divided into four equal parts, and each of these subdivided into portions resembling so many farms. At the age of four years the young horses are all collected in the centre of the establishment. A selection is first made of the best animals to supply the deficiencies in the establishment, in order always to keep it on the same footing. A second selection is then made for the use of the other: none of these, however, are sent away until they are five years old; but the horses that are not of sufficient value to be selected are sold by auction, or sent to the army to remount the cavalry, as circumstances may require.

The whole number of horses at present here, including the stallions, brood-mares, colts, and fillies, is three thousand. The persons employed in the cultivation of the ground, the care of the animals, and the management of the establishment generally, are a major-director, twelve subaltern officers, and eleven hundred and seventy soldiers.

The imperial treasury advances to the establishment every year one hundred and eighteen thousand florins (the half rix-dollar or florin is in value about 2*s*. 1*d*. English money), and is reimbursed by the sale of one hundred and fifty stallions, which are sent every year to the provinces at the price of one thousand florins each, and by the value of the horses supplied to the cavalry. The other expenses of every description are paid for by the produce of the establishment, which is required to defray, and does defray all. This is, therefore, an immense estate—a farm on a colossal scale—with a stud in proportion, managed on account of the sovereign, and which produces a considerable revenue, independently of the principal object which is attained, the propagation and multiplication of the best breeds of horses. It can always supply the wants of the army at a price almost incredibly small. For a horse of the light cavalry he pays only one hundred and ten florins, for the dragoons one hundred and twenty, for the cuirassiers one hundred and forty, for the train one hundred and sixty, and for the artillery one hundred and eighty. It is a great element of power to possess at home such an immense resource against a time of war, at an expense so far below that which the powers of the west and south of Europe are compelled to incur.

The facility with which the large bodies of Austrian cavalry, their numerous and comparatively clumsy artillery, and enormous waggon-train were horsed and moved during the disastrous Italian campaign of 1859, was due to this organised system of breeding for the army.

The *German running horses*, mentioned hereafter in our notice of early racing in England, were probably Hungarian horses, with an Eastern cross.

HOLLAND AND BELGIUM.

Though these countries possess good horses for harness and saddle purposes, it is by their "long-tailed blacks," with their arched crests, profuse manes, and clumsy fetlocks, used in the funeral *cortége*, or, by their ponderous dray and waggon horses, that they are best known in England.

The fleshy, broad, and roomy "Flanders mare" has been proverbial for centuries. "Bluff King Harry's" unpolite exclamation in relation to his *fiancée*, Anne of Cleves, will be remembered. From some of the lighter of this stock we have had stately coach-horses; and the cream-coloured Hanoverians in the royal state-carriage owe their origin to a kindred race.

FRANCE.

"The horses of France are of all descriptions—but few of them handsome, and fewer still fast-goers," says a recent sporting traveller. This is easily accounted for. There is not, and will not be, except in the very rare instances of immediate descent from imported blood, animals of that high class which result in England from a liberal and judicious expenditure in every part of the country on procuring the best stock to breed from. Baron Charles Dupin says "Comparant ensuite la France avec les contrées voisines pour la richesse en chevaux et en troupeaux, il s'arrête devant la deproportion qu'elle présente sous ce point de vue avec la Grande-Bretagne." And it is probable this will remain so as long as we have the law of primogeniture, and France is without it. The expenses of the turf will never be supported in France in the same way as in England on that very account. In a country like France, where property is so divided, and in a country like England, where money is in such masses—the turf being a luxury as well as pleasure—becomes the enjoyment of the nobility of the land; the law of primogeniture preventing the division of estates, secures at once the experience and the means of perpetuating the breed of horses of the first quality, from generation to generation. And to this may be added the long engrafted love of the horse among our yeomen, farmers, and all engaged in rural pursuits. In fact,

Frenchmen generally, though a few rare exceptions may be found to prove the rule, do not understand, and therefore do not admire thorough-bred horses. Beyond the army and the court, there are not many Frenchman but would be content with a moderate priced horse; and would rather avoid, we believe, the extra care and attention which a higher-bred animal might subject him to. The French, as far as our experience goes, are an economical people, not likely to encourage any expense which they possibly could do without; and therefore are in the main content with their present breed of horses. There are no hounds kept in the provinces, because there are no primogeniture estates of twenty thousand pounds a year to support them; there are no subscription packs for the same reason as there is no private one; property is so extensively divided, that if it secures comforts, they are satisfied, and are too wise to embark in any thing which they deem extravagant. There is no encouragement to stimulate the breed of hunters, and the breed of blood horses will, we suspect, still remain in the hands of the French Government, rather than be taken up by private breeders.

From the time of Napoleon I. the practice has prevailed in France for the government to send stud horses into the different provinces to assist the French farmer in the improvement of his horses, but with little advantage, as we shall note hereafter. This is absolutely necessary, for the French farmer employs so little capital that it would interfere too much with his economy to pay a price for a good stallion.

Louis Philippe, albeit no sportsman, at the earnest solicitation of his eldest son the Duke of Orleans, founded the great hippodrome, or race-course at the royal demesne of Neuilly. Though personally without taste for the pleasures of the turf, as a national recreation, he could not fail to see the importance of encouraging the breeding of horses upon a better principle than that of merely crossing the soft-boned and heavy Flanders mare with the hardy but clumsy Norman stallion. With an eye to war and to commerce, the astute "old Ulysses"— whose cunning however overshot the mark, and sent him wandering like the old Greek whose name was aptly applied to him—saw that this branch of rural pursuits must be advantageous. Accordingly, the royal stud in Normandy was conducted on an immense scale. A writer in 1840 says, "The stud of stallions here is enormous; and when such horses are found in it as Lottery, Cadland, Pickpocket, Dangerous, Juggler, Teetotum, Mameluke, Young Emilius, Cleveland, and an endless et cetera of minor stars, it will be owned they have gone the right way to work. These horses during the season are sent all over the country." If they have gone "the right way to work" in procuring such stallions, they have gone "the wrong way to work" in the use of them, in thus travelling them like our cart-stallions. In this we are confirmed by an incidental remark of Admiral Rous, which we have this instant stumbled over in *Baily's Magazine of Sports and Pastimes* for April 1860. The gallant turfsman says:—"In France they order things differently: in addition to liberal prizes, the Government has purchased our best stallions, whose services are given to the public at a cheap rate. If in this country we pursued the latter policy, we should deteriorate our breed, because it would induce persons to breed from ordinary mares with a view to obtain a valuable marketable article by a crack stallion. The first-class horses would be overworked, and an inferior animal would be the natural production."

This then is one of the "things" they do *not* manage better in France. The Duke of Orleans—whose melancholy death, by being thrown from his phaeton, in 1842, probably was the turning-point which led mainly to the expulsion of the Orleans dynasty, and thence to a republic, an empire, and a military despotism—was an ardent admirer of the race-horse. His visit to Goodwood, and his victory with Beggarman, for the Goodwood Cup, took place in 1840: a feat twice since performed by French horses—by Jouvence, in 1853, and by Count Lagrange's Monarque, in 1857. Since then a French horse, Gladiateur, won both Derby and Leger in 1865, and a French mare, Fille de l'Air, was victrix in the Oaks in 1864. The ex-emperor of the French, during his twenty years reign, gave an immense impetus to the breeding of a better class of horse. The most sedulous attention was given in all the imperial *haras* to procure the best crosses which money could obtain, with the view of propagating in France an animal of blood, bone, and symmetry, to rival our best chargers and hunters; while thorough-breds for the turf were not neglected, though, on the whole, treated as a subsidiary desideratum — substance being preferred to speed. According to a recent survey, France possesses 2,750,000 horses, of every description; of which 1,440,000 were mares; a great proportion of which were used in breeding mules. Besides these, there are annually 30,000 horses imported into France for sale, or with the express purpose of improving the breed. Most Frenchmen of fortune are ambitious to have first-rate English horses, and will give high prices for them.

Two-thirds of the French horses are devoted to purposes of light work, and possess a certain degree, and that gradually increasing, of Eastern blood. There is room, however, for a great deal more than the French horse usually possesses. One-third of the horses are employed in heavy work; 70,000 in post work; and about the same number are registered as fit for military use, although not more than half of them are on actual service. The ascertained number of deaths is about one in twelve or thirteen, or leaving the average age of the horse at twelve. This speaks strongly in favour of the humanity of the French, or the hardihood of the horses, for it exceeds the average duration of the life of the horse in England by more than two years. Calculating the average value of the French horse at 400 francs, or 16*l.* 13*s.* 4*d.*, there results a sum of about 160,000,000 francs, or rather more than six millions and a half sterling, as the gross value of this species of national property.

It must be supposed that so extensive a country as France possesses various breeds of horses. Auvergne and Poitou produce good ponies and galloways; but the best French

horses are bred in Limousin and Normandy. From the former district come excellent saddle-horses and hunters, and from the latter a stronger species for the road, the cavalry service, and the carriage.

M. Houel has published an interesting work on the varieties of the horse in France. He states that in the time of the Romans there were but two kinds of horses,—the war-horse, and the sumpter or pack-horse. The carriage, or draught-horse, was comparatively or quite unknown; and even persons of the highest station suffered themselves to be indolently drawn by oxen. Great care was taken to preserve or to renew the strength and speed of the war-horse, and African or Arab blood was diligently sought. An animal, the type of the English Cleveland breed, the handsomest and strongest description of the coach-horse, was thus procured. By degrees, this horse was found too valuable for a hackney, and too high-trotting for a long journey, and a more smoothly moving animal was gradually introduced. Still the charger did not grow quite out of fashion, and in Normandy the rearing of this animal became an object of much attention to the farmer. At first they were bred too slow and ponderous, but by degrees a horse was obtained of somewhat lighter action and considerable speed, without much sacrifice of strength, and they now constitute a most valuable breed. "I have not elsewhere," says, M. Houel, "seen such horses at the collar, under the diligence, in the post-carriage, or the farm-cart. They are enduring and energetic beyond description. At the voice of the brutal driver, or at the dreaded sound of his never-ceasing whip, they put forth their strength; and they keep their condition when other horses would die of neglect and hard treatment." The little Norman cart-horse is, perhaps, the best for farm-work. The Norman horses—and the same observation applies to all the northern provinces of France—are very gentle and docile. A kicking or vicious one is almost unknown there; but they are, with few exceptions, treated with tyranny and cruelty from first to last. The reign of terror may to a certain degree be necessary where there are many perfect horses; but the principle of cruelty should not extend, as it too often does, to the treatment of every kind of horse.

We, however, give our suffrage for the admirable system so widely propagated by Mr. Rarey, feeling convinced, by the case of Cruiser, King of Oude, and a dozen other entire horses, which have been subdued by that gentleman's system, that terror produced by suffering or violence is more likely to create or confirm vice, than really eradicate it. In regard to general treatment of the horse there is more humanity among the French than the English peasantry; but, on the other hand, there are horrible scenes of cruelty to the horse hourly taking place in the streets of Paris, that would not be tolerated for a moment in the British metropolis.

The breeding of horses has more decidedly become a branch of agricultural attention and speculation than it used to be, what is taking place is attributable principally to this cause—it has been proved to the farmer that, with the proper kind of pasture, and within a fair distance of a proper market, instead of being one of the most uncertain and unprofitable modes of using the land, it yields more than an average return.

The establishment of races in almost every part of France has given a spur to the breeding and improvement of the horse which cannot fail of being exceedingly beneficial throughout the whole of the French territory. Nor has the Republic been slow, considering the terrible devastation of the recent war and the exhaustion occasioned by the ruinous indemnity to Germany, in re-establishing the public breeding establishments. The English thorough-bred horse has been preferred to the native Arabian. A great many of the best English stallions have been purchased for the French studs, and have been beneficially employed in improving, and often creating, the hunter, the racer, and the better class of horses.

It has been stated that the most valuable native horses are those of Normandy; perhaps they have been improved by the English hunter, and occasionally by the English thorough-bred horse; and on the other hand, the English roadster, and the light draught horse, have derived considerable advantage from a mixture with the Norman; not only in early times, when William the Conqueror was so eager to improve the horses of his new subjects by means of those of Norman blood, but at many succeeding periods.

A certain number of Normandy horses used to be purchased every year by the French government for the use of the other departments. This led occasionally to considerable trickery and evil. None of the Norman horses were castrated until they were three, or sometimes four years old; and then it frequently happened that horses of superior appearance, but with no pure blood in them, were sold as belonging to the improved breed, and it was only in their offspring that the cheat could be discovered. The government now purchases the greater part of the Normandy horses in their first year, and brings them up in the public studs. They cost more money, it is true; but they are better bred, or become finer animals.

It is stated in the journals that the Norman horses, which were encouraged rather from political considerations, are to be proscribed from the national *haras;* they are to be sent up to Tattersall's. Messrs. Anderson, Murray, Collins, Phillips, and Sewell have commissions to buy from them for carriage and saddle horses. They are not of the very first class in either capacity.

The necessity of a stud-book, whenever horses are of sufficient value to deserve a record of their descent, is self-evident. The first work of this kind in France was drawn up as late as 1837. This fact alone warrants what to some persons may consider as savouring of insular prejudice in some of our precedent remarks. This book contains the names of 215 stallions, of pure English blood, imported into France, or foaled there, 266 Barbs, Arabs, Turkish, or Persian horses; 274 mares, of pure English blood; and 41 Barbary or Turkish mares. Their stock is also registered. This work forms an epoch in the

improvement of the horse in France. Of necessity, leading French turfites have extensively patronised English trainers and jockeys, as Frenchmen neither understand training nor riding racehorses.

SPAIN AND PORTUGAL.

In early times, the Iberian Peninsula was celebrated for a noble and high-couraged breed of horses, which owed their origin to African blood; and, in the days of Roman power, the district near Calpe, our modern Gibraltar, was renowned for a breed of horse superior to any other European variety, even that known as Arabian. The true Spanish horse is extremely handsome, well knit, clean-jointed, and easy in his paces. His disposition is playful, free from vice, and affectionate to his master. But, like his master, he has degenerated. Pliny's description of the "thieldones" or "tellers of their steps," applies accurately to the jennet of later times.

Cordova, in Catalonia, was once famous for its horses, but their glory is departed: indeed, the taste of the Spanish breeder is so depraved that he prizes a horse for those very points which would make an English sportsman reject him from the stud, viz.:—forelegs far back, almost under the belly; shoulders, consequently, heavy and forward; and tail set on so low that it appears squeezed close to the hams. The Spanish grooms do not suffer their horses to lie down, but keep them chained to a clean pavement by their feet. Within a few years, however, a healthy reaction has taken place, and some attempts have been made, by introducing in the various provinces Andalusian stallions, to check the degenerating progress so manifest in this mule-breeding land.

Solleysel, in his "*Parfait Mareschal*," has left us a florid description of the Spanish horse as he found him:—"I have seen many Spanish horses; they are extremely beautiful, and the most proper of all to be drawn by a curious pencil, or to be mounted by a king, when he intends to show himself in his majestic glory to the people. There will not be found any kind of horse more noble than they, and of their courage; I have seen their entrails hanging from them, through the number of wounds that they have received; yet they have carried off their rider safe and sound, with the same pride with which they brought him to the field, and after that they died, having less life than courage."* It is delightful to read accounts like these, and we know not which to admire most, the noble horse or the writer who could so well appreciate his excellence.

Berenger, (*Horsemanship*, vol. i., p. 151,) whose judgment can be fully depended on, thus enumerates their excellences and defects:—"The neck is long and arched, perhaps somewhat thick, but clothed with a full and flowing mane; the head may be a little too coarse; the ears long, but well placed; the eyes large, bold, and full of fire. Their carriage lofty, proud, and noble. The breast large; the shoulders sometimes thick; the belly frequently too full, and swelling; and the loin a little too low; but the ribs round, and the croup round and full, and the legs well formed and clear of hair, and the sinews at a distance from the bone—active and ready in their paces—of quick apprehension; a memory singularly faithful; obedient to the utmost proof; docile and affectionate to man, yet full of spirit and courage."

The common breeds of Spanish horses have nothing extraordinary about them. The legs and feet are good, but the head is rather large, the forehand heavy, and yet the posterior part of the chest deficient, the crupper also having too much the appearance of a mule. The horses of Estremadura and Granada, and particularly of Andalusia, are most valued.

The modern Spanish horse is fed upon chopped straw and a little barley. When the French and English cavalry were there, during the Peninsular war, and were without preparation put upon this mode of living, so different from that to which they had been accustomed, they began to be much debilitated, and a considerable mortality broke out among them; but, after a while, those who were left regained their strength and spirits, and the mortality entirely ceased.

There was a time when the Lusitanian or Portuguese horses were highly celebrated. The Roman historian Justin compares their swiftness to that of the winds, and adds, that many of them might be said to be born of the winds; while, on the other hand, Berenger, who lived at a time when the glory of the Spanish horse had not quite faded away, says, that "the Portugal horses are in no repute, and differ as much from their neighbours, the Spaniards, as crabs from apples, or sloes from grapes." (vol i., p. 308). He thus accounts for it. When Portugal was annexed to Spain, the latter country was preferred for the establishment of the studs of breeding, and the few districts in Portugal which were sufficiently supplied with herbage and water to fit them for a breeding country were devoted to the rearing of horned cattle for the shambles and the plough, and mules and asses for draught. Hence, the natives regarded the horse as connected more with pomp and pleasure than with utility, and drew the comparatively few horses that they wanted from Spain. The present government, however, seems disposed to effect a reform in this, and there are still a sufficient number of Andalusian horses in Portugal, and Barbs easily procurable from Africa, fully to accomplish the purpose.

ITALY.

The Italian horse, like everything in that unfortunate and lovely land, has sadly degenerated: with the iron weight of barbarous conquerors, and the paralysing incubus of a knowledge-hating and truculent army of priests, liberty, independence of spirit, wealth, manly sports, the physical and the moral health of a people, all dwindle and decay. Let us hope an United Italy, "from the Alps to the Adriatic" will soon show us that general emancipated vigour which is the life and growth of nations. We may then have something better to record than the fact that in 1859 a petticoated priest, upon the petition of the "Roman matrons," forbad Italian noblemen from following a pack of imported English foxhounds in

* Solleysel, part i. p. 211.

the Campagna of Rome, lest they should injure their "persons," as had happened to a certain Marchese who had joined in the "dangerous sport"! A pack of foxhounds is now kept at Rome by an Italian nobleman: the country within ten miles of the city is regularly hunted, and large fields attend, composed of English, French, American, and Italian sportsmen, in costumes rather amusing than orthodox. The hounds are hunted by an English huntsman.

Macgill, in his *Travels in Italy*, says that at Bari and Francavilla he saw horseflesh sold in the shambles for human food.

Misson* informs us that the horseowners of Rome used to have their wretched animals blessed every year at the Church of St. Antony, on the festival-day of that saint, even as, in some remote districts in Ireland, the priest performs a like office to the cow of the peasant: the efficacy of St. Anthony's blessing is more than doubtful. Mules are used by those epicene animals the Pope, cardinals, and dignitaries of the Roman church, and the horses, as we have already said, are remarkable for their want of breeding.

There are, however, some comparatively fast horses in Rome, the descendants of Spanish jennets, or small Barbs. These are kept for racing on the Corso. These races take place during the Carnival, and commence about dusk. So soon as they are announced, the coaches, cabriolets, and carriages of every kind are drawn up in lines on each side of the street, leaving a space in the middle for the racers to pass through. Five or six horses are specially trained for this diversion. They are drawn up abreast in the Piazza del Popolo, exactly where the Corso, or race-street, begins.

Balls with little sharp spikes are hung along their sides, which serve as spurs; pieces of tinfoil dangle against their buttocks, which make a hissing noise as they run, and terrify them to increased speed. A rope is stretched across the Corso to prevent them starting too soon, and the dropping of this is the signal to start. When all is ready a troop of dragoons gallop through the street to clear the course. A trumpet sounds—the rope is dropped—the grooms loose their hold, and away go the riderless horses. The harder the poor devils run, the more they are pricked. The unlucky animals, unable often to comprehend the cause of their torment, bite, kick, and plunge at each other, and a terrible fight is begun. The shouts and cries of the excited populace add to the uproar. Some horses from fear, cunning, or sulkiness stand stock-still, and are shoved and goaded on by brute force and cruelty. A strong canvas screen is passed along the bottom of the street. This is the goal. It has the appearance of a wall; but some of the horses, in the excess of their agony and terror, dart full against it, tear through it, or carry it away.

The prize, after all, is merely a piece of fine purple or scarlet cloth, or a flag, which is presented to the owner of the winning animal by the Governor of Rome, and is supposed to be a heirloom in the winner's family.

The decision of such a race, however, can have little to do with the speed or strength or value of the horses in any respect. The Italians, however, enter into the affair with all their characteristic eagerness of feeling, and are guilty of every kind of extravagance. During the first six days of the carnival, the horses are fairly classed according to the age, height, degree of breeding, &c.; but on the two last days the horses are of all sorts and sizes, like a Welsh race at a country fair.

At Ancona, a gun is fired to start the horses, in order to warn those at the far end of the course to get out of their way and to be ready to receive them; when they have reached half-way another gun is fired, and a third on the victor passing the goal.

Macgill, in his amusing book already quoted, mentions a very curious and laughable circumstance in connection with these races, which took place at Ancona on an occasion of this nature. He says, "To guard the course, a great number of Roman soldiers, under arms, are generally ranged on each side of it. The morning after the first race, the wind blew from the north and was rather cold. I was sitting with his Excellency the Governor, Signor Vidoni, when a messenger arrived from the General, with his compliments, requesting that the race might be deferred till another day, as he thought the weather too cold to put his troops under arms. The Governor replied to him, that, 'As the weather was not too cold for the ladies, he thought it was not too much so for Roman soldiers.' I have seen, on a day which only *threatened rain*, a guard of Roman soldiers turn out, every one of whom had an umbrella under his arm, the drummer only excepted."* Shades of Cæsar and Brutus! could ye have witnessed this, what would have been your emotions? could ye have foreseen such effeminacy among the descendants of the "masters of the world," what would have been your dying pangs?

The Corso here is about 856 toises† in length, and it has been satisfactorily observed by means of a stop-watch, that the horses, usually small Barbs, have run this distance in 141 seconds, or about the rate of 37 feet in a second; a rate of going by no means despicable, considering the small size and consequent short stretch of the racers, and which places them on a par with a second-rate English racer.

The length of the Italian course is, however, under an English mile, while the Beacon at Newmarket is four—a space too long for any horse to run at the same speed at which he started; and yet this has often been run at the average rate of 42 feet in the second. Childers ran a mile in a minute, which is at the rate of 87 feet in a second! so was Stirling said to do; and these were mounted, while the Italian racers have only to carry themselves.

There is one "bright particular star in Italy," the fortunes of which give hope of a resuscitated Italian nation—we mean Sardinia, which under its patriot soldier-king, *il Re galantuomo*, is carefully improving the breed of this noble quadruped, chiefly in these sore times of trouble for the production

* *Travels through Part of Italy*, vol. i.

* Macgill's *Travels in Italy*, vol. i. p. 22. † A toise is six feet.

of a cavalry war-horse. Peace, national strength and security will bring the rest. A letter from Turin, written in May, 1869, says: "an immense number of horses have been purchased in England for Sardinia, the road over Mount Cenis to Turin, and vessels in Genoa harbour, are full of them. They are rather of a light stamp, and are delivered at £40 to £50 each. Very few have been picked up in Yorkshire, as they do not breed the animals in request, the Midland Counties and Norfolk principally furnished them."* Of the indigenous horse old Blundeville tells us, "the horsys that come out of Sardygnia and the isle of Corsica have shorte bodyes, and be very bolde and corageouse, and unquiet too in their pace, for they be of that fierce and hot cholericke complexion, and therewyth so much used to running in theyr countrie that theye will stand still on no grounde. And therefore this kynde of horse requireth a discreete and patient ryder, who must not be over hastie in correcting him, for fear of marring him altogither." The original Welsh horse was of this stamp.

CHAPTER VI.

I. THE HORSES OF BRITAIN.—HISTORY AND VARIETIES.—II. GALLOWAYS AND PONIES: III. THE DRAUGHT HORSE: IV. THE CLEVELAND BAYS; THE COACH HORSE: V. THE HACKNEY.

I.—THE HORSE OF BRITAIN.

THE character of the indigenous horse of Britain, though not capable of definite description, can be fairly deduced from numerous incidental observations of ancient authorities and circumstantial evidence.

We have already noted† that at the earliest of our written historic period, when Julius Cæsar landed near Dover, that the Britons in their scythed chariots, drawn by "well-trained horses," struck terror into the veteran legionaries of the conquering Roman, who had subjugated Gaul without encountering any similar force. We are told further that he took on his return to Rome some of these war-horses to cross with his own breeds. Surely the most strenuous sticklers for a common original will not maintain that the "Foresters" of Exmoor or Dartmoor, the Cornish or Welsh pony, the Scotch Sheltie, or the Irish Hobby—supposing any intercourse at that early period had subsisted between what now forms the United Kingdom—could have amazed and awed the serried phalanx of the Roman army, or have tempted the world's conquerors to covet them as chargers? We may here incidentally notice that the Latin writers divide the horses of Imperial Rome into three classes, adapted for war, the circus, and the saddle. "For war," says Vegetius, "the Huns, Thuringian, Burgundian, and Frisian horses excel; next those of Epirus, Sarmatia and Dalmatia; for chariots, the Cappadocian. In the circus the Spanish horse excels all others, and also the Sicilian, although the African horses of Spanish blood are the swiftest of any. For the saddle above all the Persian horses, being the easiest in their carriage and most soft in their step; afterwards come the Armenian and Sappharenean; nor should the Epirotan and Sicilian horses be despised, though not equal to them in carriage, manner, and form." And this people—possessing all the horses of the Gauls and Belgæ—are said to have coveted a breed of horses that had no original qualities?

The horse figures upon the most ancient coins of the British Kings: the rude effigies of the monarch occupying the obverse and the clumsy figure of a war-horse the reverse. That the horse was then remarkably numerous in this island is shown by the fact that Cassibelaunus retained "four thousand war-chariots to harass the Romans," after disbanding a large portion of his army. As the Roman horses were crossed with those of Spain and Greece, and those again with a strain of Barb or Arab blood, there can be little doubt, although subsequent neglect led to their degeneration, that the English heavy horse was improved during the long occupation of Britain by the Romans.

That the ponies (or mannii) of Britain were a distinct race of animal, may also be assumed from the fact of notice being taken of their intelligence, docility, and small size, which specially fitted them for the performances of jugglers and strollers.

Passing from the Roman to the Saxon times, we find Athelstan celebrated for his attention to the "improvement of the horse," and, in order "that this advantage might be kept in this realm," he prohibited the exportation of English horses. Athelstan seems to have placed considerable value on some of his horses; for he bequeaths, in his will, the horses given him by Thurbrand, and the white horses presented to him by Lisbrand. These are apparently Saxon names, but the memory of them is now lost.

In the laws of Howell the Good, Prince of Wales, A.D. 890, there are some curious particulars of the value and sale of horses. A foal under fourteen days is to be sold for 4*d.*; at one year and one day it is estimated at 48*d.*; at three years at 60*d.* It was then to be tamed with the bridle, and brought up either as a *palfry* or a *serving horse*, when its value became one hundred and twenty pence. That of a *wild* or unbroken mare was sixty pence.

* See *Sporting Review*, No. cclviii, June 1860.

† See *ante*, page 8.

Even in those early days, the frauds of dealers were too notorious, and the following singular regulations were established. The buyer was allowed time to ascertain whether the horse was free from three diseases. He had three nights to prove him for the staggers ; three months to prove the soundness of his lungs; and one year to ascertain whether he was infected with glanders. For every blemish discovered after the purchase, one-third of the money was to be returned, except it should be a blemish of the ears or tail, which it was supposed to be his own fault if the purchaser did not discover. The seller also warranted that the horse would not tire when on a journey with others, or refuse his food from hard work, and that he would carry a load or draw a carriage up or down hill, and not be *resty*.

The practice of letting horses for hire then existed; and then, as now, the services of the poor hack were brutally exacted. The benevolent Howell disdains not to legislate for the protection of this abused and valuable servant. "Whoever shall borrow a horse, and rub the hair so as to gall the back, shall pay four pence ; if the skin is forced into the flesh, eight pence ; if the flesh be forced to the bone, sixteen pence." If a person lamed a horse, he was to forfeit the value of the animal; and if he was supposed to have killed a horse, he was to purge himself by the oaths of twenty-four compurgators.

Then, as now, it would appear that some young men were a little fond of unwarrantable mischief, or perhaps there were thieves in the country, even so soon after Alfred's days, for cutting the hair from a horse's tail seems to have been of frequent occurence. However it shows the estimation in which this portion of the animal was held, and the manner in which the hair was suffered to grow; for it was decreed that he who cut off the hair from a horse's tail was to maintain him until it was grown again, and in the mean time to furnish the owner with another horse. If the tail was cut off with the hair, the miscreant who inflicted the outrage was mulcted in the value of the animal, and the horse was deemed unfit for future service.

The Norman conquest brought important crosses to the British horse. To his superiority in cavalry the Conqueror was chiefly indebted for the victory of Hastings. The favourite charger of William was a Spaniard. His followers, both the barons and the common soldiers, principally came from a country in which agriculture had made more rapid progress than in England. A very considerable portion of the kingdom was divided among these men ; and it cannot be doubted that, however unjust was the usurpation of the Norman, England benefited in its husbandry, and particularly in its horses, by the change of masters. The historians of those times, however—principally monks, and knowing nothing about horses—give us very little information on the subject.

One circumstance deserves to be remarked, namely, that in none of the earliest historical records of the Anglo-Saxons or the Welsh is there any allusion to the use of the horse for the plough. Until a comparatively recent period, oxen alone were employed in England, as in other countries, for this purpose; but about this period—the latter part of the tenth century—some innovation on this point was commencing, and a Welsh law forbade the farmer to plough with horses, mares, or cows, but with oxen alone. On one of the pieces of the Bayeux tapestry, woven in the time of William the Conqueror (A.D. 1066), there, however, is the figure of a man driving a horse attached to a harrow.

In William's reign the heavy horses of Burgundy, Picardy, and Flanders were imported largely. Roger de Bellesme, Earl of Shrewsbury, we are expressly told, brought over "Spanish stallions," and Giraldus Cambrensis, and Drayton (*Polyolbion*) speak in high terms of their fire, vigour, and fitness for the tilt and tourney. We have in another place noticed in the reign of Henry I. (A.D. 1121)—the importation of the first so-called Arabian, presented by Alexander, King Scotland, to the Church of St. Andrew. This solitary case, however, recorded as something extraordinary, may be passed over in considering the general stamp of horse in use at this time.

The Crusades, which followed this period, must have introduced many Eastern horses, though no particular esteem seems to have attended them or their progeny. The jennet of Spain is spoken of with approval, rather as an ambling palfrey than comparable with the heavy German horse. Improved agriculture and commercial labour caused the importation of heavy draught horses from the Low Countries, but the principles of breeding were little regarded and less understood.

The price of horses was singularly uncertain. In 1185, *temp.* Henry II., fifteen breeding mares sold for two pounds, twelve shillings, and sixpence. They were purchased by the monarch, and distributed among his tenants ; and, in order to get something by the bargain, he charged them the great sum of four shillings each. Twenty years afterwards, ten capital horses brought no less than twenty pounds each ; and, twelve years later, a pair of horses were imported from Lombardy, for which the extravagant price of thirty-eight pounds, thirteen shillings, and fourpence was given. The usual price of good handsome horses was ten pounds, and the hire of a car or cart, with two horses, tenpence a-day.

To King John, hateful as he was in other respects, we are much indebted for the attention which he paid to agriculture generally, and particularly to the improvement of the breed of horses. He imported one hundred chosen stallions of the Flanders breed, and thus mainly contributed to prepare our noble species of draught-horses, as unrivalled in their way as the horses of the turf.

John accumulated a very numerous and valuable stud. He was eager to possess himself of every horse of more than usual power; and at all times gladly received from the tenants of the crown, horses of a superior quality, instead of money for the renewal of grants, or the payment of forfeitures belonging to the crown. It was his pride to render his cavalry, and the horse for the tournament and for pleasure, as perfect as he could. It was not to be expected that so haughty and over-

bearing a tyrant would concern himself much with the inferior kind; yet while the superior breeds were rapidly becoming more valuable, the others would, in an indirect manner, partake of the improvement.

One hundred years afterwards, (A.D. 1311) Edward II. purchased thirty Lombardy war-horses, and twelve heavy draught-horses. Lombardy, Italy, and Spain were the countries whence the greater part of Europe was then supplied with the most valuable cavalry or parade horses. Those for agricultural purposes were chiefly procured from Flanders.

Edward III. (1328) bought fifty Spanish horses of such value, that he negociated with the kings of France and Spain to give them safe convoy. These were probably of a lighter and more active form; the prevailing taste for the heavy war horse being on the decline among the courtiers: the ponderous armour of the cavalry, however, still kept the "destrier" in esteem for several succeeding reigns.

These horses were bought in order to enable the king successfully to prosecute a war against Scotland, and to prepare for a splendid tournament which he was about to hold.

Entire horses were alone used for this mimic contest, and generally so in the duties and dangers of the field. It was rarely the custom to castrate the colts; and the introduction of the female among so many perfect horses might occasionally be productive of confusion. The mare was at this period comparatively despised. It was deemed disgraceful for any one above the common rank to ride her, and she was employed only in the most servile offices. This feeling and practice was then prevalent in every part of the world. When, however, it began to be the custom to castrate the young horses, the worth and value of the mare was soon appreciated; and it is now acknowledged that, usually, she is not much, if at all, inferior to the perfect horse in many respects, while she has far more strength, courage, and endurance than the castrated horse.

Edward also prohibited the exportation of horses jealously. It is, however, recorded that he allowed a German merchant to export some Low Country horses which he had brought here on a venture, but prohibited his taking them to Scotland. It was for several centuries a felony to export horses from England to Scotland.

In many points the English horse is already spoken of as superior to those of neighbouring countries, and his price was so enhanced, that the breeders and the dealers, then as now skilful in imposing on the inexperienced, obtained from many of the young grandees enormous prices for their animals. This evil increased to such an extent, that Richard II. (1386) interfered to regulate and determine the price. The proclamation which he issued is interesting, not only as proving the increased value of the horse, but showing what were, four hundred and fifty years ago, the chief breeding districts, as they still continue to be. It was ordered to be published in the counties of Lincoln and Cambridge, and the East and North Ridings of Yorkshire; and the price of the horses was restricted to that which had been determined by former monarchs. A more enlightened policy has at length banished such absurd interferences.

In the same reign, in 1356, at the glorious victory of Poictiers, wherein the Black Prince took John, King of France, prisoner, we read in Bonnechose's *History of France:* "but the French knightes could not contend against the *great horses* of the English, and the arrows of their archers."* And on the triumphal entry of the Black Prince into London, Stow tells us that the captive John was "mounted on a beautiful wyte steed, in royal robes, while the victorious Prince of Wales rode by his syde on a *litel blacke palfre*, like an attendante, not a conqueror."

The wars of York and Lancaster now devastated the land, and we can collect but little of the history of the horse until the reign of Henry VII., at the close of the fifteenth century. He continued to prohibit the exportation of stallions, but allowed that of mares, when more than two years old, and under the value of six shillings and eightpence. This regulation was, however, easily evaded; for if a mare could be found worth more than six shillings and eightpence, she might be freely exported on the payment of that sum.

The intention of this was to put an end to the exportation of perfect horses; for it is recited in the preamble "that not only a smaller number of good horses were left within the realm for the defence thereof, but also that great and good plenty of the same were in parts beyond the sea, which in times past were wont to be within this land, whereby the price of horses was greatly enhanced," &c. The exception of the mare, and the small sum for which she might be exported, shows the unjust contempt in which she was held.

In the time of Henry VIII., we find from the writings of Sir Thomas Chaloner, who flourished at the beginning of Elizabeth's reign, horses were imported by that despotic monarch, who was "a great lover of the chase and sportynge," from "Turkey, Naples and Spain." The means adopted by Henry to enforce the breeding of full sized horses were arbitrary and characteristic in the extreme. He made a law, which remains in the statute book till this day, (32 Hen. VIII cap. 13), by which it is enacted:—"That no person shall put in any forest, chase, moor, heath, common, or waste (where mares and fillies are used to be kept) any stoned horse above the age of two years, not being fifteen hands high, within the shires and territories of Norfolk, Suffolk, Cambridge, Buckingham, Huntingdon, Essex, Kent, South Hampshire, North Wilts, Oxford, Berks, Worcester, Gloucester, Somerset, North Wales, South Wales, Bedford, Warwick, Northampton, Yorkshire, Cheshire, Staffordshire, Lancashire, Salop, Leicester, Hereford, and Lincoln; nor under fourteen hands in any other county, on pain of forfeiting the same;" and it proceeds, "It is lawful for any person to seize any horse so under size, in manner following:—he shall go to the keeper of such forest, or (out of such forest) to the constable of the next town, and require him to go with him to bring such horse to the next

* Bonnechose, *History of France*, anno 1356.

pound. there to be measured by such officer, in the presence of three honest men, to be appointed by the officer; and if he shall be found contrary to what is above expressed, such person may take him for his own use."

Also, s. 6, "all such commons and other places shall within fifteen days after Michaelmas yearly, be driven by the owners and keepers, or constables, respectively, on pain of 40*s*., and they shall also drive the same at any other time they shall think meet; and if there shall be found, in any of the said drifts, any mare, filly, foal, or gelding, which shall not be thought able, nor like to grow to be able to bear foals of a reasonable stature, or to do profitable favours, by the discretion of the drivers, or the greater number of them, they may kill and bury them."

Even infected horses are prohibited from being turned into such commons—(s. 9), "whereby it is enacted that no person shall have, or put to pasture, any horse, gelding, or mare, infected with the scab, or mange, in any common or common fields, on pain of 10s. and the offence shall be enquirable in the leet, as other common annoyances are, and the forfeitures shall be to the lord of the leet."

Carew, in his *History of Cornwall*, supposes this act of parliament to have been the occasion of losing almost entirely the small breed of horses which were peculiar to that country; and no doubt the same effect was produced in Wales. This loss, however, was well repaid by the race of large and powerful horses which took their place.

The following illustration of the horses of England in this reign is taken from the Regulations and Establishments of Algernon Percy, the fifth Earl of Northumberland, begun in 1512.

"This is the ordre of the chequir roul of the nombre of all the horsys of my lordys, and my ladys, that are apoynted to be in the charge of the hous yerely, as to say, *gentill horsys, palfreys, hobys, naggis, clothsek hors, male hors.*

"First, *gentill horsys*, to stand in my lordis stable, six. Item, *palfreys* of my ladis, to wit, oone for my lady, and two for her gentillwomen, and oone for her chamberer. Four *hobys* and *nags* for my lordys oone saddill, viz.: oone for my lorde, and oone to stay at home for my lorde.

"Item, chariot hors, to stond in my lordis stable yerely. *Seven gret trottynge horsys* to draw in the chariott, and a nag for the chariott man to ride, eight. Again, hors for Lord Percy, his lordship's son and heir. A gret doble trottynge hors, called *a curtal*, for his lordship to ride on out of townes. Another trottynge gambaldynge hors for his lordship to ride on when he comes into townes. An amblynge hors for his lordship to journeye on dayly. A proper amblynge little nag for his lordship when he goeth on hunting and hawking. A gret amblynge gelding, or trottynge gelding, to carry his male."*

It is proper to explain that the *gentill* horse was one of superior cattle, and made the best chargers. *Palfreys* were an elegant kind, mostly of a small size, and broken in to the use of ladies, and aged or infirm people of rank.

Hobys were strong active horses of a small size, and are supposed to have come originally from Ireland. This breed being at one time in high repute, gave origin to the phrase, by which any favourite object is termed a man's *hobby*.

The *clothsek*, or "male horse," was one that carried the cloak-bag, or portmanteau.

Chariot horses, (derived from the French word *charotte*, from which again the English word *cart*), were waggon-horses.

A *gret doble trottynge horse*, was a heavy, powerful horse, whose pace was a trot, being either too unwieldy in itself, or carrying too great weights to gallop.

A *curtal* was a horse whose tail was cut or shortened.

A *gambaldynge* horse was one of show and parade; from the Italian word *gamba*, (leg), *gambado*, (a curvet.)

An *amblynge* horse was one of much the same description, but whose more quiet ambling pace adapted him especially to the use of ladies.

In the reign of Edward VI., horse stealing was made a capital offence. By the 1st Edward VI., cap. 12, we find it enacted, "that no person convicted for felonious stealing of horses, geldings or mares, shall have the privilege of clergy." But this enactment being in the plural number, caused a doubt whether a person convicted of stealing *one* horse, mare, or gelding, was entitled to benefit of clergy, and two acts were subsequently passed in the same reign, to remedy this defect.

We have every reason to believe that the country derived much benefit to its breed of horses in the reign of Elizabeth; as it is more than probable that great numbers of Barbs, and Spanish horses descended from Barbs, were taken on board the numerous vessels captured by Lord Howard of Effingham, the British admiral, on the defeat and dispersion of the Spanish Armada. Elizabeth, though herself a great horsewoman, does not seem to have patronised racing, as we shall note when we come to the history of that pastime. We do not find it mentioned as forming part of the amusements with which the Earl of Leicester entertained his royal mistress on her visit to Kenilworth; and Comnenius says, at this day, 1590, tilting or the quintain is used, when a ring is struck with a truncheon, instead of horse racing, which, he adds, is grown out of fashion. That this was not on account of any gambling or improper practices being attached to it, we may gather from the writings of John Northbrook, a puritan, who, though very severe against cards, dice, and plays, allows horse-racing, classing it with hunting and hawking.

It is remarkable that such was the large falling off in the number of cavalry-horses between the reign of Edward VI., in 1547, and the middle of Elizabeth, that in 1588, when England was threatened by the Spanish Armada, no more than 3,000 cavalry could be mustered in the whole kingdom, to suppress the invasion.

Towards the close of this reign coaches were introduced by Fitzallen, Earl of Arundel, their inventor, and such was the demand for horses thus occasioned, that a bill was actually

* Fr. *malle*, a leather trunk, whence our English *mail*, the letters being conveyed on horseback in a *malle*. The French *mail* is called the *malle-poste*.

introduced into the House of Lords, to restrain the excessive use of coaches. It was, however, lost on the second reading. Before this the Queen was, on state occasions, accustomed to ride behind her Master of the Horse. But for a considerable period after the introduction of coaches, saddle horses continued in use at state ceremonies; for so late as the Restoration, King Charles II. made his entrance into London, May, 1660, riding between his brothers the Dukes of York and Gloucester, with a splendid cavalcade.

We shall here pause in our general history of the English horse: the subsequent periods being so intimately mingled with the history of racing, as to class it more fitly under our History of the British Turf.

II.—GALLOWAYS AND PONIES.

The name galloway, is said to be derived from a handsome, hardy, and much prized breed of horses, indigenous to the South of Scotland, on the shores of the Solway Firth; they have now, however, disappeared from the place of their origin, the agriculturists of the district having sought to breed an animal of larger stature, better fitted for draught purposes, such as the Clydesdale horse. There is a tradition, by no means warranted by physiology or probability, that the original galloway was descended from a cross with a horse escaped from the wreck of a ship of the Spanish Armada, cast away on the neighbouring coast. We have a record, indeed, of hardy horses supplied to the army of Edward I. from this district three centuries before.

The original galloway was between thirteen and fourteen hands in height, of a bright brown or bay, with a neat head, black legs, peculiarly deep and clean. It had a remarkable surefootedness and stoutness, with a fair amount of speed. Dr. Anderson thus describes the breed:—

"There was once a breed of small elegant horses in Scotland, similar to those of Iceland and Sweden, and which were known by the name of galloways; the best of which sometimes reached the height of fourteen hands and a half. One of this description I possessed, it having been bought for my use when a boy. In point of elegance of shape, it was a perfect picture; and its disposition was gentle and compliant; it moved almost with a wish, and never tired. I rode this little creature for twenty-five years; and twice in that time rode a hundred and fifty miles, without stopping, except to bait, and that not above an hour at a time. It came in at the last stage with as much ease and alacrity as it travelled the first. I could have undertaken to have performed on this animal, when it was in its prime, sixty miles a day for a twelvemonth running, without any extraordinary exertion."

A galloway in point of size, whether of Scotch origin or not is uncertain, performed in the year 1814, a greater feat than Dr. Anderson's favourite. It started from London with the Exeter mail, and, notwithstanding its eighteen changes of horses, and the rapid driving of that vehicle, it arrived at Exeter (one hundred and seventy-two miles) fifteen minutes before the mail. The well-known Professor Youatt, who saw this animal about twelve months after his wonderful performance, describes him as being wind-galled, spavined, ring-boned, and a lamentable picture of the ingratitude of some human brutes towards a willing and faithful servant. Other instances of endurance, equally remarkable, are recorded.

In 1754, Mr. Corker's galloway went one hundred miles a day for three successive days, over the Newmarket Course, and without the slightest distress.

A galloway belonging to Mr. Sinclair, of Kirby-Lonsdale, performed at Carlisle the extraordinary feat of one thousand miles in a thousand hours!

The galloway, or small stout horse known in England by that name, is often from Wales, or the New Forest.

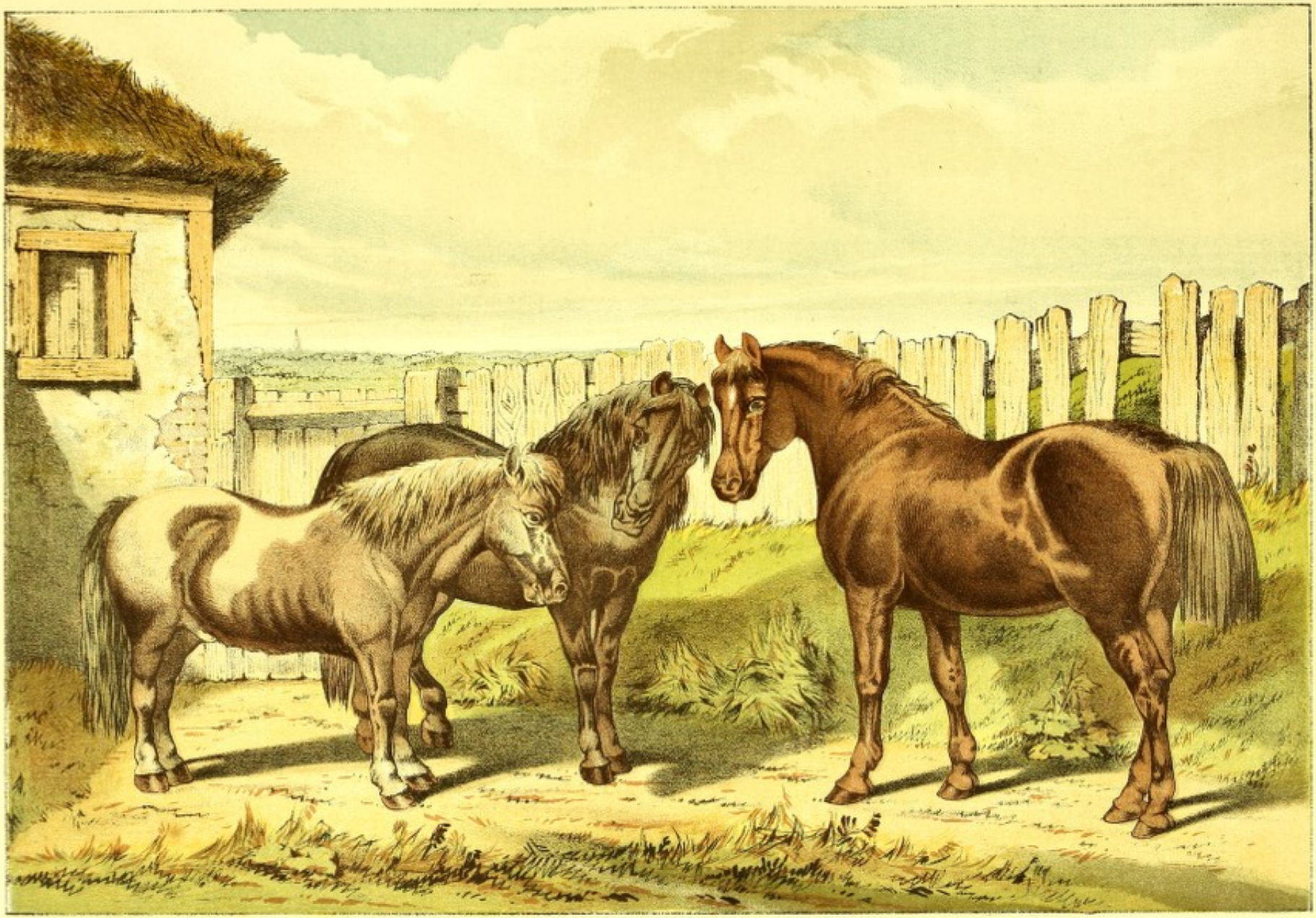
The Welsh pony is a beautiful little animal. He has a small head, high withers, deep, yet round barrel, short joints, flat legs, and good round feet. The Welsh ponies are said to be indebted to the celebrated Merlin, for an improvement in their form and qualities. They will live on any fare, and can never be tired out.

This has arisen from a misconception. The Welsh pony was called "a Merlyn," as will be seen by an extract from the *Cambrian Quarterly Magazine*, which follows:—

"Pony-hunting used to be one of the favourite amusements of the Welsh farmers and peasantry, a century and a half ago, and it has not, even now, fallen altogether into disuse. The following story of one of these expeditions is founded on fact:—A farmer named Hugo Garonwy lived in the neighbourhood of Llweyn Georie. Although he handled the tilt plough, and other farming tools in their due season, yet the catching of the merlyn, the fox, and the hare, were more congenial pursuits; and the tumbles and thumps which he received, and from which no pony-hunter was exempt, served but to attach him to the sport. Rugged, however, as the Merionethshire coast and its environs were, and abounding with precipices and morasses, he sometimes experienced worse mishaps—and so it happened with Garonwy.

"He set out one morning with his lasso coiled round his waist, and attended by two hardy dependants and their greyhounds. The lasso was then familiar to the Welshman, and as adroitly managed by him as by any guacho on the plains of South America. As the hunters climbed the mountain's brow, the distant herd of ponies took alarm—sometimes galloping onwards, and then suddenly halting and wheeling round, snorting as if in defiance of the intruders, and furiously pawing the ground. Garonwy, with the assistance of his servants and the greyhounds, contrived to coop them up in a corner of the hills, where perpendicular rocks prevented their escape.

"Already had he captured three of the most beautiful little fellows in the world, which he expected to sell for 4*l.* or 5*l.* each at the next Bala fair—to him a considerable sum, and amounting to a fourth of the annual rent which he paid for his sheep-walk. There remained, however, one most untameable creature, whose crested mane, and flowing tail, and wild eye, and distended nostril, showed that he was a perfect Bucephalus of the hills; nor indeed was it safe to attack him



THE SHELTIE NEW FOREST PONY HORSE PONY

GROUP OF PONIES.

in the ordinary way. Many of the three-year-olds had been known to break the legs of their pursuers, and some had been dismounted and trampled to death.

"Garonwy was determined to give the noble fellow a chase over the hills, and so overcome him by fatigue before the lasso was flung. The dogs were unslipped, and off they went, swift as the winds, Garonwy following, and the two assistants posted on a neighbouring eminence. Vain was the effort to tire the merlyn. Hugo, naturally impatient, and without waiting to ascertain that the coils were all clear, flung the lasso over the head of the wild horse. The extremity of the cord was twisted round his own body, and tightening as the animal struggled, the compression became unsupportable, and, at length, in spite of every effort to disengage himself, Garonwy was dragged from his horse.

"The affrighted merlyn, finding himself manacled by the rope, darted off with all the speed of which he was capable, dragging poor Garonwy over the rocky ground and stunted brushwood. This occurred at some distance from the men. They called in their dogs that the speed of the merlyn might not be increased, but ere they could arrive at the spot at which the accident happened, the horse and the man had vanished. Whether the sufferings of the hunter were protracted, or he was dashed against some friendly rock at the commencement of this horrible race, was never known; but the wild animal, frenzied and blinded by terror, rushed over a beetling cliff, at a considerable distance, overhanging the sea-shore, and the hunter and the horse were found at the bottom, a mis-shapen semblance of what they had been when living."

Old Marsk, the sire of Eclipse, is reported to have given an improving cross to the *New Foresters*,* nevertheless, these are generally ill-made, large-headed, short-necked, and ragged-hipped, but hardy, safe, and useful; with much of their ancient spirit and speed, and all their old paces. The catching of these ponies is as great a trial of skill as the hunting of the wild horse on the Pampas of South America, and a greater one of patience.

A great many ponies, of little value, used to be reared in Lincolnshire, in the neighbourhood of Boston; but the breed has been neglected for some years, and the enclosure of the fens will render it extinct.

The *Exmoor ponies*, although generally ugly enough, are hardy and useful. A well-known sportsman says, that he rode one of them half a dozen miles, and never felt such power and action in so small a compass before. To show his accomplishments, he was turned over a gate at least eight inches higher than his back; and his owner, who rides fourteen stone, travelled on him from Bristol to South Molton, eighty-six miles, beating the coach which runs the same road.

There is on Dartmoor a race of ponies much in request in that vicinity, being sure-footed, and hardy, and admirably calculated to get over the rough roads and dreary wilds of that mountainous district. The Dartmoor pony is larger than the Exmoor, and, if possible, uglier. He exists there almost in a state of nature. The late Captain Colgrave, of Dartmoor prison, had a great desire to possess one of them of somewhat superior figure to its fellows, and having several men to assist him, they separated it from the herd. They drove it on some rocks by the side of a tor (an abrupt pointed hill); a man followed on horseback, while the Captain stood below watching the chase. The little animal, being driven into a corner, leaped completely over the man and horse, and escaped.

The horses in the southern and western districts of Devonshire, called "pack-horses," from their former use, are merely a larger variety of the Exmoor or Dartmoor pony.

There is one description of pony, however, truly and unmistakably aboriginal in the northern parts of Britain—we mean the unmistakable little *Sheltie*, or *Zetland pony;* an animal which loses every characteristic if an attempt or accident should lead to an increase of their general size. The strength of these little animals almost surpasses belief. Seven, eight, nine, and at the outside ten hands high they are full of vigour, strength, and beauty of a peculiar stamp. There are some which an able man could lift up in his arms; yet will carry him eight or ten miles, and as many back. Summer or winter they never come into a house, but run upon the mountains, in some places like flocks; and if at any time in winter they are straitened for food, they will come from the hills when the ebb is in the sea, and eat the sea weed (as likewise do the sheep). Winter storms and scarcity of food brings them so low that they do not recover their strength till about the middle of June, when they are at their best. They will live to a considerable age, as twenty-six, twenty-eight, or thirty years. They last to be good for riding at twenty-four; especially if they are not put to work until they are four years old. Those of a black colour are judged the most durable. The pied often prove not so good. They have been more numerous than they are now. The best of them are to be had in Sanston and Easton; also, they are good in Waes and Yell. Those of the least size are in the northern isles of Yell and Uist. The coldness of the air, and the barrenness of the mountains on which they feed, and their hard usage, may tend to keep them little; but if bigger horses are brought among them, their progeny degenerate.

Mr. Youatt says:—"A friend of mine was not long ago presented with one of these elegant little animals. He was several miles from home, and puzzled how to convey his newly-acquired property. The Shetlander was scarcely more

* Marsk was sold at the death of the Duke of Cumberland, in 1765, to a farmer for a trifling sum, being considered a very indifferent stallion: in 1766 he covered country mares in Dorsetshire at 10*s.* 6*d.* He was afterwards bought by Mr. Wilkinson (first owner of Eclipse) for 20 guineas, the seller considering himself quit of a bad bargain. In 1767 he covered at Bistern, near Ringwood, Hants, at 3 guineas, seeming to be creeping into favour. In 1769, at Gibbons' Grove, Leatherhead, Surrey, at 5 guineas; in 1770 at 10 guineas; then 30 guineas. Marsk soon became, by the unparalleled performances of the famed Eclipse, the first stallion in the kingdom; and was in consequence thereof purchased by the Earl of Abingdon for 1,000 guineas and sent to his Lordship's stud at Rycot, in Oxfordshire, where he covered, previous to his death, which happened in July 1779, at 100 guineas and one guinea the groom.

than seven hands high, and as docile as he was beautiful. 'Can we not carry him in your chaise?' said his friend. The strange experiment was tried. The Sheltie was placed in the bottom of the gig, and covered up as well as could be managed with the apron; a few bits of bread kept him quiet; and thus he was safely conveyed away, and exhibited the curious spectacle of a horse riding in a gig." The same writer adds:—"He is often exceedingly beautiful, with a small head, good-tempered countenance, a short neck, fine towards the throttle, shoulders low and thick—in so little a creature far from being a blemish—back short, quarters expanded and powerful, legs flat and fine, and pretty round feet. These ponies possess immense strength for their size; will fatten almost upon anything, and are perfectly docile. One of them, nine hands (or three feet) in height, carried a man of twelve stone forty miles in one day."

Her present Majesty has, on more than one occasion, purchased some interesting and perfect specimens of the Sheltie, for the use of the youthful members of the Royal Family; and they have always been very much prized for the use of children, alike from their smallness of size and docility.

The Highland Pony is far inferior to the galloway, and is not pleasant to ride, except in the canter. His habits make him hardy, for he is rarely housed summer or winter. The Rev. Mr. Hall says that when these animals come to a boggy piece of ground they first put their nose to it, and then pat on it in a peculiar way with one of their fore-feet, and from the sound and feel of the ground they know whether it will bear them. They do the same with ice, and determine in a minute whether they will proceed.

As to the English pony, almost every district has its breed, more or less, commingled; and the variety would appear to be most suitable to the circumstances of pasturage and soil. Owing, however, to the average large stature of the English horse, any thing under thirteen hands has, in horseman's phrase, come to be called "a pony." Many of our best trotters have passed under this name.

III.—THE DRAUGHT HORSE.

Up to within these few years our principal employers of draught horses in the metropolis aimed almost exclusively at the procuring of those grand, stately, and immense animals which judicious crossing with the Flemish and old Suffolk Punch so often produced. Of late, however, the immense demand for a horse of higher activity and handiness, for the service of the railway van, has given the waggon horse a stamp more approaching to the Cleveland, or the "machiner"—a smart trot, as well as a sheer-strength pull, being a desideratum. When the old "sumpter," or carrier's horse, was used in England, for the conveyance of loads in packs or panniers, some of the Yorkshire sumpter horses have been known to carry 700lbs. weight sixty miles in the day, and to repeat this journey four times a week, while mill horses have carried 910 lbs. for shorter distances.* This is the stamp of animal required by the Baxendales, Chaplins, and Pickfords; another sort is yet the pride of our great brewers, distillers, and London waggon owners. The remarks of a gentleman "frae north o' Tweed" on these horses are so genuine and apposite that we transcribe them:—"A prevalent error of strangers is that these magnificent horses are merely meant as an advertisement of the firm to which they belong. The large and opulent brewer has less occasion for this kind of publicity than any other trader. His customers are compelled to come to him: a chance sale is a *rara avis*. He has these horses because extraordinary exertion is sometimes required, and he can command it when necessary: at the same time they are too valuable to be uselessly worn out, and pay better in the long run for the attention bestowed upon them. This has led many into the error of supposing these splendid animals cannot do the work of such as, from want of proper points to command the higher prices, get into the more laborious employments; and you will hear the owners of these inferior horses constantly remarking on one of these beautiful teams, as not only the pride of the drayman, who beckons them to him like old acquaintance, and which they answer with the sagacity of bipeds, but they are also the pride and admiration of all Englishmen, and the astonishment of most foreigners. A Scotchman is certainly not a foreigner, being but an Englishman of a distant portion of Great Britain; but I cannot help noticing, that, when visiting the Land of Cakes, I have always felt elated at the animated description of their feelings at first beholding these noble creatures. They were full of astonishment, and could not tell which made the greatest impression, their extreme beauty, vast size, sagacity, or docility, amounting beyond parallel. One gentleman remarked, 'I have been over most of the globe; I have seen many of its wonders; but the greatest I ever saw was in London. I saw a brewer's team lowering some butts of beer. The horse that performed this office, without any signal, raised the butts, and returned and lowered the rope: not a word or sign escaped the man at the top of the hole, who only waited to perform his part as methodically as his four-footed mate did his. Two others were sometimes playing at intervals in apparent converse. The cellaring finished, the horse took his place by the team: the other loose horse, that had been going wherever he pleased, also came, and was hooked on. The man adjusted his dress, then walked away; the team followed. Not one word has passed, not even a motion of the whip, or any other intimation of what was to be done next.' He added, he had never seen the same number of men work in such unison with the various changes: it was wonderful, and if it was not reason, he thought the greater portion of mankind had better give up some part of their reason to learn sagacity from a dray-horse. He continued: 'I followed some distance to see how it was that a man, who seemed as if he could be crushed at any moment by these monsters, had such control over them. I observed he never touched them: between carriages where there

* Youatt, p. 256.

hardly seemed room enough to squeeze through, he went without touching, and this, too, by merely waving a bit of whipcord on the end of a long black rod." He finished with—'I was quite astounded; it was truly wonderful; and I always recollect the sight with pleasure; and can hardly prevail upon myself that it was not some necromancer waving an enchanted rod.'"

This digression dismissed, we will proceed to show that the observation that brewers' horses cannot do the more laborious kinds of work, particularly that of town carmen, is a mistake. There is not often an opportunity of proving the fact, the greater part of the brewers being too liberal to their old servants to part with them when worn out: most of them, therefore, have them destroyed when, from old age or accident, they are incapacitated from performing their work with moderate comfort. Some wealthy gentlemen, aye, and ladies too, may take a leaf in this respect, at least, out of the brewers' book, when many a favourite hunter, charger, ladies' pad, hack, and even racer, will be saved the torture of dragging street-cabs and costermongers' carts with aching limbs, crippled feet, galled shoulders and back, for the sake of putting into the pocket of the seller not perhaps one half what the old dray-horse would fetch.

There are a few exceptions of brewers selling their horses, and we feel confident all those who have bought them have found them work better than the ordinary horses at the same age: we have known many. One was sold out from being supposed to be lame: he turned out sound. Three tons and a half, including his cart, became his ordinary load, and with this he went all over London and the neighbourhood, and never had, or required, any assistance, not even over the bridges, or up hills. He certainly was a remarkably fine horse, and kept up his fat till he died, some years after leaving the brewhouse.

The heavy black horse, a favourite with the coal-merchants, is bred chiefly in the midland counties, from the fens of Lincolnshire to Staffordshire. Many are bought up by the Surrey and Berkshire farmers at two years old; and, being worked moderately until they are four, earning their keep all the while, they are then sent to the London market, and sold at a profit of ten or twelve per cent.

It would not answer the breeder's purpose to keep them until they are fit for town work. He has plenty of fillies and mares on his farm for every purpose that he can require; he, therefore, sells them to a person nearer to the metropolis, by whom they are gradually trained and prepared. The traveller has probably wondered to see four of these enormous animals in a line before a plough, on no very heavy soil, and where two lighter horses would have been quite sufficient. The farmer is training them for their future destiny; and he does right in not requiring the exertion of all their strength; for their bones are not yet perfectly formed, nor their joints knit, and were he to urge them too severely, he would probably injure and deform them. By the gentle and constant exercise of the plough, he is preparing them for that continued and equable pull at the collar which is afterwards so necessary.

The true Suffolk Punch, which did much for our best short-legged dray-horses, is not found now in its purity. It stood from fifteen to sixteen hands high, of a sorrel colour; was large-headed; low shouldered, and thick on the withers; deep and round chested; long backed; high in the croup; large and strong in the quarters; full in the flanks; round in the legs; and short in the pasterns. It was the very horse to throw his whole weight into the collar, with sufficient activity to do it effectually, and hardihood to stand a long day's work.

The present breed possesses many of the peculiarities and good qualities of its ancestors. It is more or less inclined to a sorrel colour; it is a taller horse; higher and finer in the shoulders; and is a cross with the Yorkshire half or three-fourths bred.

The excellence, and a rare one, of the old Suffolk—the new breed has not quite lost it—consisted in nimbleness of action, and the honesty and continuance with which he would exert himself at a dead pull. Many a good draught-horse knows well what he can effect; and, after he has attempted it and failed, no torture of the whip will induce him to strain his powers beyond their natural extent. The Suffolk, however, would tug at a dead pull until he dropped. It was beautiful to see a team of true Suffolks, at a signal from the driver, and without the whip, down on their knees in a moment, and drag everything before them. The immense power of the Suffolk is accounted for by the low position of the shoulder, which enables him to throw so much of his weight into the collar.

Although the Punch is not what he was, and the Suffolk and Norfolk farmer can no longer boast of ploughing more land in a day than any one else, this is undoubtedly a valuable breed.

The Duke of Richmond obtained many excellent carriage horses, with strength, activity, and figure, by crossing the Suffolk with one of his best hunters.

The Suffolk breed is in great request in the neighbouring counties of Norfolk and Essex. Mr. Wakefield, of Barnham, in Essex, had a stallion for which he was offered four hundred guineas.

The Clydesdale is a good kind of draught-horse, and particularly for farming business and in a hilly country. It derives its name from the district on the Clyde, in Scotland, where it is principally bred. The Clydesdale horse owes its origin to one of the Dukes of Hamilton, who crossed some of the best Lanark mares with stallions that he had brought from Flanders. The Clydesdale is larger than the Suffolk, and has a better head, a longer neck, a lighter carcase, and deeper legs; he is strong, hardy, pulling true, and rarely restive. The southern parts of Scotland are supplied from this district; and many Clydesdales, not only for agricultural purposes but for the coach and the saddle, find their way to the central and even southern counties of England. Dealers from almost every part of the United Kingdom attend the markets of Glasgow and Rutherglen.

Professor Low (in his *Illustrations of British Quadrupeds*) says, that "the Clydesdale horse, as it is now bred, is usually

sixteen hands high. The prevailing colour is black, but the brown or bay is common, and is continually gaining upon the other, and the grey is not unfrequently produced. They are longer in the body than the English black horse, and less weighty, compact, and muscular; but they step out more freely, and have a more useful action for ordinary labour. They draw steadily, and are usually free from vice. The long stride, characteristic of the breed, is partly the result of conformation, and partly of habit and training; but, however produced, it adds greatly to the usefulness of the horse, both on the road and in the fields. No such loads are known to be drawn, at the same pace, by any horses in the kingdom, as in the single-horse carts of carriers and others in the west of Scotland.

IV.—THE CLEVELAND BAY; THE COACH HORSE.

Though horses are bred in every county of England, Yorkshire has the credit of producing the greater number of good ones. It has, or rather had, in the old "Cleveland bays," a particular race, combining peculiarity of form, a certain cast of countenance, and high qualities of utility. This powerful and active breed have, by many writers, been considered as owing their valuable properties to early crosses with the race-horse of those times; it is probable that those qualities marked the indigenous Yorkshire horse. The large London carriage horses are of this stock, though the demand for a harness-horse of lofty size has much decreased; other qualities, which are to be had combined with more grace, lighter action, and less of the "farm" horse stamp, being now in request. A century ago, however, the carriage-horse had not even the form of the Cleveland—he was a round-barrelled, hollow-backed, clod-shouldered, thick-legged brute, with long tail, full mane, and hairy fetlocks, something between a hearse-horse and a dray-horse, full of flesh, pride and pawing, and capable of six miles an hour for three hours three times a week—not that he ever got half of it. The later coach-horse, though too large, was a great improvement on this Netherlandish animal. The points of a good coach-horse, are, depth in the body, good bone under the knee, moderately long pasterns, and sound tough feet, well open at the bars. Though differing respectfully from Professor Low, as to the origin of the Cleveland Bay, yet agreeing with him as to its more modern form, we take the liberty of quoting his description:—

"It is the progressive mixture of the blood of horses of higher breeding with those of the common race, that has produced the variety of coach-horse usually termed the Cleveland Bay; so called from its colour, and the fertile district of that name in the North Riding of Yorkshire, on the banks of the Tees. About the middle of the last century this district became known for the breeding of a superior class of powerful horses, which, with the gradual disuse of the heavy old coach-horse, became in request for coaches, chariots, and similar carriages. The breed, however, is not confined to Cleveland, but is cultivated through all the great breeding district of this part of England. It has been formed by the progressive mixture of the blood of the race-horse with the original breeds of the country. To rear this class of horses, the same principles of breeding should be applied as to the rearing of the race-horse himself. A class of mares, as well as stallions, should also be used, having the properties sought for. The district of Cleveland owes its superiority in the production of this beautiful race of horses to the possession of a definite breed, formed not by accidental mixture but by continued cultivation.

"Although the Cleveland Bay appears to unite the blood of the finer with that of the larger horses of the country, to combine action with strength, yet many have sought a farther infusion of blood nearer to the race-horse. They are accordingly crossed by hunters or thorough-bred horses, and thus another variety of coach-horse is produced, of lighter form and higher breeding; and many of the superior Cleveland curricle and four-in-hand horses are now nearly thorough-bred. The bay colour is in the most general estimation, but the grey are not unfrequently used."

Such is unquestionably the "Cleveland" horse of our day; from a thorough-bred of moderate stature, and a Cleveland mare three-quarters blood, we obtain a horse fit for the small pair-horse brougham, the curricle-phaeton, or the four-in-hand.

A pleasant and most popular writer, who adopts the *nom de plume* of "Harry Hieover," thus agreeably contrasts the modern and antique carriage-horse:—

"The great alteration in the form and breeding of the carriage-horse has partly arisen from the alteration of the vehicle he draws, but still more from the improvement in the paving of the streets and the state of the roads round the metropolis. The heavy, old-fashioned machine that was built to suit the pavement over which the royal Hal and his fat friend were jolted to Eastcheap, became no longer necessary when, if a hole was found in a street, the paviours were set instantly to work; and when the two miles and a-half from St. Paul's to Hyde-park Corner, barring stoppages, became a work of fifteen minutes, instead of a long mortal hour, the heavy old coach-horse found the pace so unpleasant—indeed, impossible to him—that it became necessary to infuse some quicker-flowing blood into his veins; yet perhaps this necessary change, though it improved speed, would have made the more high-bred animal refuse to fetch a heavy load out of a slough or hole that let the vehicle in axle-deep. Each was fitted for a different purpose, and each had its distinct merit.

"Doubtless the old coach-horse was little better bred than the light cart-horse; and I should think it more than probable that Lincolnshire and Suffolk mainly contributed to the early supply of coach-horses, for in those days the Yorkshire horse was the hunter, and would have been thought too light for harness-work. When roads got better, and gentlemen became charioteers, with their phaetons-and-four, and when this was followed by the barouche, then Cleveland sent up its stock for carriage-horses, and they began to get those higher bred. George the Fourth, as Prince of Wales, aided by his friend Sir John Lade, was perhaps the first who showed the public the *ne plus ultra* of the carriage-horse, as regards size, breeding,

beauty, pace, and action all combined. They made me stare as a boy, and made many stare as men, to see them go down Constitution-hill. I have them as distinctly before my eyes now as I had them then. These horses only wanted their 'switch' or 'barouche'-tails (as they were then called) cut off to a Leicestershire stump, their manes pulled to about an inch long, and they were very fair specimens of hunters, and were quite as highly bred as the generality of hunters then used.

"Partly, perhaps, to favour the kind of horse that had become in vogue, but much more in consequence of good roads, small carriages became in vogue also; all sorts of vehicles, with all sorts of names, shapes, sizes, and construction, were, and are, seen in the streets; and all the ingenuity of man was called forth to produce something new. But the ultimatum of all this ingenuity appears to have been to enable a family, constituting in itself a host, to avail themselves of the convenience of one carriage and one horse. The large old-fashioned family-coach is no longer seen; this was a capacious, lumbering looking vehicle, it must be allowed; six inside, two footmen, and coachman, made nine in number. This was thought enough for two large coach-horses."

Since the days of Harry Hieover a very great change has taken place in the size and structure of London carriages; for instead of being constructed to carry six, or even four, they are mostly built only to carry two inside; at least there are more broughams than larger carriages, excepting always open barouches, which, carry four inside. But it is the roads rather than the carriages that favour horses. Bring back the roads as they were a century ago, and you must also get back the old coach and coach-horse; though, it is to be hoped, we have seen the last of both.

V.—THE HACKNEY.

A capital judge in equine matters has well said, that a perfect hack or roadster is the rarest phenomenon in horseflesh. To judge the just properties, we must have an accurate perception of the end for which the animal is designed, for according to the end the proportions vary. Thus, there is one set of proportions for the racer, another for the hunter, another for the hackney, another for the coach-horse, and another for the cart-horse; and, as each of these merges into the other's qualities, so is it inferior for its special objects. Each too possesses its own style of beauty.

Why should that common-place animal, as he appears to the uninitiated, the roadster, be more difficult to be met with in perfection than even the hunter and racer?

There are many reasons for this. The price of the hack, or the horse of all work, is so low, that he who has a good one will not part with him; and it is by mere accident that he can be obtained. There are also several faults that can be overlooked in the hunter, but which the road horse must not have. The hunter may start, may be awkward in his walk, or even his trot; he may have thrushes or corns; but if he can go a good slapping pace, and has wind and bottom, we can put up with him, or prize him: but the hack, if he be worth having, must have good fore-legs, and good hinder ones too; he must be sound on his feet; even tempered; no starter; quiet in whatever situation he may be placed; not heavy in hand; and never disposed to tumble down.

The hack, like the hunter of the present day, is always a horse with some portion of racing blood, the whole English race, even to the cart-horse, being more or less imbued, and equally improved by it. Thus our road horses are half, three-parts, seven-eighths, or thorough bred. The two latter degrees are, in several respects, less fitted for the purpose of travelling the roads than the former: chiefly on account of the tenderness of their legs and feet, their longer stride, and straight-kneed action, not so well adapted to the English road pace, the trot. Nevertheless, well-bred hackneys are elegant and fashionable, and, when good canterers, pleasant to ride; insomuch that, a certain colonel of the Guards of former days insisted, there was the same difference to be felt in riding a bred hack and one without blood, as between riding in a coach and in a cart. One good property in the thorough-bred road horse is, that he seldom shies, many of them never.

The road horse should have a considerably lofty yet light forehand or crest, a deep and extensive shoulder, well raised at the withers, straight back, with substantial loins and wide fillets, the croup not suddenly drooping, nor the tail set on low. The head should not be thick and fleshy, not joined abruptly to the neck, but in a gradual and tapering form; the eye full, clear, and transparent. The fore arms and thighs, with plenty of muscular substance, should be of reasonable length, but the legs should, at no rate, be long. Much solid flat bone beneath the knee, is a great perfection in a hackney; and the feet, standing straight, turning neither in nor outwards, should be of tough, dark, shining horn, the heels wide and open. The saddle-horse's fore-feet should closely approach each other, the wide chest being rather adapted to the collar. Nor need any apprehension be entertained from this near approximation of the fore feet, of the horse's cutting in the speed, or knocking his pastern joints, since those defects arise almost invariably from the irregular pointing of the toe, inwards or outwards, and for which, neither a wide chest, nor the most skilful farriery, has ever yet provided a sufficient remedy. A saddle horse of any description can scarcely go too close before, or too wide behind.

Perhaps the best pedigree for a road horse for general purposes is, that he should be bred from hackney stock on both sides, more particularly for a trotter.

In the hackney, says Blaine *(Outlines of the Veterinary Art)* "we look with as much anxiety to his fore parts, as we do to the hinder parts of the racer or hunter: and as in them the fore parts are rather subordinate to the hinder, so in the hackney, on the contrary, the hind parts may be regarded as of less consequence than the fore; for, though speed is diminished, yet it is subordinate to safety. The head should be small, well placed, and well carried on a neck of due length; the withers high, the shoulders muscular but not heavy; and above all

they should be deep and oblique placed. The fore-legs must be perfect throughout, and stand straight and well forward under the horse; and what in the hunter or racer is of less consequence is here indispensable, that the elbows should be turned well from the body. The feet also, it is requisite, should be clean, open, and perfect, and the limbs, especially the fore ones, free from all stiffness. The height in the hackney is not so esential as in the racer and hunter; indeed the best hackneys are from 14-3 to 15-1. He should be equally set, without being in the least clumsy; and with such a form the more blood he shows, short of full-blood, the better."

The action of the hack shall be examined when we treat of the paces of the horse, especially the TROT, and the choice of a horse for saddle.

A hackney is far more valuable for the pleasantness of his paces, and his safety, good temper, and endurance, than for his speed. We rarely want to go more than eight or ten miles in an hour; and, on a journey, not more than six or seven. The fast horses, and especially the fast trotters, are not often easy in their paces, and although they may perform very extraordinary feats, are disabled and worthless when the slower horse is in his prime.

CHAPTER VII.

BREEDING FOR GENERAL PURPOSES.—EARLY SUBJUGATION OF THE HORSE: THE BIT, THE BRIDLE, THE SADDLE.—BREAKING FOR SADDLE AND HARNESS.

"LIKE produces like," and the progeny will inherit the qualities or the mingled qualities of the parents. It is proven that in respect of diseases there are few which affect either of the parents constitutionally that the foal will not inherit, or, at least, a predisposition to them. Even the consequences of ill-usage or hard work will be entailed in the progeny. We have proof upon proof that blindness, roaring, thick wind, broken wind, spavins, curbs, ring-bones, and founder, have been bequeathed, both by the sire and the dam, to the offspring. It should likewise be recollected, that although these blemishes may not appear in the immediate progeny, they frequently will in the next generation. Hence the necessity of some knowledge of the parentage both of sire and dam.

Peculiarity of form and constitution will also be inherited. This is a most important consideration; for however desirable, or even perfect, may have been the conformation of the sire, every good point may be neutralized or lost by the defective form, or want of blood, of the mare. When breeders are careful that the essential points should be good in both parents, and that some minor defect in either shall be met, and got rid of, by excellence in that particular point in the other, the result is creditable to their judgment and highly profitable. The unskilled or careless breeder will often so badly pair the animals, that the good points of each will be, in a manner, lost; the defects of both will be increased, and the produce will be far inferior to sire and dam.

In breeding the half or three-quarter bred horse, different men go on different principles. The generality put a half-bred mare to a thorough-bred sire, a mode that is mostly attended with the best success. Some use the thorough-bred mare and half-bred sire, while others breed from sire and dam half or three-quarters bred. In several instances we have known the experiment tried of putting a cart-mare to a thorough-bred sire, and *vice versa;* but have never yet seen this answer. The produce from such a connection does not, as might be expected, possess the strength of the cart-parent, lightened by the thorough-bred throughout his general formation, but is mostly a brute with light legs and body, with the head and shoulders of the cart-horse; or, at all events, in some parts or other of his form he will be this kind of nondescript; at least, all we have seen bred by such a cross have been so. The fact that the produce outwardly more resembles the sire than the dam, leads many people into the very great error of being careless in their choice of mares.

It may, perhaps, be justly affirmed, that there is more difficulty in selecting a good mare to breed from, than a good horse, because she should possess somewhat opposite qualities. Her carcase should be long, to give room for the growth of the fœtus, and yet with this there should be compactness of form and shortness of leg.

The mare is capable of breeding at three or four years of age. There have been injudicious instances of their being made mothers at two years, which may be passed without comment. The mare comes into "season" about February, and continues "horsing" at intervals until the end of June or middle of July. The term of gestation of the mare is between eleven to twelve months; these periods forming its ordinary limits. According to M. Tessier, who observed the result in 582 mares, who had copulated but once, the shortest period was 287 days, the longest 419, making the extraordinary difference of 132 days, and of 89 day beyond the usual term of eleven months. It is a mere supposition that the mare carries her first foal longer than subsequent ones; neither does the term vary on account of the offspring being a filly or a colt. With race-horses, who take their age from the first of January, and who are brought to their post at two years old, early foaling is of the first importance. With other breeds, who do not figure in Weatherby's register, the beginning of May is the most desirable time for stinting them. The foal will then be dropped in the

following April, when there is pleasant air, and natural food for dam and offspring, and they need not be so much in stable.

When nearly half the time of pregnancy has elapsed, the mare should be petted and varied in her food. This is about the period when they are accustomed to slink their foals, or when abortion occurs: at this time, therefore, the eye of the owner should be frequently upon them. Good feeding and moderate exercise will be the best preventives against this. The mare that has once slinked her foal is ever liable to the same accident, and therefore should never be suffered to be with other mares about the time that this usually occurs, which is between the fourth and fifth months; for such is the power of imagination or of sympathy in the mare, that if one of them suffers abortion, the greater number of those in the same pasture will share the same fate. The mare gives a day or so notice of the "event," by the appearance of adhesive matter about the teats. Even up to this time gentle work will not hurt her.

If a mare has been regularly exercised, and apparently in health while she was in foal, little danger will attend the act of parturition. If there be false presentation of the fœtus, or difficulty in producing it, it will be better to have recourse to a well-informed practitioner, rather than injure the mother by the violent and injudicious attempts which are often made to relieve the animal.

As soon as the mare has foaled, she should be turned into some well-sheltered pasture, with a hovel or shed to run into when she pleases: and as, supposing she has foaled in April, the grass is scanty, she should have a couple of feeds of corn daily. The breeder may depend upon it that nothing is gained by keeping the mother and foal on "short commons" at this time. It is the most important time in the life of the horse; and if, from false economy, his growth be arrested now, his puny form and want of endurance will ever afterwards testify the error that has been committed. The corn should be given in a trough on the ground, that the foal may partake of it with the mother. The mare will usually be found at heat at or before the expiration of a month from the time of foaling, when, if she be kept principally for breeding purposes, she may be put again to the horse.

One of the great things to be desired in a brood mare, after having properly selected her, is to render her perfectly familiar and quiet: she should be brought to be as tame as a pet sheep. Nearly all mares by kind and gentle treatment may be brought to this. The being perfectly free from alarm produces a general placidity of temper that is highly desirable in any breeding animal as to their well doing: fright, we all know, when in this state, has often most fatal effects both on mother and offspring: reasoning, therefore, on analogy, if absolute fright is often fatal, constant alarm or apprehension must be prejudicial. Independent of this, mares galloping about to avoid being caught whenever they are approached is highly dangerous; and, after the foal is produced, he naturally follows the mother: if she is wild, the colt becomes so, and learns from her to avoid man as his enemy, whereas he should be taught to hail him as a friend. The mare should be taught to come up to man the moment he enters her paddock or pasture, from always gaining caresses and indulgence when she does so. A little corn from a sieve or a carrot from the hand will soon teach her this; and if, when laid hold of, she gets this and caresses, and is never suffered to be alarmed, she will come as readily and willingly as a favourite dog. What, then, is the result of the tameness of the mother? The foal naturally follows her either to or from you, and, from constantly approaching man, he becomes familiar; and, as a matter of course, never being hurt or alarmed, he in a few weeks has no more fear of him than of his dam, and will suffer himself to be handled in any way you please. As soon as he is able to eat, he should get something from the hand, and will from this watch for the approach of man, instead of (as most colts do) galloping away to avoid him. A flock of sheep follow the shepherd from habit, and finding him their friend. A herd of deer, from want of habitual intimacy with man, avoid him, but a tame deer is as tame as any other pet; and so will mares and colts be, if properly treated. Even supposing there was an inherent vicious propensity born with a colt, by beginning thus early with him it would in most cases be eradicated; if not, it would to a certainty be most materially softened.

To return, however, to the new-born foal:—It is not generally known thut the refusing to suck, which is the cause of the death of many foals, as well as the scouring, which about the third day kills many more, are both produced by irritation, and consequent inflammation of the bowels, from the retention of a few small hard fæces in the rectum. These are generally more in quantity in proportion as the keep of the mare has been high.

The cure is simple; a few hours after the foal has been dropped, a tallow candle should invariably be passed into the rectum, and when the passage has been sufficiently softened, the fæces can easily be extracted by the finger.

In cases where scouring kills foals at a subsequent period, it is generally attributable to the foal heating itself by violent exercise; consequently the mare, for the first day or two that she is let out (supposing her to be housed,) ought only to be walked about with a halter, and the same practice pursued at the time of her first horsing.

Some mares will not allow their foals to suck. This arises from the tenderness of the teats; and in this case they should have their heads tied up, and if necessary, be otherwise prevented from kicking, while they are milked by hand; and the milk should be rubbed over the teats for some short time, after which they will allow the foal to suck.

Should the mare's milk be obstructed and fail, either from cold caught, or other cause, if out, she should immediately be taken up to the house, and enticed to lie down upon a large and deep littered bed of fresh straw, in a loose box, and every method taken to comfort her, and to encourage the secretion of milk. To promote this end, as much warm mild ale should be allowed, as she would drink; or should she refuse it, she may be drenched with a couple of quarts, to be repeated as may

appear necessary; her food being the finest and most fragrant hay, sweet grains, with mashes of corn and pollard. In cases of *chill* and great weakness, the old well-known article, cordial ball, may be given in warm ale.

Should, however, the case be inflammatory, from previous high condition and fulness of blood, cordial ball and all stimulants should be strictly avoided, and the regimen confined to warm water and gruel, in as copious quantities as can be administered. Should further measures of similar tendency be indicated, a mild solution of Glauber's or Epsom salts (ten or twelve ounces in a pail of warm water,) may be given, which she may be induced to drink by means of being kept short of water. A moderate quantity of blood may be drawn, should the symptoms demand it, not otherwise. Daily walking exercise abroad, the mare being clothed if necessary, should succeed, until she be sufficiently recovered to be returned to her pasture.

During the inability of the mare to give suck, the foal must be sustained on cow's milk. This alien milk will generally disorder and gripe the foal, for which the best remedy is two or three spoonsful of rhubarb in powder, with an equal quantity of magnesia, in warm gruel. This medicine should be given to the foals of working mares, which are often griped by sucking pent milk. The disorder arising from wet and cold, a table spoonful each, of the best brandy and syrup of white poppies, may be given several times.

Mares having dead foals, ought to lose a little blood, be fed moderately on cooling mashes with a little nitre, and on no account be allowed corn. Moderate walking exercise is very desirable for mares before foaling; and alternate mashes of plain and of scalded bran are much to be recommended.

It should be observed that geldings should not be admitted among the brood mares, as by leaping them, or harassing them about, abortion may be occasioned.

In five or six months, according to the growth of the foal, it may be weaned. It should then be housed for three weeks or a month. A rick-yard in good weather is a capital place for the foal, as affording, without trouble, both food and shelter. One or two urine balls, or a physic ball, will be useful, if the milk should be troublesome, or the mother should pine after her foal.

There is no principle of greater importance than the liberal feeding of the foal during the whole of his growth, and at this time in particular. Bruised oats and bran should form a considerable part of his daily provender. The money is well laid out which is expended on the liberal nourishment of the growing colt; while, however, he is well fed, he should not be rendered delicate by excess of care. A racing colt is stabled; but one that is destined to be a hunter, a hackney, or a general horse should merely have a square rick, under the leeward side of which he may shelter himself, or a hovel, into which he may run at night, or out of the rain.

EARLY SUBJUGATION OF THE HORSE.—THE BIT, THE BRIDLE, THE SADDLE, THE STIRRUP.

"The noblest conquest ever made by man was that of the horse," says Buffon: the earlier methods of rendering him submissive to the will of his rider have not descended to us The Jews fiercely denounced and despised the grandest and most useful of animals; and equally despised, adding persecution to their prejudice, the faithful dog. The heathen nations more liberal and enlightened, zealously patronised the horse.

The period at which the horse was first subjugated has been a matter of curious rather than useful inquiry.

Sir Gore Ouseley, from examinations of the sculptures at Persepolis, inclines to the opinion that they were first used in chariots, and in this he is countenanced by many antiquaries. Homer describes all his heroes as fighting from chariots. Palæphatus says that men were first drawn in chariots. It would seem, however, more probable, that mounting the horse, with the skin of a wild beast for a saddle, would be the earliest method. Those interested in such enquiries, may consult Berenger's work "The History of the Horse."

It is in some of the Grecian sculptures that we first see the bit in the horse's mouth, but it is not always that we do see it; on the contrary, there is frequently neither bridle, saddle, or stirrup. It, however, was frequently necessary to make use of cords or thongs, in order to confine the horse to the place at which it suited the rider to leave him. These cords were fastened round the animal's neck, and may be seen in several of the ancient figures. According to some writers, the occasional struggles of the animal to escape from these trammels, and the strength which he exerted in order to accomplish his purpose, first suggested the idea of harnessing him to certain machines for the purpose of drawing them; and it is evident that soon after this it must have occurred to the horseman, that if this rope was put over the head and over the muzzle, or perhaps in the mouth of the animal, he would be more easily fastened or led from place to place, and more securely guided and managed, whether the man was off or on his back Hence arose the bridle. It probably was at first nothing more than the halter or cord by which the horse was usually confined. An improvement to this was a detached cord or rope, with prolongations coming up on both sides of the mouth, and giving the rider much greater power over the animal; and after that, for the sake of cleanliness and to prevent the wear and tear of the rope, and also giving yet more command over the animal, an iron bit was fitted to the mouth and rested on the tongue, and the bridle was attached to each end of it. This was the common snaffle bridle of the present day, the iron being jointed and flexible, or often composed of a chain. There were, however, no cross pieces to these bits at the mouth, but simple knobs or bulbs, to the inside of which the bit was attached.

Bits and bridles of this kind occur frequently in the Athenian sculptures of the time of Pericles, about four hundred and thirty years before the Christian era; but the headgear of the bridle had not long been introduced, the bit being supported, in some figures, by the buckling or tying of the bridle about the nose, a little above the muzzle. These, however, soon disappear, and we have the present snaffle with very little alteration, except a straight leather or cord from the head to

the nose-band, and that not always found. The chain under the chin is occasionally observed, probably for the sake of keeping the bit steady in the mouth.

In no period of Grecian history was the severe curb-bit known. This was an invention of after-times. The only instrument of punishment which was then attached to the bit was found in the knobs at the corners of the mouth: they had sharp or rough points on their inner surface, which by a turn or twist of the bridle might be brought to bear painfully on the cheeks and angles of the mouth. A bit so constructed was termed a *lupatum*, from the supposed resemblance of these sharp projections to the teeth of a wolf. It would seem that this was, among the Romans, almost coeval with the introduction of the bit, for the poet attributes it to Neptune, the fabulous parent of the horse*.

We also find, even at this early period, that horses were moved in circles to supple them, and render them ready to turn any way they might be required. Lucan, in his "Pharsalia," praises the Massylians as being able to dispense with saddle and bit in the management of their war horses. He says—

> " Et gens quæ nudo residens Massylia, dorso
> Ora levi flectit frænorum nescia virgâ."
> " Without a saddle the Massylians ride,
> And with a bending switch their horses guide."

No mention is made of saddles, such as are used in modern times; by way of ornament, and partly of convenience too, the horses were often covered with beautiful cloths, or with the skins of wild beasts, secured by a girth or surcingle. Thus the horse of Parthenopæus† was covered with the skin of a lynx, and that of Æneas‡, according to Virgil, with a lion's skin. In their religious or triumphal processions the housings of the horses were particularly magnificent, being frequently adorned with gold and silver and diamonds. Rich collars were also hung round their necks, and bells adorned their crests. The trappings of the young knight in the days of chivalry did not exceed those of the Grecian warrior on days of ceremony.

" It is conjectured," says Nimrod, in the *Sporting Magazine*, No. cxxxviii., " that saddles having any resemblance to those now in use, were invented in the middle of the fourteenth century, and were generally covered with cloth; but previous to this period, in the fifth century, articles bearing something of this stamp were made so extravagantly, that a prohibition was issued by the Emperor Leo the First against any one ornamenting them with pearls or precious stones. In the sixth century the saddles of the cavalry had large coverings of fur, according to Mauritius, who wrote on the military art; and at this period the Greek word σελλα (*sella*) occurs. Vegetius, who wrote on the veterinary art, speaks of saddle-horses; and the saddle-tree is mentioned by Sidonius Apollinaris. It is considered probable that the invention of saddles belongs to Persia, not merely from the circumstance of Xenophon's mentioning the people of that country as being the first to render the seat on the horse more convenient and easy, by placing more covering on their backs than was common in other parts, but also because the horses of Persia were chosen for saddle-horses in preference to any others. The ignominious punishment of 'bearing the saddle,' had its origin in the middle ages, and was alone worthy of those times. That the word *saddle* is derived from the Latin word *sedeo*, to sit on, there can be no doubt. That the saddle, however, was unknown in this country until the reign of Henry the Seventh is, I believe, equally certain; and in Ireland also, it is conjectured, from the absence of any representation of it in the last three centuries. The first mention of side-saddles is in the time of Richard the Second, when his queen rode upon one." With all due deference to Nimrod's assertion, that the saddle was not used in England until the time of Henry the Seventh, we must cite the testimony of the venerable Bede, who informs us that the English began to saddle their horses about the year 630, during the Saxon struggle for the ascendancy.

Their harnessing the horse is certified by their use of chariots, even for war purposes, when first visited by the Roman invader.

The stirrup was likewise unknown. The adoption of that convenient assistance in mounting the horse was of singularly late date. The first mention of it occurs in the works of Eustathius, about the 1158th year of the Christian era; but it was used in the time of William the Conqueror, nearly a century before that. Berenger gives the figure of a horse saddled, bridled, and with stirrups, copied from the Bayeux tapestry, which was embroidered in the time of the Conqueror by his wife, and describes the circumstances preceding and attending his descent into England. The heroes of ancient times trusted chiefly to their own agility in leaping on their horses' backs (*corpora saltu subjiciunt in equos*), and that whether standing on the right side or the left.

They who fought on horseback with the spear or lance had a projection on the spear, or sometimes a loop of cord about two feet from the bottom of it, which served at once for a firmer grasp of the weapon, and a step on which the right or the left foot might be placed, according to the side on which the warrior intended to mount, and from which he could easily vault on his courser's back. The horse was sometimes taught to assist the rider in mounting by bending his neck or kneeling down, especially in Persia and Eastern countries. Cæsar's horse, who knelt for his master to mount, is facetiously alluded to in *Hudibras* (see quotation, *ante*, page 9). The magnates had their slaves by their horses' side to assist them in mounting and dismounting. Some made use of a short ladder; and it was the duty of the local

* " Neptunus equo, si certa priorum
Fama patet, primus teneris læsisse lupatis
Ora, et littoreo domuisse in pulvere fertur."
" Neptune, if we may credit give to fame,
First taught with bits the generous horse to tame."

† See Statius.

‡ *Quem fulva leonis pellis obit.*

magistracy, both in Rome and Greece, to see that convenient mounting-stones were placed at short distances along all the roads.

The boot for the defence of the leg from the dangers to which it was exposed was very early adopted, and the heel of it was, occasionally at least, armed with a spur.

BREAKING THE HORSE FOR SADDLE AND HARNESS.

In every art there seem to be periods of enquiry, thoughtfulness, and awakening, with intervals of stagnation, routine, and slumber. This appears to have been the case with the art of horsebreaking. For generations, with some few exceptions of men with a genius for taming and instructing animals, and these so few and far between as not to affect the general principle, pretended secrets, coercion, cruelty, and fear was the rule; kindness, patience, and gentle firmness the exception. Drugs, whisperings, and other delusions, invented by knaves and believed in by simpletons, were pretended to effect what they never did or could do, and druggists sold oil of rhodium, oil of cumin, and other delusive nostrums, to the profit of the vendors and the disappointment of the credulous. About five years since, however, a rumour was wafted across the Atlantic that a wondrous discovery had been made in the art of taming vicious horses, and it was followed shortly by the arrival of the so-called "discoverer of the art." We would not rob Mr. J. S. Rarey of one iota of his well-deserved earnings, or of his credit as a skilful demonstrator of his system. If the pretensions by which it was heralded and supported will not bear close investigation, it is certain that he roused the public mind from long apathy, and by directing enquiry to the true principles of horsebreaking, served essentially the interests of humanity, and enhanced the value of the most valuable servant of man. There is no doubt that Mr. Telfer, of Northumberland, Mr. W. Cooke, of Astley's Amphitheatre, and others, had long practised portions of the plan promulgated by Mr. Rarey, but they kept their secret till Mr. Rarey disclosed his, and, *pro tanto*, were merely "dumb oracles, that opened not their lips." We do not claim for Mr. Rarey the "invention" or "discovery" of a system, but he is fully entitled to the credit of being its promulgator, demonstrator, expositor, and teacher, and this is enough to earn our grateful thanks. A horse of Lord Dorchester's, the noted stallion "Cruiser," a four-footed fiend, to our personal knowledge, was tamed by Mr. Rarey as a first sample of his skill, in two hours, so as to be ridden "as quiet as a sheep," as the groom expressed it, although no man had been able to mount him for three years previously. He was afterwards led on the high road from Murrell Green to London, behind a dog-cart.

Before entering on the practical portion of our subject, we shall digress for a few paragraphs to introduce a few words relating to celebrated horse-breakers, who certainly performed equally astonishing feats in this line, probably by similar methods; though they preferred, as more flattering to their conceit, practising on the ignorance which is prone to take *omne ignotum pro magnifico*, and this was possibly more profitable to the professors of the "mystery." Foremost among these stand the celebrated "horse-whisperer," James Sullivan, and a Yorkshireman called Jumper. We give them on the authority of Mr. James Castley.*

"When a very young man," says Mr. Castley, "I remember purchasing a horse at a fair in the north of England, that was offered very cheap, on account of his being unmanageable. It was said nobody could ride him. We found that the animal objected to have any thing placed upon his back, and that when made to move forward with even nothing more than a saddle on, he instantly threw himself down upon his side with great violence, and would then endeavour to roll upon his back. There was at that time in Yorkshire a famous colt-breaker, known by the name of 'Jumper,' who was almost as celebrated in that country for taming vicious horses into submission as the famed Whisperer in Ireland. We put this animal into Jumper's hands, who took him away, and in about ten days brought him home again, certainly not looking worse in condition, but perfectly subdued, and almost as obedient as a dog; for he would lie down at this man's bidding, and only rise again at his command—carry double, or any thing. I took to riding him myself, and may say I never was better carried for six or eight months, during which time he never showed the least vice whatever. I then sold him to a Lincolnshire farmer, who said he would give him a summer's run at grass, and show him, a very fine horse, at the great Horncastle fair. Happening to meet this gentleman the following year, I naturally enough enquired after my old friend. 'Oh,' said he, 'that was a bad business; the horse turned out a sad rebel. The first time we attempted to mount him after getting him up from grass, he, in an instant, threw the man down with the greatest violence, pitching him several yards over his head: and after that he threw every one that attempted to get on his back. If he could not throw his rider,' continued my informant, '*he would throw himself down.* We could do nothing with him; and I was obliged at last to sell him to go in a stage coach.' Jumper, like the celebrated Whisperer, Sullivan, was supposed to possess some charm, by which this wonderful effect was produced. There appears to have been a great similarity between these two men; and those who recollect Jumper, will easily recognize the similitude in the following account of the Whisperer, extracted from the Rev. Mr. Townsend's Statistical Survey of the County of Cork:—'James Sullivan, the Whisperer, was a horse-breaker at Cork; an ignorant awkward rustic of the lowest class. He gained this singular epithet by an extraordinary art of controlling in a secret manner, and taming into the most submissive and tractable

* Mr. James Castley, Veterinary Surgeon to the 17th Lancers, and the contributor of many valuable papers to the early volumes of the *Veterinarian*. The following anecdotes are from the *Veterinarian* volume iii., pages 671—676, whence they were copied by Mr. Youatt.

disposition, any horse or mare that was notoriously vicious and obstinate. He practised his skill in private, and without any apparent forcible means. In the short space of half an hour, his magical influence would bring into perfect submission and good temper even a colt that had never been handled; and the effect, though instantaneously produced, was generally durable. When employed to tame an outrageous animal, he directed the stable, in which the object of his experiment was placed, to be shut, with orders not to open the door until a signal given. After a *tête-à-tête* between him and the horse, during which little or no bustle was heard, the signal was made, and on opening the door the horse was found lying down, and the man by his side playing familiarly with him like a child with a puppy dog. From that time he was found perfectly willing to submit to any discipline, however repugnant to his nature before*.

"'I once,' says Mr. Townsend, 'saw his skill on a horse, which could never before be brought to stand for a smith to shoe him. The day after Sullivan's half-hour lecture, I went, not without some incredulity, to the smith's shop, with many other curious spectators, where we were eye-witnesses of the complete success of his art. This too had been a troop-horse, and it was supposed, not without reason, that, after regimental discipline had failed, no other would be found availing. I observed that the animal seemed afraid whenever Sullivan either spoke or looked at him: how that extraordinary ascendancy could have been obtained it is difficult to conjecture; he seemed to possess an instinctive power of inspiring awe, the result perhaps of a natural intrepidity, in which I believe a great part of the art consisted; though the circumstance of the *tête-à-tête* shews that upon particular occasions something more must have been added to it. A faculty like this would, in other hands, have made a fortune; and great offers have been made to him for the exercise of his art abroad, but hunting and attachment to his native soil were his ruling passions. He lived at home in a style most agreeable to his disposition, and nothing could induce him to leave Duhallow and the fox-hounds."

Mr. Castley remarks on this, very sensibly, "The days of miracles and of magic are gone by; and however necromantic this may look, it is nevertheless quite true. There are so many living witnesses of the extraordinary power this man possessed, and his mystical art was practised for such a length of time, and on such a variety of subjects, that there is no such thing as doubting the fact. It is a fact, be it recollected, of the nineteenth century. My friend, Mr. George Watts, of Dublin, who is a man not at all likely to be swayed by superstitious notions, has told me that he had more than one opportunity of witnessing the wonderful effect of Sullivan's art. 'And if I had not seen it myself,' he always observes, 'I would not believe it.' One remarkable instance in particular he relates, which, as it affords another practical example illustrative of the point at which I wish to arrive, I shall take the liberty to repeat. This incident took place at the Curragh of Kildare, in the spring meeting of 1804. Mr. Whalley's King Pippin was brought there to run. He was a horse of the most extraordinary savage and vicious disposition; his particular propensity was that of flying at and worrying any person who came within his reach; and if he had an opportunity, he would get his head round, seize his rider by the leg with his teeth, and drag him down from his back. For this reason he was always ridden in what is called a sword, which is nothing more than a strong flat stick, having one end attached to the cheek of the bridle, and the other to the girth of the saddle; a contrivance to prevent a horse of this kind from getting at his rider. King Pippin had long been difficult to manage and dangerous to go near; but on the occasion in question he could not be got out to run at all—nobody could put the bridle upon his head. It being Easter Monday, and consequently a great holiday, there was a large concourse of people assembled at the Curragh, consisting principally of the neighbouring peasantry; and one countryman, more fearless than the rest of the lookers-on, forgetting, or rather perhaps never dreaming, that the better part of courage is prudence, volunteered his services to bridle the horse; but no sooner had he committed himself in this operation, than King Pippin seized him somewhere about the shoulders or chest, and, says Mr. Watts, 'I know of nothing I can compare it to, so much as to a dog shaking a rat.' Fortunately for this poor fellow, his body was very thickly covered with clothes; for, on such occasions, observes my friend, an Irishman of this class is fond of displaying his wardrobe, and if he has three coats at all in the world, he is sure to put them all on. This circumstance, in all probability, saved the individual who had so gallantly volunteered the forlorn hope. His person was so deeply enveloped in extra tegument, that the horse never got fairly hold of his skin; and I understand he escaped with but little injury beyond a sadly rent and totally ruined state of all his holiday toggery. The 'Whisperer' was then sent for, who, having arrived, was shut up with the horse all night, and in the morning he exhibited this hitherto ferocious animal, following him about the course like a dog; lying down at his command; suffering his mouth to be opened, and any person's hand to be introduced into it; in short, as quiet almost as a sheep. He came out the same meeting, and won a race, and his docility continued satisfactory for a long time; but at the end of about three years his vice returned, and then he is said to have killed a man, for which he was destroyed.

"Sullivan used to say he got his secret from a soldier who chanced to be passing by his cottage in a state of exhaustion, and to whom he offered some refreshment, and that he was bound by an oath never to reveal it. Here then, indeed, was a secret well worth knowing. But whatever it was, it

* We are strongly inclined to believe that Sullivan practised the Rarey system or something closely akin to it.

seems to have perished—to have descended to the grave with James Sullivan. His son pretended to some knowledge of it, but he certainly does not possess the right secret: of this I had myself an opportunity of being convinced by ocular demonstration, a few years since, when quartered at Cork."

One other paragraph from Mr. Castley's amusing paper and we have done. It relates to the failure of the younger Sullivan, whom his cunning parent had evidently left ignorant of his pretended "charm." "We have in the regiment a remarkably nice horse, called Lancer, that has always been very difficult to shoe; but seven or eight years ago, when we first got him, he was downright vicious in that respect; in which I believe consisted the secret of his having been sold at any thing like troop price. When the regiment was stationed at Cork, the farrier-major sought out the present Sullivan, the son of the celebrated Whisperer, and brought him up to the barracks in order to try his hand upon Lancer, and make him more peaceable to shoe; but I must say this person did not appear to possess any particular controlling power over the animal more than any other man. Lancer seemed to pay no attention whatever to his charm, and at last fairly beat him out of the forge; he was fain to make his escape from so unruly a customer. Time, however, and a long perseverance in kind and gentle treatment, together with the *exercise of a little tact*, have effected what force could not. The horse is now pretty reasonable to shoe.—*Quâ Leonina pellis non perveniet, Vulpina est assumenda.*

> "The lion's skin, too short you know,
> (As Plutarch's morals finely shew,)
> Was lengthened by the fox's tail,
> And art supplies where strength may fail."

In a former part of this work (pp. 36—38) will be found, under THE HORSES OF SOUTH AMERICA, some account of the horse-breaking of the Guachos; and under THE HORSES OF NORTH AMERICA (pp. 41-42), a reference to Mr. Catlin's experience.

Those curious in the bibliography of the art of horsemanship may find how well-versed were our ancestors in most of the "systems" and "new methods," which are from time to time trumpeted forth as "discoveries" by charlatans, or men ignorant of what has been done before them*.

Among the books in our list occurs the name of Gryson, who performed, *à la* Rarey, in public, about the year 1570. In an address to the reader of his treatise, we find the following:—

"What his judgment was in the said art (of horse taming) may appear to all those who list to look upon the rules and

* We pass over Xenophon, the great historian and warrior, who wrote the earliest treatise upon the art, 300 years before Christ, and other ancient authors, some of whom will be found referred to in the earlier chapters (I. to VII.) of this volume, when treating of the HISTORY AND VARIETIES OF THE HORSE; merely noticing those writers who are accessible to the English rule, in good libraries or at the reading-room of the British Museum:—

"Horsemanshippe." By Frederick Gryson: Lond. 1571. This author was an Italian professor of horsemanship in Naples. He was considered the most famous in Italy.

"Horsemanshippe." By Claudio Corte: circa, 1560. Also an Italian professor of the art, who wrote upon the subject during the same century.

"The Art of Riding, &c." By T. Bedingfield: 1584. An excellent and useful book.

"The Fower chiefest Offices of Horsemanship." By Master Thomas Blundevill. London, 1609, 4to. Black letter. A most elaborate treatise: the text of numerous subsequent writers. The "Fower Offices" are the "office" of "breeder," and those of the "rider," the "keeper," and the "farrier."

"The Gentleman's Accomplished Jockey." By Gervase Markham, author of "The Masterpiece." Markham's books went through many editions between 1620 and 1700.

"Horsemanship." By Nichs. Morgan, 1609. This again has furnished much of our later treatises with matter. This author, speaking of an English knight, hight Alexander, takes occasion thus to allude to Alexander of Macedon:—

> "Great Alexander deerly lou'd his horse;
> The horse lou'd him, and suffered none to ride
> Vppon his backe by flattery or by force,
> But his dread lorde, that halfe the world did guide,
> This knight did beare that Alexander's name,
> Who brought the proudest coursers to his becke,
> And with his hand, spurre, voice, and wand, did tame
> The stately steedes that never brookt the checke.
> * * * * * * * * *
> Not only he in England was esteemed,
> But eke in forraine countries for his art,
> And yet to me (that honoured him) it seemed
> His fame's report was less than his desart.
> This knighte (the mirrour of all knights for riding)
> Had many men of worth and great renowne
> That were his schollers, by whose happy guiding
> They in this art did put all others down."

William Cavendish, Duke of Newcastle. "Méthode et Invention Nouvelle de dresser les Chevaux," with a frontispiece and forty-two plates of the *ménage*, 1631. Originally written in French, and translated into English. There were numerous French and German writers upon ménage riding and horsebreaking about this period.

"The Compleat Horseman and Expert Farrier." By Thomas de Grey, Esq., 1650. A clever book, but full of conceits in its veterinary portion.

In 1686 appeared a cyclopœdic work in two divisions, called "The Gentleman's Recreation." By Robert Blome, Gent. The second division treats of horsemanship, hunting, hawking, &c. It embodies much of the knowledge contained in more recent treatises.

Solleysel's "Parfait Marechale," translated by Sir William Hope, and Michael Baret's "Hipponomie, or Vineyard of Horsemanship," about 1750.

"Military Equitation, or a Method of Breaking Horses and teaching Soldiers to ride." By Henry Earl of Pembroke. 4to., with numerous plates. This book, with its motto, "Scientia et Patientia," may well be consulted as to feeding and shoeing, as well as horsemanship. The Earl of Pembroke furnishes the text of the statements of half our modern professors.

"Berenger's History and Art of Horsemanship." A comprehensive work. In the writings of Clark, Morecroft, Osmer, John Lawrence, D. P. Blaine, Goodwin, Miles, and Darvill, may be found much relating to the Horse in general.

precepts so perfectly set forth by him in writing. What his practice was in the said art openlie and dailie in the said citie, and what his praise was there, doth appear in that noble Caracciolo's writings, the Duke of Martina's brother, which he intituled *Gloria de Cavalli*, where he says of Gryson and another, 'These be the eyes of our toong.' For besides the true knowledge of this art, and the great practice they both had thereof, they with a most perfect judgment had this special grace given them, that every horse at the first riding seemed to obey unto them even at their becke, so as the standers-by were astonied thereat; whereupon all others studious of this exercise would unto these two persons as to the oracle of Apollo verie often resort, to be resolved in all their doubts."

Ancient writers upon the subject of horse-breaking one and all declare, that in training the horse, so as to make it obedient and useful to man, there must be a combination of and regard to three distinct principles—nature, art, and reason. In the absence of any or either of these, the efforts of the trainer will be unsatisfactory, if not useless.

The secret in the art of horse-breaking consists in a correct knowledge of the nature of the horse; and when that is understood, the trainer finds his whole efforts must be devoted to improvement of the natural intellects of the animal; no other method can ever succeed. It is impossible to give a horse either an artificial intellect or memory. A horse is naturally well-disposed to man, though fearful of and obedient to him. No human art can effect anything contrary to the nature of the horse, though the animal may be easily imposed on. Therefore, in training, there must be a reason for every artifice employed; and a practicable, natural, and beneficial result looked for, or capable of being produced through the means employed. If the trainer can give no substantial reason for any particular stratagem he employs, whatever the result produced, it can have no lasting or beneficial effect upon the horse. But if Nature be obeyed, and her order strictly kept, it follows as a certainty that the end desired will be attained. So that if art be employed with reason, it must be in accordance with the instinct of the animal; for nothing in the art of horse-taming is reasonable that is contrary to the nature of the horse. And these, the first principles of the art, should be kept constantly in mind; for nothing is easier than to impose on a horse, because the animal is naturally unconscious of imposition, and is, besides, fearful and obedient to man.

Neither force nor violence should be used in training colts; they must be won by gentle treatment, for violence is opposed to the three fundamental principles of the art. Whatever a horse does by violent compulsion is of no avail in training, because the horse knows not what is required of him, or how to obey; therefore no useful impression is made upon the animal when the teaching is accompanied with violence. Correction should be administered without violence, and immediately after the fault. For instance, if a horse does wrong, and the trainer has to go and fetch a whip before administering the chastisement, it is unreasonable to suppose that the horse (which is not gifted with the power of reasoning) can know for what purpose the chastisement is administered; therefore correction should never be resorted to at any other time than the instant the horse commits a fault. An impatient man is totally unfit for the art of training colts.

First advances to the Colt.—We have already said, when speaking of the thoroughbred colt intended for racing purposes, that it cannot be too early handled and made familiar with the presence of man. We will, however, for our present purpose suppose the colt to be wild and shy, and running loose with others in the field. In this case the first step is to get the whole of them into a small enclosure or a building, and patiently and without hurry separate the one you intend for immediate "schooling" from the rest by letting the others pass out of the gateway or door until your "pupil" and a quiet broken horse are the only ones remaining. As to getting him into stable for the first time we will quote "Rarey" as the most recent instructor. He says:—"One wrong move may frighten him, and make him think it necessary to escape at all hazards for the safety of his life—and thus make two hours' work of a ten minutes' job; and this would be all your own fault, and entirely unnecessary—for he will not run unless you run after him, and that would not be good policy unless you knew that you could outrun him, for you will have to let him stop of his own accord after all. But he will not try to break away unless you attempt to force him into measures. If he does not see the way at once, and is a little fretful about going in, do not undertake to drive him, but give him a little less room outside, by gently closing in around him. Do not raise your arms, but let them hang at your side, for you might as well raise a club: the horse has never studied anatomy, and does not know but that they will unhinge themselves and fly at him. If he attempts to turn back, walk before him, but do not run; and if he gets past you, encircle him again in the same quiet manner, and he will soon find that you are not going to hurt him; and then you can walk so close around him that he will go into the stable for more room, and to get farther from you. As soon as he is in, remove the quiet horse and shut the door. This will be his first notion of confinement—not knowing how he got into such a place, nor how to get out of it. That he may take it as quietly as possible, see that the shed is entirely free from dogs, chickens, or anything that would annoy him. Then give him a few ears of corn, and let him remain alone fifteen or twenty minutes, until he has examined his apartment, and has become reconciled to his confinement And now, while your horse is eating those few ears of corn, is the proper time to see that your halter is ready and all right, and to reflect on the best mode of operations; for in horsebreaking it is highly important that you should be governed by some system. And you should know, before

you attempt to do anything, just what you are going to do, and how you are going to do it. And, if you are experienced in the art of taming wild horses, you ought to be able to tell, within a few minutes, the length of time it would take you to halter the colt, and teach him to lead."

In 1814, one Willis Powell published a book called "The Art of Taming Wild Horses," which contains some practical and clear instructions. At the risk of a short iteration, we will give them in the writer's own words, as containing the kernel of the preliminary steps in horsebreaking. Mr. Powell says: "Having your horse in a stable or room, which should be sufficiently large to move him about with the halter before you lead him out, see if he belongs to that class which appear only to *fear* man. If so, introduce yourself gently and silently into the stable or yard where you have left the horse awhile. He will instinctively run from you, and frequently turn his head from you; you must walk about very slowly and softly, so that he can see you whenever he turns his head towards you, which he never fails to do in a short time, say in a quarter or half an hour. I never knew one to be much longer without turning towards me.

"At the very moment he turns his head, hold out your left hand towards him, and stand perfectly still, keeping your eyes upon the horse, watching his motions, if he makes any. If the horse does not stir for ten or fifteen minutes, advance as slowly as possible, and without making the least noise always holding out your left hand, without any other ingredient in it than what nature put in it."* He says, "I have made use of certain ingredients before people, such as the sweat under my arm, &c., to disguise the real secret, and many believed that the docility to which the horse arrived in so short a time was owing to these ingredients; but you see from this explanation that they were of no use whatever. The implicit faith placed in these ingredients, though innocent of themselves, becomes 'faith without works.' And thus men remained always in doubt concerning this secret. If the horse makes the least motion when you advance towards him, stop, and remain perfectly still until he is quiet. Remain a few moments in this condition, and then advance again in the same slow and almost imperceptible manner. Take notice—if the horse stirs, stop, without changing your position. It is very uncommon for the horse to stir more than once after you begin to advance, yet there are exceptions. He generally keeps his eyes fixed on you, until you get near enough to touch him on the forehead. When you are thus near to him, raise slowly, and by degrees, your hand, and let it come in contact with that part just above the nostrils, as lightly as possible. If the horse flinches (as many will), repeat with great rapidity these light strokes upon the forehead, going a little farther up towards his ears by degrees, and descending with the same rapidity until he will let you handle his forehead all over. Now let the strokes be repeated with more force over all his forehead, descending by lighter strokes to each side of his head, until you can handle that part with equal facility. Then touch in the same light manner, making your hands and fingers play around the lower part of the horse's ears, coming down now and then to his forehead, which may be looked upon as the helm that governs all the rest.

"Having succeeded in handling his ears, advance towards the neck, with the same precautions and in the same manner; observing always to augment the force of the strokes whenever the horse will permit it. Perform the same on both sides of the neck, until he lets you take it in your arms without flinching.

"Proceed in the same gradual manner to the sides, and then to the back of the horse. Every time the horse shews any nervousness, return immediately to the forehead as the true standard, patting him with your hands, and thence rapidly to where you had already arrived, always gaining ground a considerable distance farther on every time this happens. The head, ears, neck, and body being thus gentled, proceed from the back to the root of the tail.

"This must be managed with dexterity, as a horse is never to be depended on that is skittish about the tail. Let your hand fall lightly and rapidly on that part next to the body a minute or two, and then you will begin to give it a slight pull upwards every quarter of a minute. At the same time you continue this handling of him, augment the force of the strokes as well as the raising of the tail, until you can raise it and handle it with the greatest ease, which commonly happens in a quarter of an hour in most horses, in others almost immediately, and in some much longer. It now remains to handle all his legs; from the tail come back again to the head, handle it well, as likewise the ears, breast, neck, &c., speaking now and then to the colt. Begin by degrees to descend to the legs, always ascending and descending, gaining ground every time you descend, until you get to his feet.

"Talk to the horse in Latin, Greek, French, English, or Spanish, or any other language you please; but let him hear the sound of your voice, which at the beginning of the operation is not quite so necessary, but which I have always done in making him lift up his feet. 'Hold up your foot'—at the same time lift his foot with your hand He soon becomes familiar with the sounds, and will hold up his foot at command. Then proceed to the hind feet, and go on in the same manner; and in a short time the horse will let you lift them, and even take them up in your arms.

"All this operation is no magnetism, no galvanism; it is merely taking away the fear a horse generally has of a man, and familiarising the animal with his master. As the horse doubtless experiences a certain pleasure from this handling,

* Mr. Frederick Taylor, who has recently published a little tract on "Horsebreaking," recommends a piece of carrot, or biscuit soaked in aniseed.

he will soon become gentle under it, and shew a very marked attachment to his keeper."

The Halter, and Haltering the Colt.—A leather halter should be invariably used, and take care that it is so made that when he pulls on it it shall not draw tightly round his nose, but sit on his head easily with the noseband not too low. Never put a rope halter on an unbroken colt under any circumstances whatever. Rarey says, and we believe him right, that they have caused more horses to hurt or kill themselves than would pay for twice the cost of all the leather halters that have ever been needed for the purpose of haltering colts. It is almost impossible to break a colt that is very wild with a rope halter, without having him pull, rear, and throw himself, and thus endanger his life; and I will tell you why. It is just as natural for a horse to try to get his head out of anything that hurts it, or feels unpleasant, as it would be for you to try to get your hand out of a fire. The cords of the rope are hard and cutting; this makes him raise his head and draw on it, and as soon as he pulls, the slip noose (the way rope halters are always made) tightens and pinches his nose, and then he will struggle for life, until, perchance, he throws himself; and who would have his horse throw himself, and run the risk of breaking his neck, rather than pay the price of a leather halter? But this is not the worst. A horse that has once pulled on his halter can never be as well broken as one that has never pulled at all.

You may now proceed to shew him the halter; allow him to approach it with his nose so as to feel and smell it, for reasons assigned under the next heading. We would recommend that the old horse should stand by all this time, which will give him more confidence than if he were alone; and, having convinced him that you mean him no harm, he will allow you to handle him about the head and ears. Before you attempt to place it on his head, let him again smell it and touch it, but above all things do not hurry the business, but by fondling with him, and using him to the feel of the hand and the halter, there will be no difficulty in placing it carefully on his head. The assistant will now lead on the old horse in the direction required to go, and taking hold of the halter shank, about a foot from the colt's head, lead him after, and close behind the old horse, now and then caressing him with the hand until the most perfect goodwill is established.

By a violent method of first haltering a colt, he is so terrified, that it will take weeks of kind treatment to convince him that it is not the intention of every man, who approaches him, to inflict pain or punishment.

At this stage of training, the colt cannot be too much handled, and accustomed to the sound of the human voice; commencing first very gently about his head, as before haltering, pass the hand along his neck, down his near shoulder, by the front and back of his near fore leg, along his withers and back, about his ribs and under his belly, over his loins, and his quarter to the hock joint, shank, and heel, finishing that side by again and again picking up his hind foot.

Then, returning to his head, pass the right hand all over his off-side in the same way. This treatment repeated a few times, will reconcile the colt, and establish more confidence between him and his trainer than a month's flogging him round a lounging circle with a whip.

Familiarising the Colt to surrounding Objects and to Sounds.—By patience and allowing him to examine it, thereby giving confidence to the horse, he will allow with indifference any object, however frightful, to approach, come around or over him, provided it inflicts no pain. Fear in the horse appears to the hasty observer as a mere unreasoning paroxysm. A log or stump of a tree by the roadside does not alarm reasoning man, and the ignorant and unenquiring breaker too often endeavours to *conquer* what he assumes to be and calls "shying." In a state of nature the horse will examine this, or any such unaccustomed object, and having satisfied himself of its innocuousness, never after trouble himself at its appearance. The horse domesticated and under restraint is often prevented from this investigation, and punished for his first startled movement. Take the colt up to the object of his fear, let him touch it with his nose, and he will care no more about it.

The same process will have the same effect with any other object, however frightful in appearance, from which he experiences no harm. Take a boy that has been frightened by a false face, or any other object that he could not comprehend at once; but let him have that face or object in his hands and examine it, and he will not care anything more about it. The same principle governs both cases.

The horse is never so well satisfied when he is about anything that has frightened him, as when he is standing with his nose to it. In nine cases out of ten, you will see some of that same wild look about him again as he turns to walk from it. And you will, probably, see him looking back suspiciously as he walks away, as though he thought it might come after him yet. In all probability he will have to go back and make another examination before he is satisfied; but he will soon familiarise himself with it, and, in a few days, such an object as a bearskin, or coloured blanket, that frightened him so much at first, will be no more to him than a familiar stump.

"We might naturally suppose," says Mr. Rarey, "from the fact of the horse's applying his nose to everything new to him, that he always does so for the purpose of smelling these objects. But I believe that it is as much or more for the purpose of feeling, and that he makes use of his nose or muzzle as we would of our hands; because it is the only organ by which he can touch or feel anything with much susceptibility. I believe that he invariably makes use of the four senses, seeing, hearing, smelling, and feeling, in all of his examinations, of which the sense of feeling is, perhaps, the most important. I think that, in the experiment with the robe*, his gradual approach and final touch

* Practised by Mr. Rarey in his system of taming: see his little treatise.

with his nose was as much for the purpose of feeling as anything else, his sense of smell being so keen that it would not be necessary for him to touch his nose against anything in order to get the proper scent; for it is said that a horse can smell a man at the distance of a mile. And if the scent of the robe was all that was necessary he could get that several rods off. But we know from experience, that if a horse sees and smells a robe a short distance from him he is very much frightened (unless he is used to it) until he touches or feels it with his nose; which is proof positive that feeling is the controlling sense in that case."

We need hardly add that the use of scented oils, recommended by old farriery books, is utterly exploded and rendered obsolete by modern research and experiment.

The Bit and Bitting.—Every horseman knows, and those who are not horsemen will soon learn (if they ride at all), that on the properly bitting the horse, the comfort, safety, and appearance, both of horse and rider, most materially depend. However good may be the natural carriage of the horse, if an unsuitable bit is put into his mouth, it will greatly counteract both the inclination and ability of the horse to carry himself handsomely.

It must be borne in mind that this proper bitting must not only relate to the mouth of the animal, but must be arranged with reference to the hands of the rider; for that bit which is the very one to suit a particular mouth, when given to a man with fine hands, would be quite an improper one to give to one whose hands are only fit to lug at the mouth of a donkey.

The mouths of some colts are naturally more sensible, or insensible, to the touch than others; and here the judgment, or the want of it, is shown in the colt-breaker, by the selection of the bit best adapted to the colt's mouth, and afterwards on the goodness of the breaker's hands and temper depends whether he turns out the colt with a good or bad mouth.

In a general way the colt's bit is the large heavy snaffle with a ring in the centre, from which hangs some loose tackling which hangs on the tongue, and by producing probably somewhat of a tickling sensation, induces the colt to keep his mouth more or less in motion. With the generality of colts their first bit cannot be too easy; but if the mouth be naturally callous, it must be rendered amenable to the bit by using a severe one, or by using the easy one with a severer touch.

Whether for the colt or mature horse, the snaffle is the simplest. It is true there are various forms of snaffles, some of them so made as to become an engine (if the expression may be allowed) of great severity; the plain large sized one, with a ring instead of joint in the centre, is the easiest, inasmuch as the ring, allowing of, say an inch in width, in the centre, does not convert the bit into an acute angle when acted on by the reins, whereas, when the centre is a joint, without going into the mathematical demonstration of the angle being forty-five degrees or any other degree, it becomes a much more acute angle or kind of skeleton wedge in the animal's mouth, and pinches the bars laterally like a vice; in short, by passing the off-side rein through the near-side ring of the bit, and the near-side rein through the off ring, and pulling both reins, we make the bit actually a pair of pincers; and if the force employed was great, the jaw of the horse would be compressed by a mechanical force that would crush it like a nut in a pair of nutcrackers.

Do not forget to show the bridle and bit to the colt as you showed the halter, and hereafter submit the saddle to his examination. Never buckle up the bitting rein tight at first.

The Cavesson—Lounging.—The application of the cavesson is the first active restraint applied to saddle-horses. Before putting it on, it is prudent to boot racing colts, and indeed all others of value, to prevent them knocking their legs against each other while they are lounging. Darvill says—"On their first being taken out, a steady lad should walk in the rear, in case any colt should hang back, to urge him quietly on by flourishing his whip or ash plant, but not to strike him. Colts with their cavessons and boots on, and thus attended, may be led out to the downs or into a large paddock. At either place they may be accustomed to be led quietly about. As soon as they become tractable in this way, attempts may be made to lounge them, by first walking them in a small circle to the right or to the left, and when they know how to go steadily round at this pace, they may be quietly urged on into a trot, gradually increasing the size of the circle by giving them more length of rein. In three or four days, or when they go boldly and freely at full length of the rein each way in the lounge, for fifteen or twenty minutes, having by degrees been brought to this pace and time of lounging, the mouthing bits, rollers, and cruppers may be put on them.

Lounging is an exercise very frequently carried on to a most unconscionable extent. Introduced originally for the purpose of subduing animals that had been neglected till they arrived at an age when their tempers became resolute, the custom of severe lounging has become one which many persons concerned in the management of young horses look upon as of paramount necessity, without any regard to the consequences which follow, or the motives which originally led to its adoption. One of these was evidently with a view of saving time. A resolute uncultivated creature four or five years old, that would neither lead nor drive until brought to subjection by fatigue, probably might appear to require such usage as the only alternative, unless an unreasonably lengthened period could be appropriated to render the animal tractable. "Lounge him till he is tired" is the usual exclamation and practice of the provincial colt-breaker, whenever he meets with a colt who is a little difficult to manage; but by such men more horses' tempers have been spoiled than improved. Harassed and overcome, the poor brute submits sullenly to the coercion of the

individual whose duty it should be to obtain by kind treatment and patient attention that which he vainly attempts by ruffianism. Thus a temper characterised by gloomy cowardice is formed instead of cheerfulness and courage. Such ought never to be the treatment of any stock, much less that which is thorough bred, or intended for the purpose of racing. Their young and delicate limbs will not sustain the rough exercise of severe lounging, neither is it at all necessary for any beneficial purpose. A little now and then is all very proper; it teaches them the use of their limbs, renders them supple and active, and as an exercise discreetly regulated is very desirable; but, judging from the effect it produces when practised upon horses of mature age and in hard condition, it is the most severe work a horse can be subjected to; that is, when it is continued for any length of time, and the poor animal is made to go at a fast pace on heavy ground. We have seen old hunters put through this manœuvre, under the impression, that in consequence of there not being any weight on their backs their legs sustain no injury. But it is a most mistaken idea. Constantly working on a circle horses are extremely liable to hit their legs, and for this reason boots or bandages should be invariably used whenever horses are lounged.

The action of some horses is such, that they scarcely move in certain paces without striking their legs, yet there are many who scarcely ever do so, and others who never touch their legs except by accident. With those of the first class there is but one alternative,—their legs must be protected or inflammation will speedily be established, and eventually lameness. The second class will be very likely to labour under the same infirmity unless means are adopted for their security; and the third class will scarcely require protection to their legs, unless some particular exercise, such as lounging, entails the probability of an accidental blow.

After these premises it may naturally be inquired what objection can be started to the use of boots? Simply this; that they are productive of some heat in the leg by the friction which they occasion. Much it is true depends upon the fittings, and the way in which they are put on; but however well they may be made, softly lined, and properly adjusted, they will to a certain extent produce heat in the legs. When very nicely put on, bandages are preferable, but it is so seldom that they are so that we hesitate in recommending them. If they are bound on too tight of course much mischief and inconvenience arises; and if not sufficiently tight, they will of course come undone. When bandages are required for exercise, they are best made from old blanketing; it wears better than common serge, and affords better protection.

Always in lounging begin with setting off the colt to the right, so that in case of his breaking out of the trot he may lead off with the left leg, and although he must be lounged both ways, work him to the right first time and most frequently. The pace at which colts are lounged is usually too fast: they are often hurried by the whip into a canter, and thence into a gallop. A trot is the proper pace, and should not be exceeded. It is a general practice to lounge colts on the most level surfaces: this is an error, especially with horses intended for hunters or hacks.

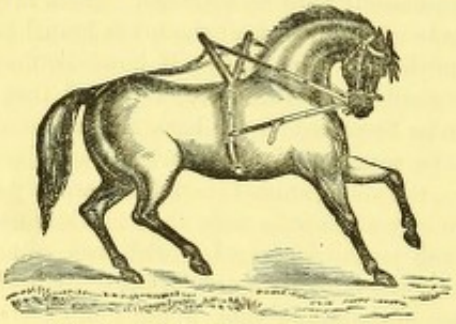
Such animals have much to learn when they leave the breaker. All horses calculated to make hunters or steeplechasers should be taught, while under the control of the breaking tackle, to leap small fences; there is no necessity for practising them over dangerous places, or where the ground is hard; but low hedges or stiles, open ditches, and narrow water courses, may always be selected for their tuition. It appears almost unnecessary to observe that the reins attached to the bit should be lengthened to an extent capable of affording the colt sufficient liberty.

The dumb jockey is an apparatus which finds favour in the opinion of most persons having the direction and management of young horses, and is no doubt a very useful agent, especially before the living rider is put up; but great caution must be used that the animal is not alarmed on the first introduction of what must appear to the astonished creature a wonderful production; and here the injunction as to halter and saddle must be observed. These inventions are usually made with soft pads at the lower branches to protect the back of the colt from injury; if, however, they are not so provided, a saddle becomes necessary; and that appendage must likewise be placed on the back in due course of time, whether it be intended as a seat for the dumb jockey or not; at any rate, the young animal should be perfectly accustomed to it before any attempt is made to put a rider up.

The dumb jockey is provided with two adjustments on each side for the reins, designed for the purpose of regulating the position of the head: thus, if the horse carries his head too high, the lower reins are to be brought into action, and if the reverse, the upper ones; the carriage of the colt may be very materially altered by these means. When sufficiently accustomed to it, the dumb jockey may be left on two or three hours while the colt is by himself, either in a large loose box or in a small paddock. This will very materially improve his mouth, and as an auxiliary, a palate or slabbering bit may be introduced instead of the snaffle already mentioned. It is made with a straight mouth-piece, having three moveable ports or arches, all of which may be adjusted so as to hang down, or two may be allowed to hang in that position, and one placed upwards, in case the horse does not play upon them sufficiently without. This bit possesses one very great recommendation, that of creating an even mouth, and is the best remedy for correcting that defect sometimes occasioned by the common breaking snaffle. A crupper may be attached to the dumb jockey with good effect, and eventually some loose straps running through it, to fall over the loins and down the sides, especially with such horses as are intended for harness; in fact, they should be accustomed by degrees to all sorts of appendages. Pocket-handkerchiefs may be tied to the

upper branches of the dumb jockey, a hat placed upon it, and other similar devices patiently and gently introduced: by these practices much future trouble and many accidents will be avoided. The greatest caution must, however, be observed not to alarm the animals, or the object will be defeated.

It would be unjust here not to break a self-prescribed rule; we mean, to omit all mention of the Gutta Percha Jockey. The various advantages of this well-made breaking and exercising apparatus will be found fully set forth in the advertisements and testimonials of the patentee, Mr. Blackwell, of Oxford Street. We can bear testimony to their valuable action in producing an easy mouth, and checking that tendency to resistance produced by the common leather rein and clumsy wooden apparatus. The yielding nature of the reins and checks is admirable. They are excellent, too, for preventing led horses from falling. They yield, too, if the colt should fall and roll over, avoiding thereby another great danger and inconvenience of the old wooden apparatus They are also serviceable in frosty weather, in loose boxes, to teach easy and graceful carriage. The figure and construction of this useful contrivance will be seen from the subjoined illustration.



Blackwell's Gutta Percha Jockey.

Saddling and Mounting the Colt.—We would recommend, unless the "casting" system of Rarey be adopted, that the saddle should be first introduced to the colt while he is lying down; and be drawn gradually over his withers, back, and hind-quarters, after he has had his feel at it. Turn the head of the colt to the right hand (when he lies on his *near* side), and he will partially rise, place his two fore feet flat on the ground, which he will permit you to do, and he has a good leverage for rising.

We shall here transcribe Mr. Rarey's directions for saddling, as the plainest and most succinct that have fallen under our notice:—"The first thing will be to tie each stirrup-strap into a loose knot to make them short, and prevent the stirrups from flying about and hitting him. Then double up the skirts and take the saddle under your right arm, so as not to frighten him with it as you approach. When you get to him rub him gently a few times with your hand, and then raise the saddle very slowly, until he can see it, and smell and feel it with his nose. Then let the skirt loose, and rub it very gently against his neck the way the hair lies, letting him hear the rattle of the skirts as he feels them against him; each time getting a little farther backward, and finally slip it over his shoulders on his back. Shake it a little with your hand, and in less than five minutes you can rattle it about over his back as much as you please, and pull it off and throw it on again, without his paying much attention to it.

"As soon as you have accustomed him to the saddle, fasten the girth. Be careful how you do this. It often frightens the colt when he feels the girth binding him, and making the saddle fit tight on his back. You should bring up the girth very gently, and not draw it too tight at first, just enough to hold the saddle on. Move him a little, and then girth it as tight as you choose, and he will not mind it.

"See that the pad of your saddle is all right before you put it on, and that there is nothing to make it hurt him, or feel unpleasant to his back. It should not have any loose straps on the back part of it, to flap about and scare him. After you have saddled him in this way, take a switch in your right hand to tap him up with, and walk about in the stable a few times with your right arm over your saddle, taking hold of the reins on each side of his neck with your right and left hands, thus marching him about in the stable until you teach him the use of the bridle, and can turn him about in any direction, and stop him by a gentle pull of the rein. Continually caress him, and loose the reins a little every time you stop him.

"Always be alone, and have your colt in some light stable or shed, the first time you ride him; the loft should be high, so that you can sit on his back without endangering your head. You can teach him more in two hours' time in a stable of this kind, than you could do in two weeks in the common way of breaking colts, out in an open place. Take him a step at a time, until you get up a mutual confidence and trust between yourself and horse. First teach him to lead and stand hitched; next acquaint him with the saddle and the use of the bit; and then all that remains, is to get on him without scaring him, and you can ride him as well as any horse.

"*Mounting the Colt.*—First caress him on both sides, about the saddle, and all over, until he will stand still without holding, and is not afraid to see you anywhere about him. As soon as you have him thus familiar, get a small block, about one foot or eighteen inches in height, and set it down by the side of him, about where you want to stand to mount him; step up on this, raising yourself very gently: horses notice every change of position very closely, and, if you were to step up suddenly on the block, it would be very apt to scare him; but, by raising yourself gradually on it, he will see you, without being frightened, in a position very nearly the same as when you are on his back.

"When he will bear this without alarm, untie the stirrup-strap next to you, and put your left foot into the stirrup, and stand square over it, holding your knee against the horse, and your toe out, so as to touch him under the shoulder with the toe of your boot. Place your right hand

on the front of the saddle, and on the opposite side of you, taking hold of a portion of the mane and the reins, as they hang loosely over his neck, with your left hand; then gradually bear your weight on the stirrup, and on your right hand, until the horse feels your whole weight on the saddle: repeat this several times, each time raising yourself a little higher from the block, until he will allow you to raise your leg over his croup and place yourself in the saddle.

"There are three great advantages in having a block to mount from. First, a sudden change of position is very apt to frighten a young horse who has never been handled: he will allow you to walk up to him, and stand by his side without scaring at you, because you have gentled him to that position; but if you get down on your hands and knees and crawl towards him, he will be very much frightened; and upon the same principle, he would be frightened at your new position if you had the power to hold yourself over his back without touching him. Then the first great advantage of the block is to gradually gentle him to that new position in which he will see you when you ride him. Secondly, by the process of leaning your weight in the stirrups, and on your hand, you can gradually accustom him to your weight, so as not to frighten him by having him feel it all at once. In the third place, the block elevates you so that you will not have to make a spring in order to get on the horse's back, but from it you can gradually raise yourself into the saddle."

The colt is now mounted; but before we proceed to perfect him in his paces, we shall advert for a moment to the method of "casting" a colt, which is the remarkable feature of horse-taming claimed by Telfer, Rarey, Mr. W. Cooke, of Astley's, Mr. Sanger, and others.

"Casting" a Horse or stubborn Colt, and Cure for Kicking.—Take up one fore foot and bend his knee till his hoof is bottom upwards and nearly touching his body; then slip a leather loop over his knee, and up until it comes above the pastern joint, to keep it bent, being careful to draw the loop together between the hoof and pastern joint with a second strap to prevent the loop from slipping down and coming off. This will leave the horse standing on three legs; you can now handle him as you wish, for it is utterly impossible for him to kick in this position. There is something in this operation of taking up one foot that conquers a horse more quickly than anything you can do to him. There is no process equal to it for breaking a kicking horse, for several reasons. There is a principle of this kind in the nature of the horse, that by conquering one member you conquer to a great extent the whole horse.

There is a plan to make a bad horse stand to be shod, by fastening down one ear. Rarey says he tried it several times, and thought that it had a good effect. "The benefit arising from this process is, that by discomforting his ears we draw his attention to them, and he is not so apt to resist shoeing. By tying up one foot we operate on the same principle to a much better effect. When you first fasten up a horse's foot he will sometimes get very mad, and strike with his knee, and try every possible way to get it down; but he cannot do that, and will soon give in. This will conquer him without any danger of hurting himself or you: for you can tie up his foot and sit down and look at him until he gives up. When you find that he is conquered, go to him, let down his foot, rub his leg with your hand, caress him, and let him rest a little; then put it up again. Repeat this a few times, always putting up the same foot, and he will soon learn to travel on three legs. As soon as he gets a little used to this way of moving, put on your harness, and fasten him to a carriage. If he is the worst kicking horse that ever raised a foot you need not be fearful of his doing any damage while he has one foot up, for he cannot kick, neither can he run away to do any harm. If he is the wildest horse that ever had harness on, and has run away every time he has been hitched, you can now do with him as you please. If he wants to run, you can let him have the reins, and the whip too, with perfect safety, for he can go but a slow gait on three legs, and will soon be willing to stop; only hold him enough to guide him in the right direction, and he will soon be tired and willing to stop at the word. Thus you will effectually cure him at once of any further notion of running off. Kicking horses have always been the dread of everybody; you always hear men say, when they speak about a bad horse, 'I don't care what he does, so he don't kick.' This *new* method* is an effectual cure for this worst of all habits. There are plenty of ways by which you can hitch a kicking horse, and force him to go, though he kicks all the time; but this doesn't have any good effect towards breaking him, for we know that horses kick because they are afraid of what is behind them, and when they kick against it and it hurts them they will only kick the harder; and this will hurt them still more, and make them remember the scrape much longer, and make it still more difficult to persuade them to have any confidence in anything dragging behind them ever after.

"But by this method you can hitch them to a rattling sulky, plough, waggon, or anything else in its worst shape. They may be frightened at first, but cannot kick or do anything to hurt themselves, and will soon find that you do not intend to hurt them, and then they will not care anything more about it. You can then let down the leg and drive along gently without any further trouble. By this process a bad kicking horse can be learned to go gentle in harness in a few hours' time."

Akin to this process is that of "casting;" it of course adds another operation, that of making the horse lie down at the pleasure of his master. Bend his left fore leg and slip a loop over it, so that he cannot get it down. Then put a surcingle around his body, so as to keep the strap in the right direction; take a short hold of it with your right hand; stand on the left side of the horse, grasp the bit in your

* It is claimed by many horse-tamers.

left hand, pull steadily on the strap with your right; bear against his shoulder till you cause him to move. As soon as he lifts his weight, your pulling will raise the other foot, and he will have to come on his knees. Keep the strap tight in your hand, so that he cannot straighten his leg if he rises up. Hold him in this position, and turn his head towards you; bear against his side with your shoulder, not hard, but with a steady, equal pressure, and in about ten minutes he will lie down. As soon as he lies down, he will be conquered, and you can handle him as you please. Take off the straps, and straighten out his legs; rub him lightly about the face and neck with your hand the way the hair lies; handle all his legs, and after he has lain ten or twenty minutes, let him get up again. After resting him a short time make him lie down as before. Repeat the operation three or four times, which will be sufficient for one lesson. Give him two lessons a day, and when you have given him four lessons, he will lie downby taking hold of one foot As soon as he is well broken to lie down in this way, tip him on the opposite leg with a stick when you take hold of his foot, and in a few days he will lie down upon the mere motion of the stick.

As these last described practices form the keystone of the "system" of breaking and taming, as practised by our transatlantic "gentler," as he delights to term himself, we have preferred to let him state the processes in his own words.

A few parting words, and we will proceed to treat of THE PACES OF THE HORSE.

The rider is now on the road. He feels his horse's mouth gently and encourages him by his voice and hand. Patting him frequently, and especially when he thinks of dismounting, the use of the rein in checking him, and of the pressure of the leg and the touch of the heel in quickening his pace, will soon be taught him. His education will now be nearly completed.

The Horse having thus far submitted himself to the breaker, pattings and rewards should be gradually diminished, and implicit obedience mildly but firmly enforced. Severity will not often be necessary; in the great majority of cases it will be altogether uncalled for: but should the animal, in a moment of waywardness, dispute the command of the breaker, he must at once be taught that he is the servant of man, and that we have the power, by other means than those of kindness, to bend him to our will. The education of the horse is that of the child. Pleasure is as much as possible associated with the early lessons; but firmness, or, if need be, coercion, must, if necessity arise, confirm the habit of obedience. Tyranny and cruelty will, more speedily in the horse than even in the child, provoke the wish to disobey, and, on every practicable occasion, the resistance to command. The restive and vicious horse is, in ninety-nine cases out of a hundred, made so by ill-usage, and not by nature. None but those who will take the trouble to try the experient are aware how absolute a command the due admixture of firmness and kindness will soon give us over any horse. The breaker should keep in his mind continually the proverb, "*Quod factum est, bis factum est*" (What is well done, is twice done).



Fig. 3.—The Ordinary Trot.



Fig. 2.—The Walk.

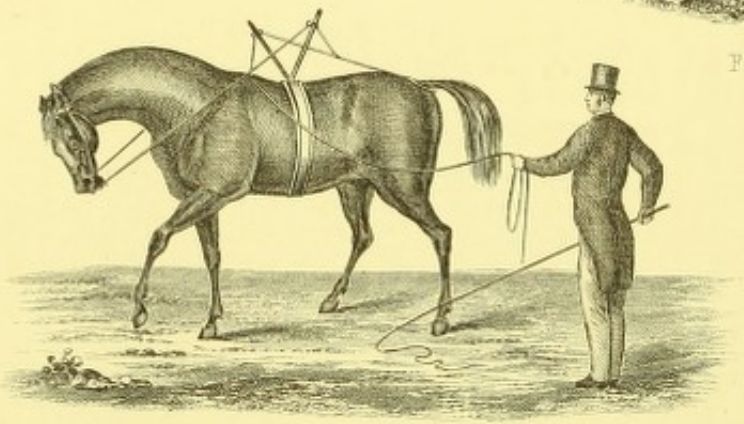


Fig 1.—Lounging the Colt. p. 216.



Fig. 5.—The Gallop.

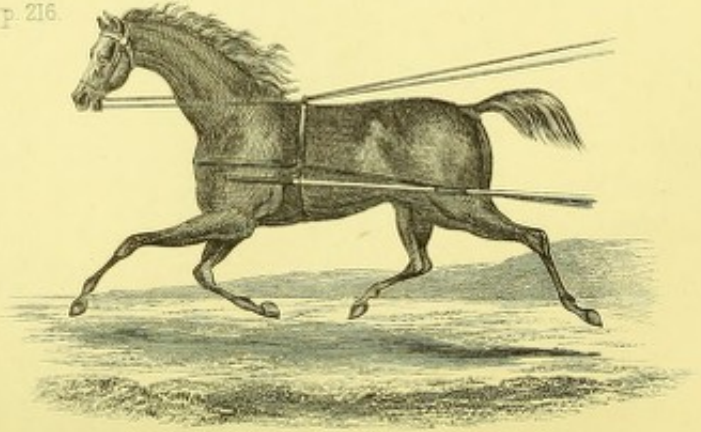


Fig 4.—The Pacing or American Trot.

THE PACES OF THE HORSE.

CHAPTER VIII.

THE PACES OF THE HORSE, AND RIDING TO THEM.—THE WALK: THE TROT: THE RUNNING TROT: THE CANTER: THE GALLOP LEAPING: THE STANDING LEAP: THE FLYING LEAP: THE BUCK LEAP: TIMBER, WALL, AND WATER-JUMPING.

THE mode of progression of the horse comprises five distinct modes of lifting the limbs: 1, the walk; 2, the trot, of which there are two varieties; 3, the canter; 4, the gallop; 5, leaping, which is akin to galloping, and exhibits several modifications, according to the obstacle to be surmounted.

The Walk.—The slow walk (HORSE, Plate VII, fig. 2), is the simplest of the paces of the horse; but, if accelerated, breaks either into the amble, or an approach to the trot, whereby the succession of the movement of the limbs is varied. In the true walk, one foot only is lifted at a time, three remaining on the ground; increase the pace, and the two legs at opposite sides, that is, the near fore leg and off hind leg, or *vice versa*, are raised together. This, also, is the true trot, although the muscular movement in the walk is very different in degree and character. Borelli, the celebrated Italian mathematician,* says that the walk is begun by lifting a hind foot first, and gives an imaginary reason, to the effect that if a fore foot were first lifted, it would disturb the true centre of gravity of the animal. We have observed that the walk is just as often begun with a fore-foot as a hind one; the philosopher and professor may, therefore, be left undisturbed by any attempt to distrust their centre of gravity theory, inasmuch as the facts are against them. Old John Lawrence, in his "Structure and Economy of the Horse," thus describes the walk: "The walk consists of four motions, thus exemplified: the horse having advanced the near fore leg, and placed it again on the ground, the off hind leg is elevated and advanced under the body; but before it reaches the ground the off fore leg is raised and advanced, in order to make room for it, as is particularly the case when a horse oversteps the print of his fore foot with his hind foot. When the off hind leg has reached the ground, the horse stands upon three legs, forming a triangle. When the off fore leg alights on the ground, then the near hind leg commences its action, and is advanced in the same manner as before, and the horse is again supported upon three legs." A careful writer on horsemanship, Strickland Freeman, differs, however, from the author quoted; but it is clear that the difference is more apparent than real. Lawrence's is the slow walk, Freeman's is accelerated. The latter says:—"I found that, supposing the off fore leg to begin, it was immediately succeeded by the near hind; but the off hind leg seemed not to follow the fore leg at the same time as before (in the slower walk); but this was owing to nothing but the alteration in the poise of the body, when either the one walk or the other took place. For when the off hind leg began, it was succeeded by the near fore leg being lifted up: and when the off hind leg was set down, the near hind leg was lifted up. But the off fore and the near hind leg seemed so connected together by the poise being on the same side, that it was the near hind leg which seemed to begin the action. The poise being altered by the will of the horse, the off fore seemed to begin, and not to be succeeded by the off hind foot being set down at the same time after it, as in the walk of the pace.* The near hind leg is in both cases taken up after the off hind foot is set down; and when the off fore foot is set down, the near fore foot is taken up, to make room for the near hind foot to be set down."

To walk well is a valuable property in any horse, but particularly so in the hackney. Such an one can compass his five miles in an hour with ease. Where a horse walks well, the necessary harmony and accordance in the form of the limbs are such as to make it almost a rule that he is good in his other paces. The racehorse can stretch along in his walk, so as to get over much ground in a little time; but it is not often that he does it either pleasantly or safely; his stride is too great, and the elevation of his limbs is naturally curtailed by his training. It is a very great acquisition also to the hunter to walk well. The walk as a pace should be performed harmoniously, whether it is quick or slow, each foot being dropped flat on the ground, and not, as is too often the case, the toe being placed first and then the heel. The breaking of the horse will have much influence on his method of walking; the angles of his limbs will have much more; and not a little will depend on the hand of the rider. One horseman, by seat and hand, will force the horse to carry his head in the right place, and to elevate and extend his limbs the one in unison with the other; another rider, by his bad seat and worse hand, will bring the horse he rides to step short and irregular, and so to mix the trot with his walk as to do little more than

* Quoted by Professor Rennie.

* Mr. Freeman divides the walk into the "common walk," and the "pace," or pacing walk.

shuffle over the ground. The maximum of speed in the true walk of the horse is under six miles per hour; there are but few can do thus much, but it has been done. Five miles per hour is the common pace of a fast walker. Charles Westhall, the pedestrian, who can or could clear seven miles' walking in fifty-eight minutes, would dead beat the best walking horse, and break him into a trot before fifty yards were covered.

Of all the paces the walk is the easiest to the rider, provided he sits in the middle of his horse's back, as it consists of an alternate elevation and depression of the animal's fore and hinder quarters. The motion may be compared to the vibration of the beam of a pair of scales. It is difficult to confine young and high-mettled horses to a walk; good temper and a firm light hand are requisite to accomplish this. When such horses change to a trot, stop them for a minute or two; then walk them on again. If the horse carry his head well, ride him with a moderately loose rein, raising the hand when he tries to break into a trot.

The Trot.—The trot is also a mixed pace; it combines the true trot, and the running, pacing, or American trot. In what may be called the true trot (Plate VII., fig. 3), the legs are lifted diagonally, and brought down simultaneously. This motion is repeated more or less rapidly, the off hind foot and near fore foot being in the air together, and *vice versa*. Accelerate the trot to ten or twelve miles the hour, and a spring will have been imparted to the pace, by which the off fore and near hind leg, having struck the ground, the near fore and off hind leg not only are ready to elevate themselves, but have actually left the ground, and all four feet are in the air at the same time, as in the racing gallop, or flying leap. In a sprint race, you may easily see that a man at speed is completely off the ground; how this self-evident fact could have been so much discussed is proof of how much more ready to theorise than to observe for themselves. In the man's running, a spring is made from one leg; in a horse's extended trot, from two diagonally taken. The result is the same; a propulsion of the body forward, and a necessity of bringing up a leg in one instance, or two in the other, to save the fall of the body forward. Thus, a series of impulses is kept up, and, by a series of driving bounds, the weight of the body is rapidly driven forward. It is to be observed, that the quadruped is here much safer, from his diagonal line of gravity being distributed over the space from fore to hind foot, while in man the centre of gravity lies so forward, as to place him at the risk of a fall from the slightest mistake or mischance.

We have spoken of irregularities in the trot; Mr. John Lawrence thus speaks of the conformation which induces such irregularities: "When a horse, whose fore legs are much shorter than his hind legs, or whose shoulders are very upright, trots fast, he is obliged to go with his hind legs very wide, so that his hind feet may come on the outside of his fore feet. By this means he sinks his croup, and brings it more on a level with his fore quarters, and at the same time he avoids striking his fore feet with his hind feet. Horses of this conformation sometimes go in the same form as dogs generally do, namely, with their fore and hind legs in two different lines of direction, by which one hind foot comes on the outside of the fore foot, and this is done with the same intention as in the former instance. They are, however, very unsafe to ride, for the hind foot is always more or less in danger of catching the fore foot, in which case, except the shoe is torn off, they must inevitably fall with great violence."

Mr. Lawrence gives a figure of what he calls "the elongated or darting trot;" it is too near to that depicted in the pictures of Tom Thumb, Rattler, Ethan Allen, and other American trotters, to deserve distinction from what we call the running or pacing trot, of which we have more to say presently.

Training a horse to trot is not a difficult process; when lounging in the circle the horse instinctively falls into this pace.

Fast trotting, except in harness—for which work, by the way, it is the only pace that almost any horse can try either safely or pleasantly—is not so much practised by sportsmen or those who ride for mere pleasure; by this we should be understood to mean the maximum sixteen or seventeen-mile-an-hourproceeding. The race-horse may take two or three fine delicate steps in this pace just previously to his jockey sending him up the preparatory gallop; and hunters will thus jig-jog along to or through a cover; but with either of them it is never thought of when business begins. The man of fashion, so proud of and particular in the choice of his thorough-bred hacks, is content with a good walker and easy canterer, adopts high ports and long cheeks to his bridle, gets (if clever and lucky) a good mouth with a light hand, pulls his horse well back on the haunches, and sails along with an idea that the fast trot is a vulgarity confined to east end fanciers and butchers' boys, fast corn-dealers, jobbers, sporting publicans, with a turn for matches and bets, and the like Yet this is the true, best, and most serviceable pace of the saddle horse. Harry Hieover thus speaks of breeding the trotting hack:—"If a man wishes to breed hacks, there are two sorts to breed—the blood-like galloping hack, and the trotting hack. By the first, I should say, a man *must* lose money, because there is seldom merit enough in them to command remunerating prices; for the really clever galloping hack seldom has high action, and most people (be it right or be it wrong) prefer those which have; consequently, the latter are safest to breed *for market*. Good action in a hack will always sell him; and we certainly run a much greater chance of getting this if we breed from trotting stock, independent of sometimes getting something *uncommon* as to pace, when of course he will bring a very long figure, and is a trump card. We must also consider that if the trotting bred colt has good action, his pace is to be wonderfully improved by practice; and provided we do not deteriorate that action, the more we increase his speed the more valuable he becomes. This is not the case with

the galloping hack; if he goes smoothly, safely, and handsomely, we can make him no better; he is fast enough for a *hack;* and if by training we increased his speed, he would be worth no more, nineteen times in twenty not half so much; for we should spoil him as a hack, and as a hack only we want him. To breed hacks I should select a low compact high-bred mare, a trotter herself, and put her to a regular trotting sire; not that we *insure* a trotter by this, but we put ourselves in the way of it, and then trust to our good luck; and I am quite clear that good luck and chance have much more to do with getting *goers* in any pace than is generally supposed. It is of course always wise to do that which is most likely to produce what we want, and to breed from *going* blood; but we all know how frequent is the disappointment when all this is done.

"I think trotting in a general way is more perpetuated in its breed than galloping; for in breeding from a certain strain on *both* sides we may pretty nearly insure a trotter more or less; and trotting being (at least I consider it so) a more artificial pace than galloping, if we get the action we can always increase the pace of the trotter in a greater degree than we can that of the race-horse. The speed of the latter is increased by training *more* in reference to speed as to a *distance* than for a few hundred yards. This is practice, and consequently wind and condition. It is not impossible that a two-year-old in fair state as to flesh might be able to go a quarter of a mile as fast before he went into training as he could afterwards, some perhaps faster; but even for that distance the speed of the trotter may to all but a certainty be very greatly increased; in proof of which, all butchers' horses get faster than they were when they bought them, not only for a distance, but for two hundred yards. A very fast thoroughbred hunter in fine hunting condition will be made somewhat faster by training; that is, he will be able to go a greater distance when quite extended than he could before; he will also go two miles somewhat quicker than he could before; but training will not increase his speed in the same ratio as practice will that of the trotter. This induces me to call *extraordinary* speed in trotting more an artificial capability than that of speed in the gallop, where each have the natural gift of going in their different paces; for this reason, with under-sized horses, which the hacks should always be, aim at getting a trotter by breeding from trotters. Should they not ride quite as we wish, they are worth long prices for harness; if the galloping sort do not ride well, they are worth literally nothing."

With respect to trotting in saddle, this pace is but to attain a secure seat, combined with confidence and firmness. The rider has more control over the motions of his body in this pace than any other: in this the body is well brought down into the saddle by its own weight, and finds its true equilibrium. When the rider wishes to make his horse trot, let him ease his reins and press the calves of his legs gently; when his horse is at a trot, let him feel both his reins, raise his horse's forehand, and keep his haunches well under him.

MATCH-TROTTING.

THE sport of match-trotting, so popular thirty or forty years since, has utterly degenerated, and fallen to a few outside sporting betting men and tradesmen, who "fancy" they have "something very fast," and post three, five, ten, or twenty pounds to "back their opinion." Across the water, however, in the United States, the trotting-match substitutes for tens of thousands the race-course with its thorough-bred flyers. Though the Americans, however, may claim a superiority in speed in the trot, it must be borne in mind that their pace known by this name is more or less the running trot. Again, in estimating "time," which they record carefully in their great matches, the horses are driven up to the starting-point, and pass it at full swing, while in England the horse must walk to the start. Nevertheless, our go-a-head cousins, having paid attention to breeding and training for this special pace, have carried their peculiar animal, the "Morgan" horse, to a perfection with us unknown. Many of these horses can trot (English fashion) a mile in two minutes and a half; while "pacing trot," they can cover the same ground in 2 mins. 12 secs. On this side the water some remarkable instances of stoutness and speed are recorded. Old John Lawrence has collected some early performances. He says, "I have met no account of trotting-matches in early writers, nor at what period the rising in the stirrups in riding came into vogue. Speed in the trot, as in the gallop, cannot be taught or acquired, although both may be much improved by training. As a man must be born a poet, so a horse must be born a trotter, or he certainly never will make one of any consequence in a racing view. The utmost speed of the trotter yet ascertained by stop-watch is a mile in a few seconds less than three minutes; and sixteen miles an hour, with a weight of twelve stone, seem the utmost that has been performed, unless the match in Lincolnshire in 1792, with fifteen stone up, when 16 miles were done, is to be depended upon." These standards have been surpassed. Tom Thumb, (an American trotter), a galloway of 14 hands high, did 18 miles within the hour, and 100 miles in a few minutes over ten hours in harness, in a match against time; time allowed, 10 hours 30 mins. Driver, 13½ hands high, did 17 miles within the hour. Sir William, a half-bred horse, did 18 miles in the hour at Manchester. In the older volumes of the *Sporting Magazine*, there are some extraordinary accounts of trotting performances scattered up and down; of the performances of "The Norfolk Phenomenon," and numerous animals claiming blood relationship to that wonder, which must be received as doubtful, not from *mala fides* in the writers of the accounts, or the spectator's testimony, but from the imperfect method of timing, and the inferiority of the watches used. A grey mare, called "The Locksmith," in 1782, trotted, we are told, 72 miles in six hours. Phenomena, a brown mare, trotted in July, 1800, 17 miles in 56 minutes on the road between Hun-

tingdon and Cambridge, and afterwards the same distance in 53 minutes, when her owner, Mr. Robson, offered to back her to trot *nineteen miles and a half within the hour*, but the challenge was not accepted. A little before this there was a dispute in sporting circles "as to whether *weight* told upon the speed of a trotter," which John Lawrence set at rest by proving that it did! The American trotter's time we have already alluded to. Lady Hampton, Jerry, Confidence, Grey Eagle, Ethan Allen, and many others have supported the credit of the American trotter, and covered the mile in 2 mins. 12 or 13 secs.

Reverting to stoutness and the sustained exertion of the trotter, we will give two matches on English ground: that of Tom Thumb's 100 miles, already alluded to, and the match between Rattler and Driver, concluding with an account of an American trotting-race as a picture of a national sport.

On Monday, Feb. 29, 1829, Tom Thumb performed the feat of trotting in harness 100 miles in 10 hours 7 minutes; time allowed, 10 hours 30 minutes; for the sum of £200 to £100. The scene of action fixed on was a mile piece of road, commencing at the fifth mile-stone from Staines, into that town and back. "At four o'clock in the morning, the American groom, who seemed to regard his horse with the affection of a relative, was on the alert. He slept in the same stable, and roused him from his slumbers to give him a substantial feed. At six, accompanied by Mr. Harry England and Mr. Frederick Smith, who rode as umpires for the horse, all set out for the five mile-stone, where the other parties had assembled. The distance from the Red Lion was about a mile and a half, and although not yet light, it was evident that the little horse was all life and spirit. He was driven by the groom, who weighs about ten stone. The match-cart, which was made in America, was one of the lightest we have ever seen, not more than one hundred and eight pounds, and decidedly the most compact, although not the most elegant, that has met our notice. The shafts ran level with the body of the horse; and the seat, which was lined with leather, was as near the axletree as possible, so as to give room for the driver to stretch his legs. The principle seemed to be, to place the weight close to the draught; and, in fact the slightest exertion set the machine in motion. The horse was unseemly in his aspect, rough in his coat, and, at first sight, slouching in his gait; in truth, anything but what an English eye would select for such a performance. He had four good legs, however, and a brightness in his eye, which led the connoisseurs to *calculate* there was something more than common in his qualities, and many began to *guess* that he would vindicate the fame of the Yankee breed of trotters, which are acknowledged to be the best in the world. Two watches having been regularly timed by the umpires, were now produced, and having been stopped at the same moment, half-past six, were at a given signal started at the same instant, and with them the horse; and we must here pay a compliment to the excellent plans of Mr. England, who, having been appointed referee, rode the whole of the match before the American, in a gig, having been supplied with excellent relays of horses for the purpose. Mr. E. foresaw that, to perform so long a journey, the wisest plan would be to prevent overexertion at first; and, although he knew the speed of the horse was equal to fifteen miles an hour, he resolved to keep him to a steady pace of about ten miles an hour, thus husbanding his strength for the last, if it should be necessary; and, in order to effect this, he further resolved to drive before him himself, with his watch in his hand, so as to regulate his time. This plan had the additional advantage of encouraging the animal, and checking that desire to increase his speed, which, if the road had been clear before him, and horses were travelling on each side of him, he would have evinced, and which to check, would only have produced fretfulness. A stable was prepared for the reception of the American, close to the five mile-stone, into which he was taken at the end of every twenty miles. Gruel was his only food, but he occasionally took a snap of hay, and never once showed a disinclination to feed." "The distances were thus performed:—First twenty miles in one hour and fifty-nine minutes; taken out, and in stable eight minutes; second twenty miles in one hour and fifty-nine minutes; taken out, and in stable eight minutes; third twenty miles in one hour and fifty-eight minutes; taken out, and in stable eleven minutes; fourth twenty miles in one hour and forty-two minutes; taken out, and in stable eight minutes; last ten miles but one, fifty-two minutes; stopped to wash mouth with gruel, which he took with good appetite, two minutes: last ten miles, in one hour. The whole in ten hours, seven minutes." From this it will be seen that this game little horse won, and had twenty-three minutes to spare of the allotted time, and that without being in the smallest degree distressed.

The celebrated American trotting-horse Rattler, when the property of Mr. Osbaldeston, was matched against Mr. Payne's famed American horse Rochester, Mr. O. backing Rattler £1,000 to £500, to trot five miles in harness, which was performed in thirteen minutes, fifty-eight seconds. Mr. Osbaldeston came in first by the length of his carriage; but the match was however declared void, because Mr. O. had neglected to pull up when his horse broke into a gallop.

The match between Rattler and Driver is thus recorded in the *Old Sporting Magazine* for August, 1832. The conditions were that Rattler was to carry eleven stone, and Driver nine stone; and should either horse break into a gallop, to turn round at the call of the umpire. Driver was formerly in the possession of the Duke of Gordon, and subsequently became the property of Macdonald, of whom Mr. Lawton purchased him. The day fixed by the articles was Friday, in the July meeting. Rattler, since his match with Rochester, remained in the neighbourhood of Newmarket; and Driver, after being in close training at Smitham Bottom, was conducted in the same direction in the early

part of the week, as it had been mutually agreed that the match should come off in that direction. The horses started from the sixty mile-stone, out of Newmarket, to the forty-third mile-stone, through Chesterford, and back. Odds, previous to starting, six and seven to four, and two to one on Rattler. There was much betting on time; several persons backing the distance to be done in two hours. The weights having been adjusted, Mr. Osbaldeston mounted Rattler, and Macdonald Driver On the signal being given, the horses went off at a steady pace, the Squire rather in the rear, a position which it was understood he intended to preserve throughout till near home, when he purposed taking the lead, if in his power The road was alternately up and down hill, in some places the ascents and descents being rather precipitous, between chalk hills, which rendered it extremely warm and oppressive from a want of a free circulation of air. In going towards town, the horses were met by a gentle and refreshing breeze; but this being at their backs on their return, the disadvantage was obvious. As the horses proceeded Macdonald increased his speed, but Mr. Osbaldeston kept close to his quarters, and waited upon him with persevering industry. The first three miles were done in twelve minutes, and the first fourteen in fifty minutes. At the turn of the seventeen miles Driver was in front about a couple of lengths, and without pulling up they came on in the same relative position till within about a mile of home, near the Ditch Gate. Both horses were now greatly distressed; the pace, though not rapid, was fatiguing from the heat of the atmosphere. Macdonald tried his little nag towards the conclusion; but he always found Mr. Osbaldeston close upon his haunches. At last the Squire, finding the period for the push arrived, went forward, and in spite of all Macdonald could do, came in first by about fifty yards; performing the thirty-four miles in two hours, eighteen minutes, fifty-six seconds, or at the aggregate rate of a mile in four minutes throughout. In many parts of the road this pace was exceeded, as the trot for the last few miles did not seem to exceed twelve miles an hour. Mr. Osbaldeston was loudly cheered He immediately dismounted and weighed, apparently little fatigued. Rattler, however, was greatly distressed, and was led into the White Lion Stable, where every possible care was taken of him, but he was stated to be in a very precarious condition. Driver was also greatly distressed, but was conducted into the town and bled. He refused his food for some time, but gradually recovered his spirits, and was pronounced in a "fair way," though acknowledged to be "dead beat."

The death of Rattler, the winner, two days afterward, was stated to be a loss of £4,000 to "the Squire;" owing to engagements for a renewed match with Rochester, and its forfeit. Driver, we may observe, was 13 hands 3, and had recently trotted 17 miles within the time at Smitham Bottom.

To return to the saddle, we may note two distinct methods of riding the trotting horse; 1, that of *rising in the stirrups*—the civilian mode; 2, the *military* style. The first saves an immense amount of fatigue to the horse and unpleasantness to his rider. The second is a sacrifice to uniform appearance in a body of horsemen; as the effect of a number of men bobbing up and down synchronously with each horse's step would be something almost ludicrous: for it must be remembered that the man must here take his time from the horse, not the horse from the man. Accordingly your dragoon bumps away upon his sheepskin as he best can. The civilian style is thus carried out: at the very moment when the near fore and off hind foot (or *vice versâ*, according to the foot the horse starts with) have struck the ground in their effort to throw the horse forward in his stride, the body of the rider is propelled into the air, by hard and high trotters, to such an extent as fearfully to discompose an entire novice. Having reached the utmost height consequent upon this unpleasant propulsion, down comes the seat, reaching the saddle just in time to catch the next impact, and so on as long as the trot lasts. Now it is by performing each of these motions so as to rise and fall the instant before you are bumped that you ease yourself and assist the animal. In this way the horse absolutely carries no weight at all during half his time, and the action and reaction are of such a nature that the trot is accelerated rather than retarded by the weight. No horse can fairly trot above 12 or 13 miles an hour without this rising, though he may run or pace in the American style; so that it is not only to save the rider, but also to ease the horse, that this practice has been introduced, and has held its ground in spite of the want of military sanction. It is here, as with the seat, utility is sacrificed to appearances: and whenever the long and weak seat of the barrack-yard supplants the firm seat of the civilian, the rising in the trot may be abandoned, but certainly not till then. The military length is not now what it was 30 years ago; and perhaps some time or other they may adopt the rise. In the trot, the foot should bear strongly on the stirrup, with the heel well down, and the ball of the foot pressing on the foot-piece of the stirrup; so that the elasticity of the ankle takes off the jar, and prevents the double rise, which in some rough horses is very apt to be produced. The knees should always be maintained exactly in the same place, without that shifting motion which is so common with bad riders, and the legs should be held perpendicularly from the knee downwards; the chest well forward, the waist in, and the loins nearly upright, but slightly forward, and as easily as can be effected without effort on the part of the rider, rather restraining than adding to the throw of the horse.

The military style, without rising, is effected by leaving the body as much as possible to find its own level. The knees should not cling to the saddle, the foot should not press forcibly upon the stirrup, and the hands should not bear upon the bridle. By attending to these negative directions, the rider has only to lean very slightly back from the

perpendicular, and preserve his balance, when practice will do the rest.

We have already described the trot as performed by the feet, 1, 2, 3, 4, diagonally; those who have pinned their faith on the fidelity of ancient sculptors—who certainly in most instances diligently studied nature—have been wofully misled in this matter, so far as the action of the horse in trotting is concerned. A visit to the British Museum, and a contemplation of the Elgin marbles, will show us two trotting horses with the legs of the same side raised at the same time, the other two being firmly planted on the ground—a mode of progression known to us only in the ungraceful trot of the bear. These are the only four horses, out of nearly two hundred, represented as trotting; the others are all cantering or galloping. The Romans, we may observe, condemned the trot. They called horses with this pace *cruciatores* or *tortores* (crucifiers or torturers); from which we may fairly infer that the art of riding this pace with ease was unknown to them, or at least not practised Nimrod is severe on this useful pace: he says, "A very fast trot is a most ungentlemanlike pace, and only fit for a butcher; besides which it wears out a horse much sooner than a canter, from the weight being all thrown upon one fore leg at the same time, whereas in the canter it is equally divided between both." This opinion is controverted by experience and our best writers.

The Canter.—The canter, as we see it in the park hack and lady's horse, is an artificial pace. The exertion is less than the gallop, the pace slower, the spring less distant, and the feet come to ground in almost regular succession. In the gallop of speed the legs are simultaneous in their movement; in the canter, the reverse. In the slow gallop, too, there is a period when all the legs are in the air; in the canter this never occcurs. He has always a point of contact with the ground. The "canter" in our plate will show this. First, the horse puts his off hind leg a little in advance of the near leg; at the same time he lifts the fore hand and then drops the near fore leg on the ground, and throws the off leg forward and beyond it, following the near leg instantly, by bringing the former to the earth. Blaine thus describes the movements of the canter: "In the second movement the hind legs are thrown in, and, while elevated, the off fore leg becomes raised from the ground, but the near fore leg is not elevated until the hinder ones are replaced; and this, as remarked above, constitutes the grand difference between the canter and gallop. The sensation to the rider is as different as possible, and so is the action to the eye also. If this be established, it will call to mind that the whole weight of the body must at one time rest completely on the near fore leg: and that this does take place in the canter is evident from the effects observed; for it is a remarkable fact, though seldom observed by old writers, that in all cantering horses the near fore leg is more deteriorated, and exhibits more of the effects of work than the off. Judicious horsemen, sensible of this, do not therefore permit their horses always to lead on the same leg, but frequently change the centre, and gallop, canter, and trot, sometimes with the right and sometimes with the left shoulder forward. The right foot is usually employed in the lead, when a horse is 'breaking in' as a canterer; and it is proper so to commence the breaking-in. If the horse is awkward, or strikes off falsely, tighten the near rein, which, inclining his head to the left, naturally advances his right shoulder, and produces the disposition, when he is pressed forward by the hand, the whip, or the heels, to canter with the right shoulder forward. But we revert to our caution, to avoid the *continued* use of one leading leg, which the reader may rest assured will suffer greatly, and become eventually contracted in the foot, gorged in the pastern, or lamed by splints. Some professed horsewomen use a screw crutch for their saddle, by which they can shift their seat; and to those who ride very much this is a very salutary custom, as the constant use of one posture has drawn the figure of the rider herself a little awry." Such are the remarks of that experienced and eminent veterinarian Delabere Blaine; Nimrod, however, as we have noted while on the subject of the trot, does not consider this pace injurious to horses. "A canter," he observes, "is much more easy, as well as safer. to the rider than a trot; the horse having his haunches more under him in the canter than when he trots, is thereby more likely to recover himself in case of making a mistake, which the best are sometimes subject to. Fast trotting also distresses a horse more than cantering, because in the one he is going up to the top of his speed, and in the other much below it."

In riding the canter, the rider should have a light and firm feeling of both reins to raise his horse's forehand; at the same time, with a pressure of both calves, to bring the animal's quarters well under him, having a double feeling of the inward rein, and a strong pressure of the outward leg, to cause him to strike off in unison.

At all times the horse should be taught to lead off with *either* fore leg; by doing so his legs will not be so much shaken, especially the off fore leg, which is the one he most generally leads off on. This must be the case when he is continually throwing the greater part of his weight upon the leading fore leg, as it comes to the ground, which causes lameness of the foot, and strains the back sinews of tne legs. Being thoroughly taught to change his legs, the horse is better able to perform long journeys with facility and comfort both to himself and his rider. Should the horse show a tendency to cross the canter, rouse his mouth with a slight reminder, and speak sharply to him; he will soon understand what is required, and behave accordingly.

The Gallop.—This is a natural pace, common to every description of horse in a state of nature, from the diminutive sheltie of the north to the onager (wild ass) of the African deserts, the ponderous Flanders cart-horse, and the flying thorough-bred of Eastern lineage, though their other paces may differ entirely.

All these move by a succession of leaps in which the hind

quarters are the propellers. There are three distinct varities in the gallop: the hand or slow gallop; the three-quarter gallop; and the full-gallop—the last capable of a yet further extension in the racing "finish." These are all modifications of the same mode of progression. We do not hold with those who class the canter as a gallop; for in the canter one foot is always on the ground, not so in the succession of leaps called galloping.

The Hand-gallop, with the right shoulder forward, is thus described by Blaine, than whom we can find no cleverer, better, or more practical writer on this topic: "At the instant the horse elevates his fore quarters by means of the muscles of the loins, he throws his fore legs also forwards, through the agency of the muscles distributed to the shoulders and arms: but it appears that he does not elevate his fore limbs equally; the right is raised a little more, and it is likewise carried a little further forward than the left, which makes the action a pace, not a leap. During this elevation, and in some instances preparatory to it, the right or off hind foot moves slightly forward, but only sufficient to gain a true centre, and to correspond with the increased forwardness of the right shoulder: the near hind leg, it must be remembered, yet remains fixed. The fore extremities now reach the ground, the near fore a little before its fellow, the off fore doubling over it, and placing itself a little beyond it; and the slower the gallop the more considerable will be the distance between the placing the fore legs. As soon as the near fore leg has met the ground, and before the off fore has yet taken its full bearing, the hinder legs are moved in the following manner,—the near hind elevates itself, and, as it reaches the ground, the off hind passes it and becomes placed also. It is now that the horse begins to be *all in air* in this pace; for, on the next spring that the hind quarters make, the fore quarters being already elevated from the last impulse, the animal is of necessity completely detached from the ground. The next period when he is likewise so, is, when the fore quarters, meeting the ground, gain a new impulse by their rebound, the haunches are again thrown in to take their share in the support, and also to give their impelling power to the mass."

In the *Three-quarter-gallop*, though it is merely an acceleration of the hand-gallop, the horse, by describing a much less curve in each leap or bound, and lengthening his stride proportionately, changes much the stretch and increases the obliquity of his pasterns as the feet reach the ground; which fact is visible in faithful pictures of running horses by competent artists. The pace is the one generally seen in hunting-scenes, and steeple-chasing, (not a "finish,") the racing-gallop being mostly incompatible with the nature of the ground.

The Full-gallop is the most simple of all the paces. "Simple as it is," says Blaine, "it cannot, however, in any instance, be commenced without the intervention of the slower gallop, in which one of the hinder legs is first advanced to establish a new centre; for it would require too great an effort to raise the fore parts at once from a state of rest by means of the loins, and to throw them forwards at the first action, to a considerable distance by means of the haunches and thighs. This fact is well known to jockeys and other sporting characters, and they often derive profit from the circumstance, by wagering with the unwary that no horse shall be found to gallop one hundred yards while a man runs fifty, provided each start together; in which case, so much time is lost in acquiring the due momentum that the man has often won: make but the race for one hundred and fifty yards and the horse would beat; for, now the impetus being acquired, he arrives at sufficient momentum to overtake his antagonist. In the extended gallop the fore parts, when raised, are forced forward by the alternate flexions and extensions of the angles of the hinder parts; and as both of the fore and both of the hind legs, in the racing-gallop, become opposed to the ground in succession at the same moment, that is, as the two fore feet at once beat the ground together and then the two hind, so it is evident that the gallop of full speed is nothing more than a repetition of leaps. Quickly as these leaps are repeated, yet the surface of ground passed over at each of them must necessarily be great, to accomplish the pace at which the good racer goes. Hambletonian, in his match against Diamond, is said to have covered eighty-three and a half feet of ground in a second; and by the calculations of Monsieur St. Bel, Eclipse covered eighty-five feet of ground in the same time, when at the top of his speed. Every turf amateur must have remarked the horizontal position of the body in the racer at the momentous struggle. Every departure from a rectilinear form of the body would detract from the rapidity of its flight; and therefore even the head and neck are carried so as to fall within the line of the trunk. As a compensation, however, for the loss of the power sustained, the limbs are more extensively flexed, that the circles they form may be more extended."

The maximum of the speed of the race-horse appears admitted to be a mile in a minute; but few, if any, horses can retain the full velocity of this rate for even that time. It has, however, been run at Newmarket, by a stop-watch, in one minute and four and a half seconds. It is said, but was never proved, that Childers did run at Newmarket one mile in the minute: certain it is that this celebrated horse, when carrying 9st. 2lbs., ran over the Round Course, which is 3 miles, 6 furlongs, 93 yards, in 6 mins. and 40 secs. Bay Malton ran 4 miles at York, in 1763, in 7 mins. 43½ secs. Eclipse also ran the same distance on the same course in 8 mins., with 12st.

In 1848, Surplice won the Derby and Cymba the Oaks (both 3 year olds, 8st. 7lbs.), in the same time, 2 mins. 48 secs., 1½ mile; the fastest of those races up to that year,* being at the rate of 14 secs. the furlong, 1 min. 52 secs. per mile.

* In 1861 and 1864 Kettledrum and Stockwell covered the Derby course in 2 minutes 43 seconds.

Sir Tatton Sykes's Leger Race (3 years, 8st. 7lbs.) was faster (1 mile 6 furlongs and 132 yards), run in 3 mins. 16 secs., at a rate of nearly 13½ secs. a furlong, 1 min. 48 secs. per mile.

West Australian (4 yrs.), in 1854, ran over the Ascot Cup Course, 2½ miles, in 4 mins. 27 secs., or 13½ secs. per furlong, or a fraction less than 1 min. 47 secs. per mile. In this race Kingston ran West Australian to a head. From the above authenticated timing of the speediest racehorses on the British turf, the "mile-a-minute" tradition of the last century may be set down as too absurd a fiction to excite more than a smile at those whose credulity can cling to it. In some "time matches" in America, the best pace made was at New Orleans in 1855, when Lexington (4 years old), did 4 miles, with 7st. 5lbs. up, in 7 mins. 19¾ secs. And in the same year Brown Dick (3 years old, 6st. 2lbs.), and Arrow (5 years, 7st. 12lbs.), ran 3 miles over the same course in 5 mins. 28 secs. (13⅞ secs. per furlong). The heavier weight carried, and greater speed, of the modern English racer are here evident.

The gallop is ridden in two ways: the one seated in the saddle, the feet in the stirrup as far as the ball of the great toe, in the usual manner of riding throw paces, or with the stirrup home to the waist and instep of the boot—the ordinary hunting seat. With this the body is slightly bent backwards, in an easy posture; the knees press firmly against the saddle flaps; the hands low, with a gentle draw on the mouth; the position of the hands, however, must be higher or lower, according to the horse's mode of carrying his head when galloping; that is, raised if he hangs downward, level if he does not bear on the bit, and absolute low if he "sniffs the wind with upturned nostril." The second way is the jockey's rising in the stirrups and standing. The weight is then on the irons, steadied by a moderate pressure of the knees. The seat is more backward than when down in the saddle, the loins and body leaning forward; the head not too low, and the knee slightly flexed to press the foot backward as well as downward. This seat is rarely used except in racing. It relieves the horse in bad ground, and over deep plough or fallow, and might be more frequently adopted with advantage. It, however, soon fatigues the muscles of the rider, if it saves those of the horse.

LEAPING.

Leaping is a mode of surmounting obstacles common to most hunting quadrupeds, and to the horse tribe, though the style of jumping varies greatly in different animals. The kangaroo, which has no pace but jumping, is the most abnormal, his jump being effected by the base of his muscular tail and squatting hams. The trained horse alters his style of leap considerably, according to the nature of the obstacle to be surmounted, and hence, "fencing," as it is called in hunting countries, presents several well-known varieties. The jump is effected by a sudden and vigorous extension of the hinder limbs after bringing them well under the animal by the action of the flexor tendons. The body is then, as it were, projected forwards in proportion to the force of the impulse. Hence the importance of the hunter possessing powerful loins, muscular thighs, wide and well let down hocks, and oblique shoulders for landing safely. Though weight-carrying hunters must be large framed, it does not follow that a large animal can leap a greater distance than smaller ones; the length or height of the leap being measured by the force in relation to the weight of the body projected thereby.

The varieties of leap proposed to be noticed are—1, the standing leap; 2, the flying leap; 3, the buck leap; 4, timber, wall, and water jumping.

The Standing Leap (Paces of the Horse, Plate VIII., fig. 1) is, as the figure will suggest, only suitable for slight obstacles, such as a horse can easily surmount by rising at them with bent fore legs, and his head at liberty. In the standing leap the horse rises on his hind legs by bringing them well under him, his rise being more or less perpendicular according to the height of the obstacle. Some horses are remarkably clever at a standing leap, while others (often they have been spoiled by bad riders taking them too close up to the obstacle, and then not letting them *have their heads*) will scarcely rise unless allowed a run. The horse being thus in a rearing attitude, except that his fore legs are flexed to enable him to rise more easily, he springs, after a second or so of balancing, upward or forward, throwing out his fore legs and landing with a drawing action, and bringing the hinder feet well in under his quarters on landing, ready for another spring forward. It may be easily guessed that to keep your seat in a standing leap of good height requires some skill from the great change which the horse's position undergoes in regard to his rider. A judicious equilibrium and a good hold with the knees are quite as necessary in this style of leap, *slow* as it is voted by Meltonians, as in the more showy flying leap. Nimrod tells us of a splendid horse bought of the Earl of Stamford, which, after being a good flying leaper, changed his style, and could not be brought to jump any way but standing, except at water, when he would carry his seventeen stone master over any brook the width of which was at all practicable.

Mr. Waite, the riding-master, in a little concise treatise, entitled "Graceful Riding; a Pocket Manual for Equestrians," thus summarily directs the movements in the standing leap:—"Let the rider take up his horse at an animating pace, halt him with a tight hand upon his haunches; when rising at the leap, the rider should only just feel the reins, so as to prepare for slackening them, when he springs forward yielding them without reserve; as, at the time, the horse must be left quite at liberty. As the horse's hind feet come to the ground, the rider must again collect him, resume his usual position, and move on at the same pace. His body must be inclined forward as the horse rises, and backwards as he alights."

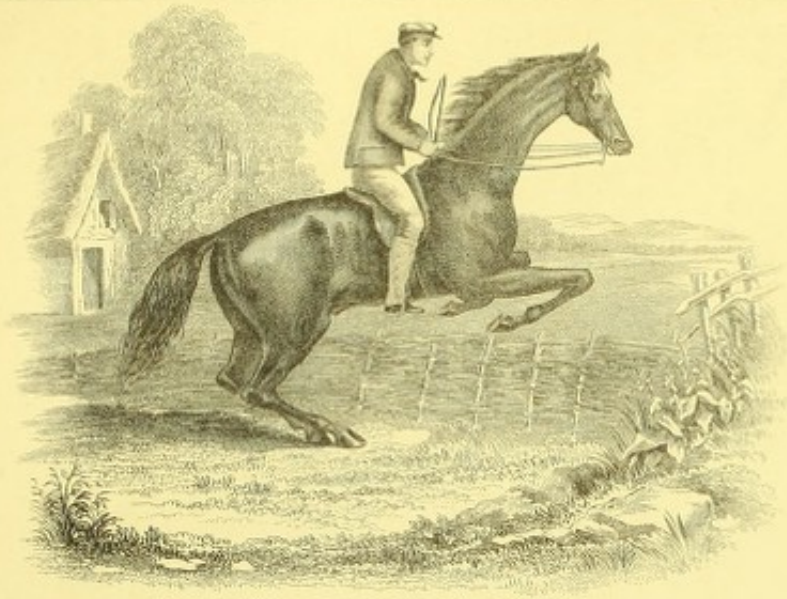


Fig 1._The Standing Leap.

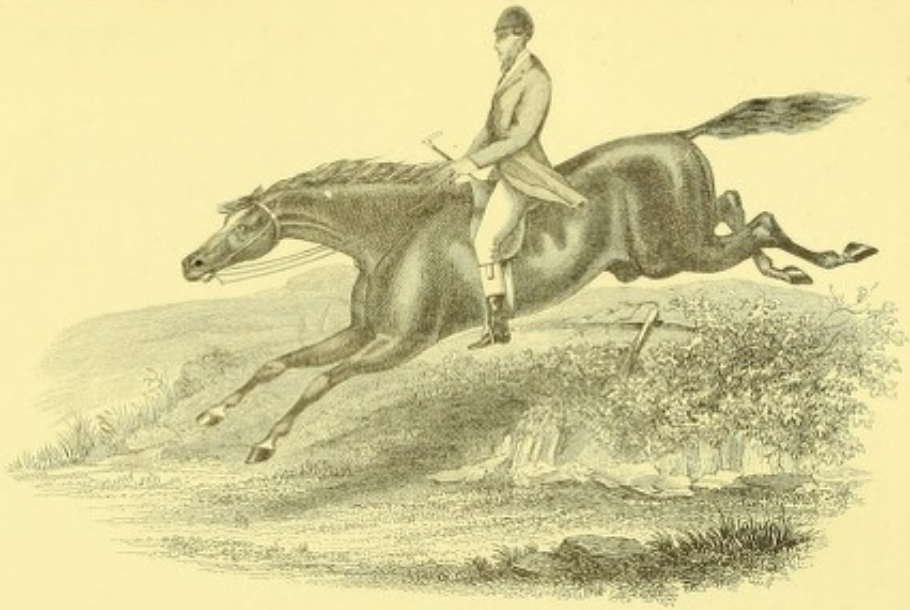


Fig. 2._The Flying Leap.



Fig. 3._The Buck Jump.

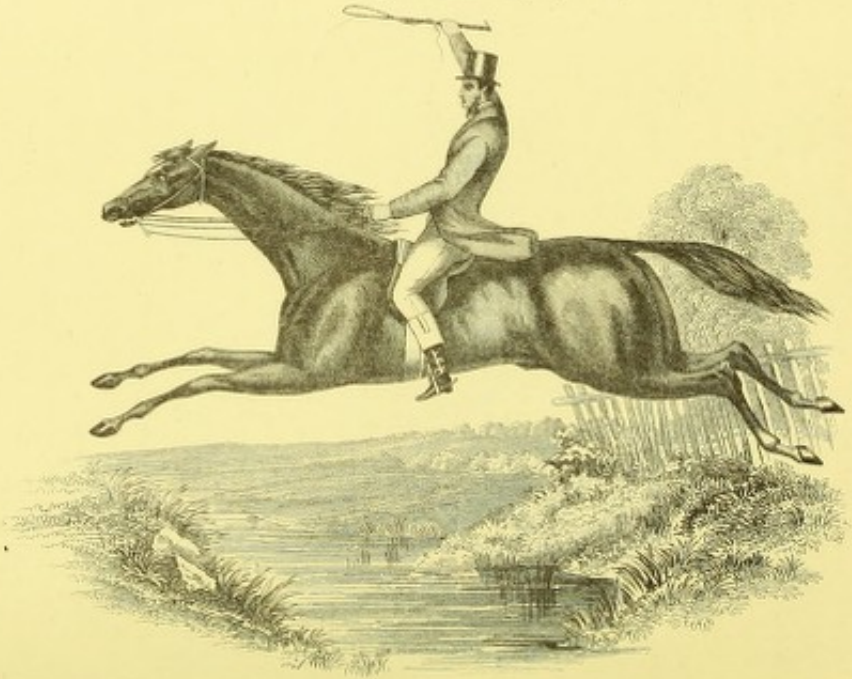


Fig. 4._The Water Leap.

LEAPING.

In many places where a stile or low gate, with a branch of a tree overhanging, has to be crossed, a perfect hunter will gather himself together and tilt himself over with a safety which a flying leap is far from insuring. Yet, as we have before said, the standing leap having been voted "slow" by modern "fast" men, we will pass to the next.

The Flying Leap.—This is of two classes: the rushing one, adopted from necessity in the jumping race known as the steeple-chase; the deliberate or hunting one, in which the horse is ridden steadily, and the fence, hedge, bank, or rail taken by a true leaping stride. The flying leap (*Plate* VIII., *Fig.* 2), is performed with all the limbs more or less extended, and the whole line of head, neck, and body nearly horizontal, more so in proportion to the width of the brook, dyke, or other space to be cleared. As in the flying leap the hinder limbs are the main instruments of propulsion, but the fore legs certainly take a greater part in the operation than is generally supposed, the last stride before the take-off of the leap the fore feet will be found to be violently thrown against the ground, to assist in lifting and propelling the animal, almost synchronously with the grand effort of the hinder limbs. The horse, having carried himself over the object, lowers his head, throws his fore legs yet more horizontally, and lands so as to offer the least resistance and jar; while his hinder limbs, which had been gathered up towards the belly to clear the leap, are brought under him, as in other cases, to again gallop on. Some hunters can rise well for a flying leap from the trot, but a steady hand-gallop is the best pace to rise from in the field; in that pace, or a canter, the horse is more under control, and can be more readily stopped. In the steeple-chase the jumps are all known, previously examined, and "eye-measured," both in "take-off" and "landing." In the field it is otherwise; and therefore rushing at fences is merely tempting mishap to horse and rider. At water a good pace is best, as it must usually be taken in stride; but a horse leaps better at a height from a steady pace, enough to secure a propulsive spring, than at extended speed. Double-posts and rails, and stone walls, require gathering together and "rousing;" and never forget that the horse gathers courage from the confidence of his rider: a good horse, steady at his fences and straight at his work, may soon be spoilt by a nervous and irritable rider.

We again resort to Mr. S. C. Waite's manual. He directs the flying leap to be made thus:—"The horse must not be hurried, but taken up at a brisk pace, with a light and steady hand, keeping his head perfectly steady and straight to the bar or fence. This position is the same as in the standing leap; and the aids required are the same as for making a horse canter. If held too tight in the act of leaping, the horse is likely to overstrain himself, and fall. If hurried at a leap, it may cause him to miss his distance, and spring too soon or too late; therefore his pace must be regulated, so that he may take his spring distant enough, and proportionate to its height, so that he may clear it. When nearing the leap the rider must sit perfectly square, erect, pliant, and easy in the act of leaping; on arriving at the opposite side of the leap, throw the body well back, and again have the horse well in hand."

The Buck-jump, or double leap (*Plate* VIII., *Fig.* 3), is most remarkable in Irish horses, and among such of our own as are accustomed to banks and wall enclosures rather than water, hurdles, wattles, or quickset hedges. In the buck leap a second impetus is obtained by the horse striking the top of the wall or fence with his hind feet. Blaine has some sensible remarks, evidently based on close observation, on this peculiar repetition of the impulse in the act of leaping. He says, "Our experienced hunters, when facing a *rasping leap*, or when, after bounding over a ditch, and having reached the centre of a quick hedge, they get sight of a second ditch on the other side, will often be observed thus to double their leap, by applying the hind feet to the top of the hedge, and with such additional impetus, slight as it may appear, they carry themselves and riders over the whole. It must not, however, be supposed by this statement, that we consider the hedge itself to offer a fulcrum equal to the required propulsion. No; we consider that the horse himself makes a second extensile effort by the stimulus within, but instinctively put into action by this *point d'appui*. This doubling of the hind legs is almost always seen in the greyhound when covering, not only a timber leap of the most trifling height, but also that of a low hedge in coursing, &c., &c., which we consider as bearing us out in our principle. It was by observation first made on greyhounds in our younger days, that we became apprised of this secondary effort in leaping, which led us, by attentive observation of every case of the kind that occurred, to detect the same in horses. Having also had much opportunity when in Ireland, of remarking the ease with which the common horses of the country, under Pat's 'cram and shout,' cleared the stone walls so numerous there (we beg pardon, we ought not to have said *cleared them*, for it was by always going over, and so seldom clearing the wall, but, on the contrary, invariably displacing a ridge stone or two), that we were led to a more minute inquiry into the matter, both practical and theoretical. The result of this inquiry satisfied us, that this doubling of a leap is instinctively implanted in all quadrupeds, whose form and arrangement of organs fits them for extensive saltation. Having often, in the company of sportsmen, when we have noticed this capability, been met with doubt, and not unfrequently with a direct contradiction of the possibility of it, we cannot but be gratified when we meet with such an authority as Mr. Apperley bearing us out in our statement of this secondary effort to extend the leap:—'Yet after all,' says this talented writer, 'the most extraordinary fact relating to the act of leaping in horses, is the power they have of extending themselves by a second spring as it were, when, on being suspended in the air, they perceive something on the further side of a fence, for which they were not prepared. That they occasionally do this under good horsemen. all good

horsemen of experience can vouch for; but whence the fulcrum is derived, it would be difficult to determine.'" (*Encyclopædia Britannica*, vol. xi., p. 627.)

We need hardly say that the buck-leap is not made at the top of speed. The horse must not be at extended stride. The canter, trot, or short hand-gallop, are the most common preface, but we have seen it made under sudden alarm from a standing position. The buck-leap is made from the ground by the simultaneous action of all four legs at once; but the superior strength and more favourable angle of the hinder ones throw the horse forward, as well as up. When the wall or bank is topped, the horse, striking with his hinder feet, the fore legs doubled, comes down by gathering his hind legs up and throwing out the front in such a way as to land them all together—a most dangerous and unpleasant concussion follows. Blaine says of a fatigued horse, under these circumstances:—"The horse in such case not being able to bear the jar of a secondary effort of the joints to relieve himself, the attempt often brings him down, and thus it is that buck-leapers are seldom safe ones. We would caution the nervous rider against the dangerous custom, which some have at every downward leap, of grasping the cantle of the saddle with the whip hand; for it not only displaces the body, and consequently unsteadies the seat, but it has likewise dislocated the shoulder. We have seen others elevate the whip hand at every flying leap; and the action appears to have become so natural to them as not at all to discompose their seat. In Ireland this is very common, and among the regular Pats it is accompanied with a vociferous 'hough!' the rise of the hand and voice being synchronous; neither is it improbable that, from custom, both the action and sound are inspiriting to the rider—perhaps to the horse also."

In leaping much depends on the manner of bringing the horse up to the leap. He should be taken up straight and steady to the take-off, with the reins held in each hand; the hands low, the *curb-rein* held loosely. The rider's body must be erect, pliant, and easy in its movements. As the animal rises, the body must be well thrown back; and so at landing. The sitting a leap well is entirely dependent on the due poise of the body. The weight then accompanies the horse's movements, and the rider and his steed "keep time."

Timber, Wall, and Water-jumping.—Candour compels the admission that in these important points of cross-country riding the late Mr. Apperley has in various works; in his "Tours," "Riding to Hounds," "The Chase," &c.; well-nigh exhausted the subject, and to his pages, in the main, are we indebted for what we have here gathered.

Timber-leaping is of various kinds—posts and rails; a stile, with occasionally a foot-bridge; park-paling; double-posts and rails, and swing gates, are the most common obstacles in this category. Sheep-hurdles and thorn-fences, with or without binders, are included in the timber-jump. As a preliminary caution we may note that many of the falls which occur in timber-leaping are attributable to the want of "catches" on the outer side of the shoes. These should be slight, and only on the outer side, as we shall note when we come to speak of the shoeing of the hunter. When the horse has not these as a foothold he is apt to slip his hinder quarters too far under in the attempt to stop the impetus of his gallop, and thus baulk his spring. Horses jump, however, as well as gallop, in all sorts of forms; and the judicious horseman will know that it is better to accommodate himself to his horse's habit, and cultivate his talent, than to interfere with his style; which is like an attempt to force a man to alter his settled opinions. The authority we have already referred to thus practically sets forth his opinion:—When you know your horse to be a safe fencer, be his fashion of performing his leaps what it may, do not try to force him to alter it; and whatever you do, by no means hurry such a horse, however prudent it may be to do so with others. Some horses, although sufficiently eager to get over, will always pull up at a timber-leap. particularly if it costs an extra exertion. In such a case, if you know your horse will clear his leap fairly, let him take it his own way; forcing such a horse will probably be very unsafe. Never, however, attempt such a leap merely to show off either yourself or your horse during the run; for several others of a similar kind may be inevitable, and every such leap takes so much out of your horse that if he receives much shock on landing he will, perhaps, refuse a repetition. Never follow another rider when he is taking a timber-leap; for should he fall you may maim or kill him, or at any rate, lose your own credit. Do not force your horse at timber when he is distressed; for should he then fall it may be with great force, and he will hardly rise, to say nothing of your own probable injury. Once more would we caution the aspirant in field riding against taking such leaps at the gallop: *au contraire*, it is good riding to pull up at some leaps, as we have already said, and to take them either from a walk, or at most from a canter. The late Mr. Assheton Smith—*præclarum et venerabile nomen*—never rode hard at any kind of leap whatever, with the exception of brooks. We know "fast" men who would denounce much of this as savouring of "the slow."

The *Stile*—especially when it has a foot-bridge on one or both sides—is often a very ugly leap. If on the take-off side most horses will sooner face it and clear the whole; should this be impracticable or doubtful, an experienced "fencer" will, if the bridge is strong enough, take it at twice, and do it cleverly. A slip, however, on the bridge is apt to hang the horse's stifle in the top rail, and keep him till the timber gives way; or, by getting a leg between the bars, the unlucky animal and his rider "come to grief." A good way—don't fear the vulgar imputation of "slow,"—is to turn the horse over *solus*, if you have a friend to catch him for you.

The Gate, like the posts and rails, should be steadily ridden at: but remember that the foothold in these places is often

very treacherous, owing to the ground being "poached" by the passage of neat-cattle and sheep at each side of the obstruction.

Never ride at a gate that by probability is unfastened; to do so when it is actually on the swing would be madness; for as many good leapers measure heights and distance so accurately as almost always to brush the former, and exactly span the latter, so a gate on the swing, or even unfastened, would in all probability fly open, and the horse, instead of topping it, would first find himself swinging on it, and next rolling rider and all headlong from off it. In such case it would be not unlikely also that the legs of the horse might, at the same time, become entangled in the gate rails; should this happen, first hold the head of the horse firmly down, and then let some one unhinge the gate, which is best done by putting the back against it. In these and other such like cases, wherein timber is concerned, we may remind the steady rider of the advantages which attended the heavy hunting whip of former times, with its hook and hammer mountings, as well as the sporting knife, with its cutting and sawing blades. Some good horsemen always ride briskly at a gate, which they say it is prudent to do; first, because your horse will at once distinguish between your purpose of merely going up to open it, and your intention of going over it; next they observe, that by rushing at it, if the horse does not clear it, there is the greater chance of his breaking it by the impetus of the rush. The rider of a tired or blown horse, however, would do well to avoid timber when in his power, for such falls are usually serious ones to both parties: but when circumstances strongly urge the leap, let him push his horse at it with energy, lifting him by hand, and pressing him with the heel at the moment of the spring.

Park-paling is an ugly kind of timber to take, from the zig-zag forks at the head of the pales occasionally locking the hinder foot, where it is strong enough not to fly before the blow. Double posts and rails, where too yawning for a clearance, must be taken "in and out," or "on and off;" at this, some Irish jumpers are very clever. Where there is a bank most English hunters lift themselves on to it, then, dwelling a moment, extricate their forelegs and drop into the next field, with just spring enough to clear a ditch if there be one. Double hurdles are an identical jump. Be careful to "give the horse his head," in rising, and in his second spring, feeling his mouth and lifting him when he touches ground.

Sheep-hurdles are generally too weak to occasion a fall, and may, therefore, be "rode at any how," as we have heard it expressed. They are a good means of teaching the colt, and impressing on "the young idea how to" jump. Three feet to three feet six is their usual height.

Water-jumping.—In going at a brook, take hold of your horse well, and ride him at a good striding pace straight at it; choosing as good a "take off" and sound "landing" as possible. A horse to be good at brooks must be practised at smallish ones at first, which he must take in his stride at the three-quarter gallop. Few horses take water-jumps kindly unless early instructed. A wide low-banked brook, if fordable, should be so taken. Strains and overreach are often the result of the other practice, to say nothing of a rotten bank and a return by rolling over. It is superfluous to say that an overreach spoils your sport for the day; and that if you cram your horse at a water-jump he will not take, he may either stop dead—in which case it is fortunate if you do not first taste the quality and sound the depth of the ditch, and so afford mirth to the field—or, if you have him not well "felt by both reins," he will swerve to right or left, and carry you a circuitous bend homewards; to repeat the gyration as many times as you bring him up to the leap.

Stone-walls are noticed under the *buck-leap.*

The author of "The Horse and the Hound" tells you "how to fall from your horse;" and quaint as is the precept, it is well worth study, as "falls," like "offences, needs must come." In all falls, the horseman should roll away from his horse as soon as he possibly can, lest in his struggle to rise again he strike him with his legs or head. It frequently happens that the horse himself rolls after he falls, and if in the direction in which his rider lies, is apt to crush and injure him. Indeed there is scarcely any hard rider who has not been thus served; but here, again, self-possession often stands his friend. When he sees the body of his horse approaching him, he frequently saves himself by meeting it with one of his feet, and, by obtaining a fulcrum, shoves his own body along the ground out of his reach. Coolness in this hour of peril likewise serves the sportsman in another way. Instead of losing hold of his reins, and abandoning his horse to his own will, as the man who is flurried at this time invariably does, he keeps them in his hand, if not always, perhaps in nine falls out of ten, and thus secures his horse.

Of the wonderful leaping powers of the horse we have innumerable recorded instances.

Some years ago, a wager of 100 guineas was made between Lord Alvanley and Mr. Maher, that each did not leap over a brook of six yards width, without disturbing the water. Both riders leaped the brook handsomely; but, unfortunately for Lord Alvanley, his horse threw back a bit of dirt into the water after he had landed, which made him the loser.

Blaine witnessed a jump over the river Roding, in Essex, made by Sir William Rowley's huntsman, 24 feet in the clear.

The next is an example of sustained leaping powers and pace for a small animal. Sir Charles Turner's leaping match, made with the Earl of March, for 1,000 guineas, was performed on Fell, near Richmond, Yorkshire. "The conditions of the match were, that Sir Charles Turner should ride 10 miles within the hour, in which he was to take forty leaps; each leap to be 1 yard, 1 quarter, and 7 inches high" Sir Charles performed it on a galloway, with great ease, in 36 minutes.

The Trial Leaps, as they are called, of the Irish horses, are however much more extraordinary. They are made over stone walls 6 feet high, and built firm throughout by coping and dashing: however, it is not expected that any other than a first-rate horse can top such a fence; but several instances have occurred where this has been done, and that even by the common horses of the country. In the county of Limerick, one of these walls is shown which was ridden over by Colonel O'Grady. When Mr. Blaine, already quoted, was with his regiment in Ireland during the rebellion, he saw many such. "Over these walls it was a very common occurrence for their crack fieldsmen to ride; but it was owned that some of the stones were usually displaced in the leap. Indeed, it was this very circumstance that deprived the enterprise of half its danger. A good horse there, when hunting, seldom balks such a leap; for he is aware that either his knees or his breast will displace the first tier of loose stone; the next rider who follows does the same; and then each one who succeeds is in more and more peril from the loose stones, which very frequently give horse and rider an awful somersault. That high fencing horses are almost, as it were, indigenous to Ireland, we might conclude from the circumstance, that, at one of the great horse fairs held at Ballinasloe, the parish pound, which is 6 feet in height, forms the *trial leap* for the high priced horses bought there, each of which, we are told, is expected to leap it ere the bargain is concluded. It is also recorded of a descendant of Old Pot-8-os from an Irish half-bred mare, that she leaped a wall of 7 feet high, built for the purpose, in Phœnix Park, Dublin." The feat of leaping over the wall of Hyde Park is well known. It was to have been performed by an Irish mare, the property of Mr. Bingham, but the trial was frustrated by her having passed into other hands: merely for the honour of Ireland, the leap was nevertheless attempted and achieved, on February 24, 1792, by a bay horse in his possession, whose performance of it, it is said, was done merely to show the possibility of the thing. This was a standing leap; the height of the wall was 6½ feet on the inside and 8 on the outside, where a bed of long dung was laid to receive the horse in his descent. The willing animal, it must also be remarked, did it twice, merely displacing a few bricks at the last jump.

Well-authenticated brook and fence leaps of the steeplechasers of later years have far beaten these. Charity, winner of the Newport Pagnel Steeplechase in 1841, cleared 28 feet and a bank; while Peter Simple leaped the artificial water-cut, opposite the Grand Stand at the Liverpool Steeplechase, and left his measured foot prints 32 feet from bank to bank. Lottery cleared 29 feet with Jem Mason up; and The Chandler jumped 32 feet at Liverpool, across a watercourse, measured in presence of the writer.

We propose to speak of the accidental "Paces of the Horse"—such as rearing, jibbing, shying, backing, cutting, lying-down, running-away, &c.,—when treating of the subjects of "Vices" and "Riding."

CHAPTER IX.

BUYING A HORSE: PREFATORY REMARKS: TRICKS OF DEALERS: CHOICE OF A "GENERAL PURPOSE" HORSE: "A GOOD SORT:' EXAMINATION FOR PURCHASE: EXAMINATION FOR DEFECT AND DISEASE: CONCLUSION.

No one who has mixed much in general society but has found, from peer to peasant, that one of the tenderest points of an Englishman's self-opinion is touched by the bare supposition that he "knows nothing about a horse;" yet how few really have studied the subject, and how many less have possessed the opportunity of a technical acquaintance even with the leading points necessary to form an approximately just judgment of a horse's capabilities, powers, and suitableness for the purpose for which he is required. Next to choosing a wife, buying a horse to carry you "for better or for worse" is the affair in life that requires most deliberate circumspection. True, the former is proverbially "a lottery," but there is no reason that the latter need be. We will not be so ungallant as Lord Bacon, who likened wife-taking to a blindfold dip in a bagfull of snakes to draw forth the single eel; but however heaven may make matches, and "another place" dip them, the man who will study the subject need not, in suiting himself with a horse, buy one with such serious defects as may make him feel he is "sold again, and the money paid."

A dissertation on the various ways in which a horse may be bought in London—at Tattersall's, Dixon's (Gower's), or Aldridge's; in Manchester, Liverpool, or Dublin—at Bretherton's, Lucas's, or Dicey's; of a great public dealer, as Murray or Collins; of a livery-stable keeper, jobmaster, as Wimbush, Dickinson, Phillips, Cox, Grey, &c.; or of a breeder, farmer, or "friend," the last not the least dangerous—would waste too much of our space and of the reader's time. Much of this matter, more especially of the "stud" class, will be found pleasantly gossiped over in the small volume by "Harry Hieover" entitled "Precept and Practice," and similar works; our object here is to write for the "general" purchaser, who wants a "general" horse for "general" purposes, which is just the sort of person nine-tenths of writers on this subject consider it would be beneath them, and a derogation from their character for sporting *νους*, to write for at all. They will insist upon showing you what a thoroughbred should be, according to the highest standard; that, we opine, is not what an every-day buyer of a horse for his pleasure, comfort, business, or healthful exercise, wants. He may find it, in its right place, under RACE HORSE, pp. 395--401, and under HUNTER, pp. 503, 504, and ON BREEDING, 508, 509; also, and more to the point of our present topic, under THE HACKNEY, pp. 61, 62, ante. We have there described the best of that most useful class of horse as half or three quarter bred, and from 14·1 to 15·1 in stature, yet galloways and cobs under this height are often to be met with of undeniable utility, stoutness, and constitution. And here we would say to the "gentlemen in search of a horse," look rather for the good qualities, as you would in a friend or trusty servant, than mere beauty.

> "Whoe'er expects a perfect 'horse' to see,
> Expects what never was, or is, or e'er shall be;"

therefore, as all things have their defects in "this best of all possible worlds"—even you and I, gentle reader, included—we will just take a glance at a standard animal; the nearer to which standard the horse you can buy approaches, the better for the fortunate man who becomes his owner.

An amusing, but, to our thinking, useless chapter or two might be given, studded with anecdotes of the various tricks of "copers," "chanters," "sharps," "flats," and "wideawakes;" with illustrations downward, from the aristocratic cavalry officer who "sells" the rich Cornet Greenhorn in the little matter of the 120 guinea charger, and the gentlemanly "friend" you met in the hunting-field—who has "the splendid fencer," and will part with, "to you only, for £250, because he is just the thing to carry you"—through all the gradations, till you come to the hide-and-seek-rascals who advertise a horse, "the property of a gentleman;" inquire of the groom, No. 6, Backslum Mews, "ring the right-hand bell." Each of these has its horse-dealing story, proving the axiomatic truth that "No man is honest in selling a horse." Our old friend Nimrod speaks to this. He says: "The moment a man has a horse to sell he becomes a suspicious character. Now, if the sale of one horse places a man in such an equivocal situation as to character, what must that man be who becomes a dealer in horses? Why, by common consent, he is placed out of the pale of respectability; and if his conduct were to be in parallel with his character, he would be simply a systematic cheat." Again, "The horse seems a conductor to all sorts of villany; even friendship itself is no security in this matter, in which all the ordinary principles of honour and fair dealing, by common consent, are placed in abeyance, and a laugh is the rejoinder to the recital of acts which, if a horse were not in question, would expel a man from good

society." There is quite as much fallacy in this as truth. The vendor is always the defendant in this moral court of inquiry; but in many—we had almost said most—instances the purchaser is a self-deluder, who querulously complains of the bargain he himself sought, and laments, in possession, the object he so earnestly coveted when another's. The better class of our London horse-dealers are quite as upright and fair in their dealings, as wine merchants, auctioneers, advertising jewellers, and a score of dealers in articles of a "fancy" description. This, many will say, is but poor praise; be it so. It is nearer truth than the senseless outcry about horse-dealers which fills the pages of light-reading periodicals, and points the pencil of the caricaturist. If to-morrow we wanted an animal, such as we shall presently describe, and distrusted our own experience and judgment, we should apply at once to an established dealer, on the same principle as we should to a respectable silversmith, and should not doubt to get fair value in one case as in the other.

It is a gratifying fact, and we speak from observation and experience, that those tricks and dishonesties which used formerly so extensively and constantly to disgrace the repositories, are now of rare occurrence, if not quite gone down into desuetude; although, of course, *caveat emptor* cannot be flung to the winds when one is buying anything, but more especially in such an extremely delicate undertaking as purchasing a horse. The "knock-outs" are now confined to a few of the very needy and characterless cads. All the more respectable members of the trade repudiate the practice as beneath them. Improvement has also given the guinea-hunters the go-by; and here and there only, a crown or half-crown cad is tipped. Respectable agents, too, are not the *rara avis* they used to be. To return.

We will suppose you are not over-particular as to colour, and that the venerable saw, "a good horse is never of a bad colour," has its due weight with a sensible man. Grey, chesnut, roan, bay, brown, or black, there are good ones of all. Bay or brown, with black legs and hoofs, are usually most obtainable, and, all other points being equal, most desirable. Greys are handsome, but as they grow older and white, stain themselves so frequently by lying down that much more washing is necessary; add to which, their hoofs are often white, and softer and less dense than those of black-footed horses.

To describe a "good sort" of horse is, perhaps, not a difficult matter. A really good sort of horse cannot well be put quite out of his place; he is capable of all services that can be required of him, with the reservation of the two extremes—racing, or the waggon. Even for these, if he is well bred, he would make a tolerable good fight for the one, and his pluck and courage would, to the extent of his strength and weight, make him a most willing rival of "Gee woa," if the ingratitude and cupidity of man should destine him to such degradation and suffering: by no means an improbable ending of his career, and that often under circumstances at which the humane sportsman revolts.

There can be no doubt but that "a good sort" is a valuable acquisition to any man who wants a horse to perform well any purpose for which such sort is necessary or desirable; but he may not get what performs a particular kind of work in a superior manner notwithstanding; and we may sometimes, and under peculiar circumstances, show our tact and knowledge of horses, by purchasing one for a given purpose, which our judgment may tell us is really of a good sort, even for that purpose, or indeed any other.

A really good sort of horse is fit more or less for any purpose to which we may apply him, and will do that purpose moderately well; but it by no means follows he may be more than moderately good in any of them. A good sort of horse has so often been described by abler pens than ours, that we will not enter into the minutiæ of description here.

We are told, and with truth, that a thin, clean, good head, and cheerful eye, are indicative of goodness, and (if we may use the terms in speaking of the horse) indicative also of an amiable and generous temperament and disposition; a head well put on, with a yielding and somewhat arched neck, denotes the head capable of being carried in the right place; and further, we may infer such a horse has a good mouth, it not having been hardened or spoiled by useless endeavours to bring the head in the place we wish it to be. Long oblique shoulders usually betoken freedom of action, so far as the fore parts are concerned. A deep girth and long back ribs show strength, as do good loins; wide hips, freedom of action; long good thighs and large clean hocks, with hind legs well put on, show strong propelling powers.

With these points (as we shall go more particularly into the subject in "EXAMINATION FOR PURCHASE"), we may say a horse has got what indicates goodness of temper, cheerfulness and courage, carrying himself handsomely and pleasantly to the rider or driver, goodness of action, strength, speed, and safety.

Yet, with all these good points, he may only be enabled to perform any of the purposes to which we may put him *moderately* well. In a general way such an animal cannot be a bad horse; but if we want perfection, or something like it, we must tie ourselves to special rules as to formation, and should show our tact in buying what our judgment must in a general way condemn, if we determine to have something uncommon in a particular way: such as a flyer for racing purposes, a jumper up to fifteen stone for steeple-chase or the hunting field, or an animal for the exclusive purposes of draught, all of which have their special conformations and characteristics.

The most perfect mechanical forms are not always the most speedy or the most powerful: good conformation may give the *power* to perform extraordinary feats of endurance, activity, or strength; but it must never be forgotten that

the vigour of motion depends not upon the form alone, but the *will* to exert its powers. This *will*, or energy in work, is proportionate to the excitability of that portion of the brain and nervous system which governs the muscles exerted in the desired action. Thus, oftentimes, a plain horse with a willing temper is far superior to a perfectly formed one who has not that virtue. "How can I tell," asks the reader, "anything about all this? I must trust to the seller." True, but not to the extent you suppose. A close and intelligent examination of the postures, countenance, eye, nostril, ear, movements, and carriage of the animal, will tell you more than you would believe until you try such a thoughtful inspection.

The energetic horse has generally a large eye, is attentive to what is going on about him, fine muzzle, large nostrils, small ears, thin skin, and clean limbs; he rarely carries much flesh; and lastly, it has been frequently observed that many energetic horses have thin manes and tails.

The sluggard has usually a small sunken eye, in a large heavy head; the ears are large or sloping, and seldom move; the nostrils are almost always small, muzzle fleshy, ribs flat, belly pendent, and the tail drooping and not unfrequently very full.

A small horse is capable of greater exertion than a large one; the vital principle seems to act with increased activity in small animals; in one, it is diffused, and in the other concentrated: again, like us, some have better constitutions than others; in one, the texture of the organs may be compact, and in another weak and relaxed. Horses with thick skins are more predisposed to attacks of grease and canker. In proportion as the legs are hairy, the skin is thick and spongy, feeble in vital energy, and incapable of bearing changes of temperature.

With these preliminary remarks we will proceed to the

EXAMINATION FOR PURCHASE.

Unless proper precaution is used in the examination of horses for purchase, the law will not protect a man from the consequences of his own neglect; and it has been held that a warranty against apparent defects is bad in law, the purchaser being expected not only to possess ordinary skill, but to exhibit ordinary caution; we shall, however, have more to say on this subject when we come to "WARRANTY AND UNSOUNDNESS."

A defective horse is dear at any price; yet, though the buyer be ever so good a judge, and his inspection ever so minute, he must take some things on trust. A perfect knowledge can only be obtained on trial, which should always be taken, if possible, but which is not, under many circumstances, to be had. For instance, some horses, when turned six or seven years old, are subject to a dry chronic cough, which comes on at uncertain times, perhaps twice or thrice a day, sometimes after feeding or drinking; or changes of temperature may induce it, when he comes into or goes out of stable. Occasionally a dose of physic, and in some cases a little attention to his diet, will prevent recurrence of this cough for two or three days, or even weeks, when it will re-appear.

With a respectable dealer, after using your eyes and discretion, you had better depend on the warranty and the vendor's character, than by any unnecessary display of suspicion, offensively question his honesty. Nevertheless, as the trade is taken up by needy gentlemen of good standing in society, and broken down black-legs of respectable connexions, who are ever ready to give a warranty not worth a dump, or satisfaction if you are dissatisfied thereat, if you have reason to suspect the horse, or his master, the directions here laid down will be found useful. Always bear in mind that the observation of one symptom should induce the examiner to follow up the inquiry into those other symptoms which are characteristic of the suspected disease, defect, or unsoundness. We would also recommend, when you have made up your mind that a horse is such as you would wish, to take with you, not as your dictator, but as your adviser and friend, a respectable qualified vet.; for, depend on't, he must be a wonder of incompetence and of the rarest dishonesty, if his judgment and disinterested advice are not superior to your unaided acumen, and perhaps prejudged decision. The fee is well saved in after satisfaction.

The best time to view a horse is early in the morning, in the stables; as if there is any stiffness in the joints, or tendency to swelled legs, it will then be most apparent.

The horse should always be examined from a state of rest. If there are any symptoms of his having been previously exercised, such as sweat about his withers, or his legs have been recently washed, it is advisable he should be left in his stall till cool. There is more than one species of lameness, which becomes less apparent after exercise, and where there is a tendency to swelled legs, a smart trot and grooming will fine his legs, and render them clean.

This precautionary measure is more especially to be taken when you suspect your man, for in horse-buying you must expect to deal with gentry who are adepts in the science of imposition. A stable examination is the best for observing indications of wind-sucking, crib-biting, chronic cough, the state of the respiration, and for discovering vice.

For this purpose, always have a horse shown quietly. When there is much noise and bustle, there is generally something wrong; and when the animal is agitated, slight lameness will escape the eye. In going to look out for a horse in a dealer's stables, you will no doubt soon attract the notice of an attendant, who will endeavour to put the horses into a fidgety state by his presence, in all probability with a whip in his hand. Object, in limine, to this; your object is to see the animal in a state of repose, and as far from any exciting cause as possible. It may be difficult to take a quiet survey; for the attendant is not always obedient to you, but often will persevere in exciting what you want to see in a quiescent state, and you are

driven to leave the stable in disgust. Old John Lawrence has some sound cautions and remarks on this point, which we cite. He says:—"Suffer no person belonging to the seller to be with you in the stall (unless you know and are well satisfied with the dealer's character) during your inspection, that the horse may not be rendered unquiet, either designedly or at the mere presence of an habitual tormentor. A short time since I had occasion to examine a horse, for a friend, at the stable of a considerable dealer; it was a very beautiful and well-shaped nag, but, as is commonly the hard fate of such, he appeared to have done too much work. The attendant, from a superabundant share of regard to my safety, must needs hold the horse's head whilst I examined his legs, still assuring me he was perfectly quiet; nevertheless, every time I attempted to feel below his knees the horse started, and flew about the stall in a strange manner, to the no small risk of my toes and shins. Whilst I stood musing and wondering what beside the devil could possibly ail the animal, I discovered a short whip under the arm of the jockey, with which he had, no doubt, tickled the neck and chest of the horse whenever I stooped down with the intent of handling his legs. I wished this adept good morning.

"A good quiet stable survey is a material prelude, the horse being under none of that excitement which will probably have place in him when abroad upon the show. Unless, indeed, he should have been previously subject to that most barbarous stable discipline which I too often witnessed in days of yore, but which, I hope, does not in the present days, at least not in so great a degree or so usually disgrace the conduct of our dealers. I refer to the daily, too probably almost hourly, attendance of a fellow with a whip, who flogs and cuts the horses up and down in their stalls, causing them to jump and fly about as if mad, keeping them in such a constant state of miserable apprehension, that they dread the approach of any human being. The motive of this was to render them active, ready, and lively on a show, and to hide defects; and, as an exaggeration of this monstrous barbarity, the unfortunate cripples had even an additional share of this discipline, being whipped and beat most cruelly for putting out, in order to ease, a crippled limb."

The feet and legs.—The first thing to be observed is, that when standing evenly the weight is thrown equally on both feet. If there be any complaint in the fore feet one will probably be "pointed," that is, extended before the other, or he will frequently alter the position of them, taking one up and setting the other down; or the hind legs will be brought under the body to relieve the fore feet of some portion of the weight. Any of these symptoms will direct your attention to the feet when you see him out.

Respiration.—To judge of his respiration it is necessary to be acquainted with the indications of health. Observe if the flank alternately rises and falls with regularity. In health the respiration of the horse is from four to eight per minute, average six in the day time; during sleep it is seldom more than four. If quicker than ordinary, it betokens present fever or defective lungs. Should it arise from present fever, other symptoms will be developed, such as increased pulse, heat of mouth, and dulness, while the delicate pink appearance which the membrane covering the partition of the nostrils assumes in health will be increased in colour. But if none of these symptoms of ill health are present, and yet the horse heaves at the flank more than ordinary, if the weather be moderate, and the stable not oppressively hot, it is probable such a horse is thick winded.

When inspiration appears to be performed readily and quickly, as in health, by a single action, but expiration with difficulty by an irregular and prolonged movement, or double action, the respiratory muscles appearing as if interrupted in the act of expelling the air, and then the flank drops suddenly, it is a symptom of broken wind. His cough should then be tried. The cough of a broken-winded horse is a peculiar low hollow grunt, difficult to describe, but when once heard easily recognized.

Cough.—The cough can generally be elicited by pinching the larynx or trachea. This, however, is not an infallible test. We have met with sound as well as broken-winded horses that cannot be made to cough at all. In these cases, when there is any irregularity in the movement of the flank, which would lead to the suspicion of broken wind, and there is unusual hardness of the windpipe, which does not give way on pinching, it may be taken as a symptom of disorganization in addition to the probability of broken wind.

Mange.—Should the hair be rubbed off in some places, especially about the head, flanks, and tail, or he is observed rubbing himself against the sides of the stall, there is danger of his being mangy. In this case his coat will be found rough and staring.

Temper.—The absence of the vices of kicking and biting may be inferred from the manner of the groom when entering the stall, and by the quiet method with which he unclothes and dusts him over, and combs out his mane and tail. If he be a biter, his head will probably be tied short to the neck, or the groom will seize hold of him short by the halter or bridle, sometimes giving him a shake, or looking sternly at him. Desire to see his hind and fore feet, and by the manner in which he permits the groom to lift them, a guess may be made as to his quietness to groom his heels, or in shoeing.

The Eyes.—While the horse is in the act of being led out of the stable to the light, closely observe his manner and action: if the ears move in quick changes of direction, as if alarmed at every noise, and he hangs back on the halter, raising his feet higher than ordinary, and putting them down as if fearful aud uncertain of his step, it leads us to suspect his eyes, though sometimes these symptoms will be observed when the eyes are perfect, if the stable has been a dark one.

Standing, Grogginess.—When the horse is shown out,

notice if he stand firm on his feet, with his weight thrown boldly on his back sinews and pasterns. If there is any appearance of shaking or tottering of the fore limbs indicative of grogginess, it will be endeavoured to be disguised by the groom continually pulling at the bit, to make him shift his legs and stand advantageously. A lame horse is never permitted to stand still a moment, and the groom, though pretending to soothe, is in reality agitating him, while the shrewd and crafty seller will most probably endeavour to withdraw your scrutiny from the defective point, by calling your attention to his spirit or playfulness. If any of these manœuvres are apparent, be upon your guard. The groggy horse inclines a little forward at the knee, or it is readily bent by the least touch behind, he rests his weight on his toes, and when standing undisturbed brings his hind legs under him. Some young horses, before they have been backed, have this deformity, from malformation of the knee; but if, in addition to this bending forward, there is any tremulous motion of the limbs, it is a decided proof of the existence of that most destructive affection, navicular disease; for an account of which the reader is referred to the Veterinary portion of this work.

To return, the horse being led out, he will most probably be placed upon rising ground, for the purpose of showing his fore quarters to advantage, which also affords the buyer an opportunity of another examination in a good light. The shoulder is by this position made to appear more sloping; and dealers, to give that appearance, try to make the near-leg to stand before the off-leg. Now is the time for perceiving whether his "understanding" is sound; for though the dealer may declare that he is as sound as a *bell*, still we should disregard what he may say on that subject, and judge for ourselves.

Though the dealer is perfectly justified in these little manœuvres to show off his goods to the best advantage, more especially in so fancy an article as a horse—being no more than is done and allowed by every tradesman—the prudent purchaser will not please his eye at the expense of his judgment, but see the horse on level ground and with his feet placed evenly.

If one foot is more upright than the other, that foot is diseased; the same weight is not thrown on it, and remember that the horse never shams a complaint. If the foot is of different temperature, active disease is going on; if an old standing complaint, the feet will be found of different size, and possibly the muscles of the arm and shoulder diminished in volume.

The purchaser should take his position in front of the horse, and examine his fore legs—that they are in proper position; that there is no weakness in the pasterns, or enlargement of the fetlocks; and that the feet are of the same size, and stand square to the front. In brief, the fore legs should descend in a straight line from the bottom of the shoulder, *i.e.*, in a lateral view; but when seen in front to incline gently inwards. If the elbow projects directly backwards, and the toe points with precision forwards, we may rest satisfied that the horse is not twisted in his fore legs. Turning the toe in or out, in standing, is apt to be accompanied with distortion or deformity of the limb; this circumstance, therefore, is seldom seen without materially lessening the value of a horse. Of the two faults, turning them out is the greater; for the pointing inward is seldom carried to extreme. A good arm is broad and thick; long, when compared to the leg, and marked exteriorly by muscular prominences; the elbow cannot project too far back, and the plumper the muscle immediately above it, the greater may we conclude to be the animal's powers.

General Health.—We may judge of the general state of the animal's health by his breathing condition, the brightness of his eye, the colour of the membrane lining the lid, and that of the membrane lining the nostril, which in health is of a pale pink. If it is a rosy red, there is excitement of the system; and if it is pale, approaching to white, it is a sign of debility.

Each nostril should be alternately closed by the hand, to ascertain that the air passages are not obstructed by polypus, or enlargement of the turbinated bones.

Nasal Discharge, Glanders.—Should there be any undue discharge from the nostrils you will probably be told it proceeds from slight cold; in that case an accelerated pulse and affection of the eyes are usually present. Nevertheless, as a precautionary measure, the branches of the under jaw should be felt for enlargement of the glands; if, although enlarged, they are moveable and tender, it is probably nothing more than a catarrhal affection. And here it may be necessary to observe, that in deciding upon the disease with which the horse is afflicted, it is requisite to bear in mind the age of the animal. In examining the head of a young horse, should the space between the branches be hot, tumid, and tender, the membrane of the nose intensely red, with profuse discharge from both nostrils, and cough and fever present itself, we may more than suspect strangles. Where, however, there is neither cough or fever, but one nostril, and that the left, affected, the discharge lighter in colour, and almost transparent, yet clammy and sticky, and the gland on that side adherent to the jawbone, glanders is indicated. In this case, should the lining membrane of the nostril be found pale, or of a leaden colour, with small circular ulcers, having abrupt and prominent edges, there can be no second opinion on the subject. We caution the inexperienced examiner not to mistake for an ulcer the orifice of the nasal duct, which is situated in the inner side, just within the nostril on the continuation of the common skin of the muzzle, and which conveys the tears from the eye into the nose. And yet more seriously would we warn him, in all suspicious cases, to be careful he has no chaps or sore places on his hands or face. There is, unfortunately, no doubt that this dreadful disease is communicable to the human being. As few persons will buy a horse with any symptoms of actual disease, however slight, if they can help

it, the inquiry is better left to a professional man, in case any of these symptoms make their appearance after purchase.

The Crest, Condition, Age.—His crest should feel hard and full, and firmly and closely attached to his neck; if it be lax, he is out of condition. His skin should feel kind, and look glossy, and the muscles of the body feel hard and elastic to the touch. In the old horse, the head grows lean and fine, and the features more striking and blood-like, the neck fine, withers short, and the back sinks; the lips exhibit a lean and shrivelled appearance, and the lower lip hangs considerably below the upper. In youth they are round and plump, and meet together, and the ridges of the roof of the mouth will be found prominent. In age, the middle of the nose will sometimes be found indented by the long-continued pressure of the nose-band of the head-stall.

The Teeth and Mouth.—In lifting his lip, if the incisor teeth shut close, even, and are perpendicular, he is young. As he grows older, they project forward in a horizontal direction, and the upper and under edges do not meet with evenness, the upper projecting over the under teeth. The longer his teeth are, the gums being dry and shrunk from them, the more advanced he is in age. This appearance of his teeth cannot be altered by the arts of the dealer. In youth, the teeth are flattened at front and rear, and long from side to side; at eight years old they are oval; as age advances, they become round, and in extreme old age triangular, yellow, and incrusted, and the tusks become blunt. If there are any marks of extraordinary wear in the central teeth, there is reason to suspect crib-biting, and in old cribbers the outer edge of the front teeth are worn away, and litle pieces are sometimes broken off by the attrition against the manger; if such is the case, look to the neck for marks of the crib-biting strap. Dishonest dealers attempt to disguise age by reproducing the mark in the corner teeth by means of a hot iron or caustic; the fraud is easily detected by a judge, as it is usually overdone, and the marks do not correspond with the length, shape, and duration of the teeth, and the "bishoped" horse is usually loth to have his mouth meddled with.

In our chapter on the Age of the Horse as indicated by the Mouth, this subject is more fully treated.

TRIAL AFTER EXAMINATION.

Having attentively looked over the horse as he stands, and discovered nothing objectionable to the eye, it is prudent to see him through his paces before proceeding to ascertain, by careful examination, what defects, blemishes, &c. which may have tendency to produce unsoundness, he is afflicted with; as the action of a horse, when closely observed, guides us to his defective points.

Action, Lameness.—He should be first walked, and then trotted, without any whip near him, slowly down the ride, allowing the animal to have the whole of the halter to himself; his head will then be entirely unconstrained, and any irregularities in his action are easily detected.

The action should be scrutinized most attentively immediately he steps off, as defects are then most visible; for, not unfrequently, lameness disappears after few moments' exercise.

Should one of the fore feet be much affected, it will be evident, by the up and down motion of the head, and the different degree of force with which he puts his feet to the ground. Horses that are lame before, drop their heads when stepping on the sound leg, and raise it when the weight is thrown on the lame leg; but when they are lame behind, the action (though not so perceptible) is reversed; they throw up their head a little when the sound leg comes to the ground, and depress it when the lame leg propels the body, and the motion of the lame leg is slow, while the sound one is jerked quickly forward to sustain the weight.

"Beaning" the Foot.—When both fore feet are equally tender (which is not uncommon in groggy horses) it is more difficult to judge of his action—it is not uneven, and the limp is not perceptible, but he steps short and tenderly with a general appearance of contraction. Dishonest dealers at fairs and auctions resort to a scheme by which groggy lameness in one leg is disguised by making the action even. This barbarous trick is known in various parts by the slang terms of "diamonding," "beaning," "balancing," or "wedging;" and is performed by removing the shoe of the sound foot, and paring out the sole, until it yields to the pressure of the thumb. The shoe is then replaced, and a wedge of wood, a pebble, or bean, is driven in between the sole and shoe until sufficient pain is produced to make the horse equally lame on both legs. Although the lameness is less evident, yet a person accustomed to the action of horses will easily detect it; and if the animal is allowed to stand undisturbed, it will be shown something is wrong by his repeatedly shifting his legs.

Another trick of these rascals to conceal lameness, or to give an appearance of energy to the sluggard or worn-out horse, is the torture of the lash, termed "firing." The poor animal, previously to being shewn, is so barbarously flagellated, that, under the influence of terror of the further application of the whip, his attention is withdrawn from the disease, he feels not the lesser pain, but trots off heedless of his lameness, or at least showing it much less. Whenever there is much punishment, or the threat of it, while showing a horse, be sure there is something to conceal.

The Trot.—If his trot is good, the foot is boldly delivered with an easy, light, and springy movement. Its course is straight forward and downward, not dishing to either side; the motion should be from the elbow as well as the knee; the hind legs gathered well under the body, following with regularity and precision; the toes fairly raised from the ground, and spread pretty accurately in the impress of the fore feet; if they pass beyond they are likely to overreach. In the trot he should go lightly with the fore feet; but

strike the ground energetically with the hind, taking a long darting stride, and shooting, as it were, the body forward. The horse that throws his legs confusedly about should be rejected, for though most young and uneducated horses have an ungraceful and disorderly action, the sluggard is never precise and uniform in his trot.

In criticising action, attention must be paid to breed, but it should be sufficiently high in a hack to clear all ordinary irregularities on the ground; if it is very high, look out for trace of having worn a knee cap. Be careful to observe that he does not occasionally drop; a casual giving way on either leg, in the trot, is a sufficient hint to reject the animal, for such a horse is a constant danger to his rider's neck.

Though the best horse may stumble, yet, until after tripping, he springs out as if he feared the whip or spur if he does he is an old offender. Look again well to his knees and head. Observe that he goes clear in all his paces, and that one leg does not interfere with the other horses that go very near are more likely to cut when tired.

The Tail.—The "set-on" of the tail is not to be overlooked; a horse that "carries two good ends," (of which the head forms one and the tail the other,) always looks grand and showy. Above all others, the charger should possess this point in perfection, to coincide with the character of his display in the parade of a field-day. The tail, in most horses, should form when elevated a straight line, or nearly so, with the back; a gentle declivity of the croup, however, from the summit of the rump, denotes the blood-like quarter, and adds much grace to this part in the thorough-bred horse. Should this line, however, decline very much the quarters lose much of their beauty as well as their natural power. Nothing is so ugly in a full-quartered horse as to see the tail set on low down, and issuing abruptly from the rump. The old-fashioned dealers figged all horses indiscriminately, which was injudicious, for those who naturally carried a good tail came under the same suspicion as those who were "gingered" for the dealer's purpose. Hackneys were often called "cock-tails" from this circumstance, in contradistinction to those of the thorough-bred, who never carry any but a drooping-tail. A cocked-tail would be incompatible with a blood-quarter, yet in a generation some of whom yet survive, the detestable practice of "nicking," and even "rat-tailing," hunters of good blood, though not stainless, prevailed, so potent is fashion over common-sense and humanity.

Diseases and Unsoundness.—Satisfied with the tail in the strawed or tan-ride, he should next be mounted, and the trial be repeated on the pavement or road, for there are many cases of defect which do not show on soft ground, at a walking pace, or when the horse is unburdened. If he step away boldly, the toe in a direct line with the body, the knee fairly bent, and his foot up and planted firmly down again on the ground, fearlessly and flat, without any dropping of his head, you may conclude him sound in action. His hind legs, well lifted up and tucked well under him, should should follow his fore legs with regularity; and if in running him up hill he goes without dragging his toe, you may infer the same behind. In the gallop, if he takes up his legs quick and dashes in his haunches, not bringing his hind legs after him, his action is good. During this display of action, the examinant will have an opportunity of judging of the goodness of his wind; if he does not ride the animal himself, he should stand close to the horse at the moment he comes into the gallop. The thick-winded horse breathes with difficulty, and is soon distressed. The flanks heave much and rapidly; there is some little noise; but the laborious heaving of the flank is the principal indication. A horse unused to exercise, or if fat, or exercised on a full stomach, will show symptoms of thick wind; and it has been observed of great feeders who never breathe freely until they have gone a mile or two, or begin to sweat, that they are able to do more work than others that do not labour under the same difficulty.

"Wheezing" is a sound like an asthmatic person when a little hurried. Wheezing may frequently be heard while at rest in the stable.

"Whistling," or piping, is a shriller sound than wheezing, but it is only heard after exercise, and that of some continuance. A short gallop up hill is sometimes necessary to develop it, but the whistler is soon distressed. "Never buy a whistler, he cannot improve on your hand, and he is almost sure to get to worse," said Sir Henry Peyton to Nimrod; and the same advice may be given in respect of all these affections of the air passages.

"Roaring" is not heard when at rest. In the majority it is only developed by exertion, which quickens the breathing, and the noise is increased in proportion as the pace is accelerated; though in a few it is audible as soon as put into the trot. Knowing dealers, who wish to prevent the noise from reaching the ears of an inexperienced purchaser, when showing a "bull" of good action, start the horse a considerable distance before putting him to the gallop, and in returning, slacken the pace, so that the breathing becomes tranquil before the horse reaches the examiner; this is called "coming the long trot." Many of these lesions are consequences of inflamed lungs, or diseased alterations of the air passages, and most of them are modifications of the same disease. Sometimes they exist in so slight a degree as to be discoverable only by quick and long-continued exertion: but, when they are suspected, they should be tried by a brushing gallop, though this is not always allowed.

We next proceed to search for blemishes and those indications of unsoundness which are apparent to external examination, bearing in mind, any symptoms or suspicious appearances in his action, that may lead us to suspect particular parts, which should then be subjected to the severest scrutiny.

Any scars about the head should direct attention to the

knees, or they may lead one to suspect there may have been an attack of stumbling or staggers.

The neck should be searched to ascertain that both jugular veins are perfect. This is discovered by pressing on the lower part of the neck, with sufficient force to stop the return of blood from the head; if the vein be perfect, it will fill and swell from that point upwards towards the head. The loss of one of them, if recent, predisposes the horse to staggers or apoplexy, and he cannot be turned out to grass or straw yard without risk. The withers should be examined for bruises from the saddle, as he will be unserviceable as long as the inflammation or swelling continues.

The slightest tendency to sore back makes a horse unserviceable for many months, and not unfrequently causes him to rear and plunge on mounting.

The shoulders should be examined for tumours. If there are any marks of setons or blisters about the points, it is probable he has been treated for shoulder lameness, and the attention of the examiner will be directed to the foot; which, ninety-nine cases out of a hundred, is the seat of lameness forward. If that is found narrow, upright, and strong, with the heels high, we may suspect navicular disease.

The chest and breast should also be searched for marks of rowels, setons, and blisters, for the remains of them render it probable that the horse has been under treatment for inflamed lungs or chest affections, and should, in prudence, direct the purchaser to ascertain by a smart gallop whether the mischief is of a permanent nature.

The knees should be examined with the utmost care, first that they correspond in shape, and secondly, to ascertain whether the skin has been broken by falls; but it does not follow that a mark or scar indicates a stumbler, and an accidental blemish should not induce us at once to condemn a well-formed animal.

A broken knee may happen from a variety of causes. The safest horse may fall by an unavoidable accident, such as a false step, from something giving way under the foot, as a round stone, from fatigue and over-exertion, or from a bad rider. But a broken knee is a suspicious circumstance; it may be taken as an indication of existing or recent unsoundness, and the slightest mark calls for careful observation of every part of the horse, of his make and action, and suggests the narrowest scrutiny of the legs and feet. A tight shoe, a nail driven too close, or from bad shoeing; the toe being left too long, causes a horse to trip; tenderness in the feet, contraction, corns, and thrush: a scar on the head, above the eye, (for a forward fall of the horse leaves unmistakeable marks there) is a suspicious sign; when no trace of local disease can be found to account for them, the enquiry should be followed up into the horse's constitution, for the staggers or colic may have occasioned the accident.

When a scar on the knee is observed in connection with low withers, a thick and upright shoulder and pasterns, with the legs inclined under the bone, he is unwise who does not take the hint that the faulty formation has not produced its natural consequence. To discover the normal state of the knee is not so easy as some suppose, as occasionally the hair grows so well over the wound as to leave it hardly discernible; but on minute inspection, when there has been a scar, an interception of the gloss is apparent, as if the hair grew in an oblique direction; should this be observed on bending the joint, the secret will be exposed. The shank should be examined for splint, strained or enlarged flexors, and the marks of firing or blisters.

In inspecting the leg, the eye alone should not be trusted, particularly in hairy-legged horses; but after minutely comparing the appearance of the two limbs, the hand should be deliberately passed down both shanks before and behind; any difference before or behind, points to a deviation from health.

In the sound flat-limb, the tendon is well defined, perfectly distinct, and has a hard tense feel that resembles the touch of a cord tightly strung. If the back sinews feel thick, the flexor tendons and their sheaths swelled and rounded, leaving no distinctive marks as it were between the one and the other, but all swelled into one mass with the bone, great mischief has at some time happened; either some of the ligaments have been ruptured, or there has been inflammation, effusion, and adhesion of the synovial sheaths of the flexor tendons; or such relaxation has taken place from strain and subsequent inflammation as will always keep him weak. When the injury is recent, it is accompanied with more or less swelling, heat, and lameness; by time and treatment the first are removed, but the swelling remains and the thickening of the tendons shows the mischief that has been done. Whenever there is manifest alteration of structure here, and yet the animal is apparently sound in action, the purchaser should bear in mind that the soundness is often the effect of rest; and should the animal be again put to work, he will become lame. Bear in mind, in such case, you cannot return him, for no man in his senses would give a special warranty against it.

Splints.—These, if large, are visible in the deviation of the outline of the leg; if small, the hand discovers them.

Every excrescence on the cannon bone, in horseman's language, is termed a splint. The true splint is in fact a conversion into bone of a part of the cartilage connecting the large and small metacarpal bones. The inflammation is set up by concussion or strain. Horses are lame from them while there is inflammation in the cartilage, and the tumour is growing and distending the membrane covering the bone and cartilage. But when the tumour is formed, the inflammation has subsided, and the periosteum has accommodated itself to the enlargement, the horse is no longer lame, nor more likely to become lame from that splint, than one without; the same causes that produced the first, may produce a second.

The splint, if so large as to interfere with action, rendering the horse liable to strike, is objectionable, or so near the

knee or ligaments as to interfere with their freedom of action; otherwise it is of little consequence, beyond the blemish destroying the line of beauty. The worst splints are those discernible only by the lameness they produce.

Any marks of firing or blistering should make the purchaser cautious, and endeavour to ascertain the cause of the treatment: after blistering, the hair is sometimes a shade different in the colour, and stares a little, is shorter and bristly, and wants the natural gloss.

The fetlock joint, from being the principal seat of motion below the knee, and from its complicated structure, is particularly subject to injuries. The fetlocks should be subjected to the strictest examination for enlargements, which are best ascertained by carefully comparing them with each other, as any difference in size is indicative of strained or even ruptured ligaments, and consequently permanent weakness of that important part.

If the injury be recent, there probably will be heat and pain on pressure; and any signs of blistering or other treatment, though no enlargement or lameness is apparent, should induce the buyer to view the animal with increased suspicion.

Should there be any sores or callous places about the fetlocks or pasterns, he is a cutter, and possibly the marks of the foot may be visible. If there is no malformation to account for it, it may have been done when fatigued, or it may have arisen from improper shoeing; his feet should then be again examined.

If an old offender, he may probably have a peculiar shoe, rather thicker and narrower in the web on the inside than the outside, and nailed only on the outside of the foot, and round the toe; or the opposite shoe is found filed away or bevelled off, with the hoof projecting a little over the shoe. Where the feet, though well formed, are placed closer than desirable in narrow-chested horses, and therefore apt to cut, particularly when tired, we sometimes find a shoe which is thinner on the inside than the outside.

At other times various ingenious devices, calculated rather to increase than remedy the evil, have been resorted to; such as putting on shoes narrower on the inside of the foot, and the iron within the wall of the quarters reduced in thickness by the rasp. If none of these schemes have been resorted to, to obviate the defect, the horn of the opposite foot will sometimes be found polished by the attrition; for it is not the shoe that cuts once in a hundred times, but the hoof. In horses that interfere, we generally find the inside quarter lower than the outer, or the toes turned outwards—the fault being in the leg that receives the mischief while sustaining the weight, not in the foot that gives the blow. The tired horse throws his legs about, and frequently cuts himself; and it is a fault of most young uneducated horses, especially if they have been backed inconsiderately, or worked too early.

If there are any symptoms of "knucking over" or inclination of the fetlocks forward, serious injury has happened.

The Fetlock joint.—The hair above and below the fetlock joint should be carefully searched for the scars left by the operation of neurotomy. For the nature of this operation, see plate of "Horse's Foot" and article "Neurotomy" in Veterinary part. Pricking the fetlock, if you have reason to suspect it has been performed, will show whether sensation has been destroyed. About the fetlocks are frequently found little puffy tumours, absurdly denominated windgalls, from a supposition of farriers that they contain wind.

The Tendons.—Wherever parts move and press on each other, and between tendons, particularly about the extremities, there are placed vesicles, termed *bursæ mucosæ*, containing synovia, a lubricating fluid to prevent joint friction. When a horse has been compelled to undergo excessive exertion, an increased supply of synovia is secreted, which distends the sac; this sets up chronic inflammation of the synovial membrane—morbid secretion and visible enlargement follow. There are few horses that have done much work without these thickenings.

Though rest and pressure will diminish them, when once enlarged labour will reproduce them; they are of little consequence beyond the blemish, unless very large, and in most cases may be regarded as mere indications of hard work.

Ring-bone.—The pastern is the seat of a bony tumour termed ring-bone; it is the result of inflammation and partial conversion into bone of that portion of the cartilages of the foot which rises above and nearly encircled the coronet. These cartilages, extending backward considerably beyond the coffin bone, form the elastic frame of the posterior parts of the foot; they here take the name of the "lateral cartilages." When ossific inflammation is set up in this part, from its tendency to spread round the pastern joint it has taken its name of ring-bone. When, however, the ossification appears only at the quarters, it is termed "ossification of the lateral cartilages." It is discovered by their prominence and rigidity when pressed between the finger and thumb. Upon the soundness of these parts depend the elasticity and consequent usefulness of the foot. However trifling the apparent alteration of structure, it is a serious detraction from the efficiency of a hack; though, on soft ground, at a slow pace, the draught horse will work apparently sound. If in feeling first one leg and then the other we discover any difference between them, disease more or less is present; he may not be lame, but he is not clean upon his legs. Splints, windgalls, and ring-bones, may be present without occasioning lameness; but they are all unnatural, are considered blemishes, and are to be regarded with a suspicious eye, as either denoting past hard work, or betokening future evils. On the same principle, a horse may have a spavin, and be only stiff from it at starting, or he may have a curb, or a thorough pin, and be perfectly sound; but these are still blemishes, and as such detract from the intrinsic value of the animal.

The Foot.—We now arrive at the FOOT, the foundation of

the horse; too much attention cannot be paid to it. The best way of judging whether there is malformation of the feet, either natural or the result of disease, is to face the horse, and compare the two feet together.

The Hoof.—"No foot, no horse," is a trite but very true adage. First, we should look to the size of the hoof; a small foot is not only objectionable in itself, even though it be a natural formation, but is often a characteristic of disease. A small and upright hoof is a morbid structure. White hoofs are to be eyed with suspicion, for they are really weaker, and more liable to disease than black ones; and if a horse has one white, and the other dark coloured, and he is lame, in nine cases out of ten, it is the white hoof that is affected. Other considerations now engross our attention. Is it contracted? *i. e.*, is its circular form destroyed by narrowness at the heels? A good hoof is circular in the tread, or nearly so, measuring as much from side to side, as from toe to heel; but we frequently find those that are morbid measuring as much from toe to heel as twice the lateral diameter. See plate of Horse's Foot, figs. 3 and 4. On the other hand, the wall of the hoof, which should, at all times, be perfectly smooth and free from ridges (the contrary indicating disease), may be very oblique, in which case, it is not only circular, but spreads out, even to an abnormal degree, in the tread. Its wall should be round, smooth, level, and of a shining dark colour; full in front, of a proper obliquity, free from ribs or seams, and perfectly cool. Its proper obliquity is an angle of forty-five degrees with the plane of the shoe. If the angle is materially less, the sole is flat, or perhaps convex; if the angle exceeds it, the foot is contracted.

Shape.—When the outward line of the hoof is irregular, it marks what is called a "shelly foot." This is decidedly bad. If there are any protuberances or rings round it, they indicate that the feet have suffered from inflammation to such a degree as to produce unequal growth of horn. This frequently leaves injurious consequences in the internal parts; such as a deposition of lymph between the horny and cartilaginous processes which connect the foot and hoof together. If there be any depression or cavity, it betrays separation of the foot from the hoof and shrinking of the coffin bone; the sole will then be found bulging.

A superficial examination of the foot is not sufficient; the shape of the foot may be good, yet there are other things to be considered. It may be well formed, yet thin and weak; and those feet, externally the most perfect, are sometimes contracted internally, and liable to the insidious affection termed navicular disease. Contraction is a serious defect; it is apparent and general, or hidden and partial.

When apparent externally, which is common among high-bred horses, with light heads and necks, high in the withers with sloping shoulders, and that go near the ground, the foot presents an oblong rather than a circular shape; the curved line towards the heels becoming straight, and the heels approaching each other. The frog is hard, dry, and compressed; the foot small, and the heels upright; altogether the foot much resembles that of the mule.

Contraction.—But though a contracted foot is often an indicator of past disease, and there is a diminution of elasticity, it is not necessarily consequent that it is such unsoundness as incapacitates a horse from work. With care, such feet will work soundly to the end of life; for this change in shape has been effected by gradual and slow absorption and deposit; so that nature has had time to adapt the internal parts, and accommodate itself to the change, and elongation of the foot has taken place. When such feet feel hotter than ordinary, suspicion should be awakened, more especially if there is a marked difference between the temperature of one and the other. If there is indisputable pointing, then the horse is unsound.

Occult or partial contraction is not obvious externally, but there is diminished cavity of the horny box, from increase of the sole in thickness. In this case we usually find the foot of a circular figure, more upright than natural, and displaying an unusual appearance of compactness and strength, the soles unsually hard and thick; and if you have a firm unyielding sole, in a circular foot, it is dangerous as the forerunner of navicular disease.*

Sand-crack.—The inner quarters of the hoof must be most minutely inspected for sand-crack; and it is not always easy, without minute scrutiny, to detect sand-crack, where an attempt has been made to conceal it. A month's run in marshy ground will close it up; and low dealers, particularly at fairs and markets, and others who gain a livelihood by dealing in "screws," have a knack of neatly covering the crack with pitch, and oiling the foot to conceal the crack. Any oily appearance about the hoof should excite suspicion, and any fissure at all resembling sand-crack should cause the horse to be peremptorily rejected. Cracks indicate a dry and brittle hoof. The heels should be examined for any cracks, or appearance of heat and tenderness, as they are exceedingly troublesome to cure.

The Frog.—Thrush.—The healthy frog is firm, yet pliable and elastic. Should there be a faint smell, or if on squeezing the frog matter exudes, there is thrush. By many people thrush is considered of little importance; but when it is remembered that where there is purulent matter there must have been inflammation, and that when a horse with a thrush steps on a stone he frequently drops with the pain, to the peril of his rider and the ruin of his knees, it must be admitted it is a serious objection in a saddle horse. If it can be ascertained that it is not of long standing, or that the horse has been placed in a situation to favour its approach—such as confinement on hot, moist litter—it is of no more consequence than so much diminution in his price as will cover the expense of keep and attendance while

* See "Navicular Disease," in Veterinary Division, *post*, "Diseases of the Horse."

healing; but when thrush accompanies a foot smaller than usual, the heels bend in, and the frog is soft, he will not long remain sound.

The Sole.—The sole should be subject to close examination; in its healthy and natural state it is inclined to be concave, but if, in connection with high heels an extraordinary concavity is present, it is a sign of internal contraction. If the sole is unusually thick, and does not give way during exertion, the elasticity of the foot must be diminished. If the sole is less concave than natural, or approaching to flat, the foot is weak.

Undue Paring.—If the foot appears to have been lately cut unusually deep at the angle where the shoe meets the inside heel, or if there is a peculiarity of shoeing at that part, the examiner may infer that all is not right, and that he has corns; send for the farrier to remove the shoe.

Firing, Blistering, &c.—The stifle is very rarely diseased, but it should be examined for enlargement, or any marks of rowelling or blistering: and the groin should not be overlooked for rupture.

The Hock.—The hock is one of the most important joints in the animal machine, and should always undergo the most rigid examination previous to purchase, as from its complicated structure, and the work it has to perform, it is the seat of lameness behind in nine cases out of ten. When standing behind the horse, if one of the hocks is diseased, the observer will perceive the bone does not incline gradually, as in the sound limb, but there is an abrupt prominence. Though to the unpractised eye this is not always perceptible on comparing them, yet by passing the hand down the inside of both hocks, this abruptness will be felt. If there is any tenderness or heat on pressure, or the marks of recent cutting on the inside of the fetlock, or unequal wear of the shoes, especially at the toe, you may suspect spavin. Sometimes both hocks present an enlarged appearance, though there is neither heat, pain, or lameness (for hock lameness is frequently intermittent), such hocks should always be looked upon with suspicion. They are in fact unsound; for though the animal may, with natural malformation or morbid bone-growth, discharge his usual functions through life, in careful hands, without a return of lameness, yet the probability is he will fail, if called upon for unusual exertion, and one day's violent exertion may ruin him for ever. In this case, the examiner must be guided by circumstances; if the horse has excellences which counterbalance the defect, the price is correspondingly low, and the work required but moderate, he may be serviceable for years, and worth his money.

Certain forms of hock are prone to disease. Those approaching each other are predisposed to spavin and curb; those in which the point of the hock inclines too much backward, are liable to spavin; and when the hock is too upright, narrow, and straight, it is subject to thoroughpin. Capped hock is a soft fluctuating tumour on the point of the hock, it is an enlargement of one of the mucous sacs which surround the tendons inserted into that part. It is produced by blows, lying on rough stones, or kicking in the harness or stable. It is therefore frequently an indication of vice.

Curbs.—Curb is a longitudinal swelling at the back of the hind leg, three or four inches below the hock, seen best from the side; the enlargement is the result of a sudden strain of the ligaments, or inflammation of the sheaths of the tendon. It is attended with a good deal of lameness and swelling at first; but when that has subsided, and if time has elapsed without a recurrence of the lameness, it is of no more consequence than the unsightly blemish; but it should be remembered that curby hocks are liable to spavin.

Thoroughpin is situated above the hock joint, between the flexors of the hock and foot, projecting on each side; it is of the same nature as windgalls, being an enlarged mucous capsule, and is indicative of severe work or over-exertion.

Spavin.—Bog-spavin is a swelling situated in front of the hock, towards the inside of the joint; it is also an enlarged mucous capsule, but deeper seated, over which one of the subcutaneous veins passing, the blood in it becomes obstructed in the return, and thus increases the size of the tumour.

The shanks should be scrutinized for any symptoms of weakness, and the fetlocks for marks of cutting and windgall.

The Hind Feet.—The front of the hind feet should be examined for fissure; it is a most serious defect, and generally produces lameness. Notice the way in which he is shod, as it leads to the discovery of lameness and defects in action; in dealers' stables, however, you will rarely see any peculiarity in shoeing.

If the toe of the hind foot is found to extend a little over the shoe, it is to prevent "hammer and click" from being audible. If the toes of the hind feet drag, or we find the shoe squared off or worn, we may suspect disease of the hocks; and if the inside of the shoe is bevelled off, he is probably a "cutter."

The Spine.—He should now be "backed," to ascertain if he has received any injury of the spine; if he backs with difficulty, his hind quarters swaying from side to side, and when compelled to retrograde suddenly appears as if about to fall, he has received some injury. Some horses cannot be made to back, but when urged rear on their hind legs. His loins should be searched for marks of setons, or blisters. Among stable-men it is termed "chinked in the chine," or, ricked in the back.

A remarkable indication of diseased spine sometimes shows itself; the horse dropping when turned suddenly in the trot, the hinder quarters appearing paralyzed.

There are many blemishes and defects that render a hack unserviceable, which are of little or no consequence in harness. The greatest virtue in a gig horse is steadiness, which can only be ascertained by trial, and do not trust to the steadiness he evinces while the reins are in his owner's

hands. The author of that capital work, "The Adventures of a Gentleman in search of a Horse," truly says, "whoever buys a stanhope horse without first driving him himself, is a fit subject for a commission of lunacy; it is not enough to put him in the break, he should be harnessed at once to the stanhope, and it is prudent to observe how he bears the ceremony of harnessing, and what kind of a start he makes. Much may be predicted of his qualifications for draught, or at all events his familiarity with the collar, by the degree of quiet with which he allows himself to be put to. If the ostler runs alongside of him at setting off, as is often the case, you may be sure the horse is distrusted; if you distrust it yourself, have nothing to do with him."

The Eyes.—The examination thus far completed, the horse should be returned to the stable for the purpose of examining his eyes, the most favourable position for which is about half a foot within the stable door. There should be no back or side lights, or the rays falling between the eyes of the examiner and those of the animal will interfere with distinct observation. The head should be so placed that a moderate light may fall on the eye of the horse, and the quantity of light can be easily regulated by bringing the horse's head more or less forward, until placed in the most favourable angle of incidence.

Though any one may detect absolute blindness, yet the eye of the horse is susceptible of so many diseases, in which defective vision or partial blindness is present long before the sight is lost, that it requires more observation than most people imagine: indeed, a person unacquainted with the structure of the eye, and the different appearances it assumes, will not perceive it at all. There are certain forms of the eye, and structural peculiarities, that show a constitutional predisposition to disease. Small sleepy eyes, of a bluish gray colour, or which have a flat, retracted, and sunken appearance, or those of a longish oval figure, are predisposed to ophthalmia. When the eyes appear full, with a fleshy circle round them, these are symptoms of bad eyes, and often the forerunners of blindness, particularly in the heads of coarse and fleshy horses, with heavy countenances, who frequently go blind with cataract at seven years old. Slight thickenings of the lid, or puckering towards the inner corner of the eye, a difference in size, a cloudiness or dullness of the iris, are indications of disease.

In examining the eyes, both must have an equal degree of light; should any difference be apparent between them, one is diseased. The transparent cornea should be, as its name implies, perfectly clear.

Specks are best detected by standing at the shoulder; if one is evident, and it can be clearly proved to be no more than the effect of accident, no importance need be attached to it. But it is impossible to ascertain this, and therefore the safest course is to assume that natural irritability and consequent inflammation of the eye is the cause.

Specks on the transparent cornea are generally the result of external injury; there is seldom more than one. When very small and near the circumference, they are of little consequence; but if large, or near the centre, they interfere with distinctness of vision, and make the horse shy. If opaque or milky lines are traced on its surface, it indicates the remains of former inflammation.

But it is necessary to observe that horses, before they are six years old, have not that transparency in their eyes which they display afterwards, because while young and growing the vessels of the eye are full, therefore before that age it is not the brilliancy of the eye that denotes its goodness. If there is excess of tears, it denotes debility, and should occasion a more than ordinary scrutiny; in fact, all horses with weeping, dull, cloudy eyes, should be rejected.

It may be remarked, as a general rule, that diseases of the eye are incurable. Have nothing to do with a horse when the trace of disease of the eye is visible. It is impossible, in a brief examination, to distinguish between simple ophthalmia and inflammation of the conjunctiva—the cause of which may have been a blow, or the introduction of some irritating matter, which is curable by simple means—and the specific ophthalmia, a spontaneous affection, which ultimately culminates in cataract and blindness.

Viewed in front, the depths of the eye should be looked into; then sideways; which will assist in ascertaining the clearness and absence of specks on or within its surface.

Floating in the aqueous humour (which preserves the convexity of the cornea) is the iris, a muscular membrane the dilatation and contraction of which form an oval aperture termed the pupil, which varies in size according to the quantity of light which falls upon the eye. The iris varies very little in colour in the horse, though it bears some analogy to the colour of the skin. It is rarely lighter than a hazel, or darker than a brown; except in milk white, cream coloured, or pied horses, when it is white, and they are termed wall-eyed. If it is of a pale variegated cinnamon colour, it is good. The pupil or aperture of the iris, is that horizontal oblong bluish opening, which admits the light to the posterior chambers of the eye. It is important that the oval shape of the pupil be perfect, for if any irregularity or unevenness is perceived, it is a symptom that the organ has received partial injury. In looking into the depths of the eye, through the pupil, in a strong light, it should exhibit a lively bluishness; in a moderate light it should be perfectly transparent; if milky or turbid, that is the remanet of former inflammation, which will probably recur.

In bringing the horse out of the stable to the light, if the pupil is large, it is a bad sign; by alternately shading and admitting light, if it enlarges and lessens under its stimulus, the eye is good. But if the retina is immoveable, the pupil large, and of an invariable size, whether shaded or exposed to intense light,—though no disorganisation is apparent, the eye appearing bright, of a peculiar glossy aspect, and of a greenish colour,—the animal is blind from the disease termed "glass eye," *i.e.*, palsy of the optic nerve.

A decided cataract, or opacity of the crystalline lens, is

easily detected; but when very small it may escape observation. It appears as a cloudy or pearly white substance within the pupil, towards the bottom of the eye. If the pupil be round instead of a flat oval, it is an indication of cataract. When there is deep-seated cloudiness, the eye should be condemned; but if there is any white object before it, such as a white hat, neckcloth, waistcoat, or wall, the reflection on the cornea produces a mark having so much the appearance of a cataract as to have misled many an observer. Therefore, before deciding, hold the crown of a black hat against the eye, and observe at the same time if the mark disappears, which it will if it is only a reflection.

"Harry Hieover" says, upon the subject of defective sight, "I consider the eyes to be a part of the anatomy the most difficult for the non-professional to become competent judges of; and any disorder of those delicate organs in the horse is, generally speaking, of a more fatal nature to him than the same affliction is to the human being. This arises from several causes: among them are the following:—We can ask the horse no questions; consequently, if his eyes become diseased, we can only judge of the extent of the disease by the appearance of the organs themselves, and by the acts of the animal. If he runs his head against the stable-door instead of walking into it, we are made aware that he is blind, or very nearly so. If he bucks, or starts at things he sees on the road—for instance, a small pool of water, a stone, piece of white paper, &c.—we may fairly judge his eyes are more or less affected (even should their appearance be healthy); for, it must be observed, there is a wide difference between a horse shying at carriages, or at common objects on the road, or by its side, and starting at things he suddenly comes on at his feet. Many horses, in the first case, shy or start from timidity, and this grows into a habit When they do this, it will be found, that long before they actually come upon the object, they will prick up their ears, slacken their pace, veer a little from the object, and, by various acts, show us they are getting alarmed. They may be more or less so as they approach the object, depending on its nature, and whether, on nearing it, they find it one of terror or the reverse. The evincing fear when at a distance (from whatever cause it may arise) shows us, however, at once that they *see it*. Whether their alarm arises from confused sight or natural timidity on seeing any unusual object, we can only judge by the nature of the object creating alarm.

"The horse starting or bucking at objects when nearly under his feet is all but an infallible symptom of bad sight; for it shows that till actually on the object he did not *see it at all:* and if it should be a pool of water, or a stone, or some such trifle, it would further show that, when close to it, he was either a greater fool than horses usually are, or that he could not distinguish clearly enough to see whether it was an object of alarm or otherwise. It is only by attention to these acts on the part of the horse that we are enabled to judge of the correctness of his sight; that is, before their *appearance* demonstrates disease. The human being can complain, if he finds his vision defective; the horse cannot: and this accounts for the numbers of horses that are at this moment going with defective eyes, without their owners knowing or suspecting anything of the matter.

"Nearly all the diseases of the horse either arise from or are attended with inflammation to a very considerable extent. There are operations performed on the human eye with good effect, that, supposing they could be performed on the horse, would produce inflammation to a degree that would render the remedy, or rather the attempted remedy, an aggravation of the disease.

"Nothing is more deceptive to the casual observer than the first look at a horse's eyes. I have frequently been surprised at the very cursory glance dealers give them. It is true, that in a general way a fine healthy eye speaks for itself; such a looking eye does not, however, *always* speak the truth. A fine, very dark, clear pupil, and a fine darkish brown or hazel iris is very handsome—in fact, a great beauty in a horse—and such looking eyes are, perhaps, mostly sound ones; but such appearances are by no means proofs. I have seen dealers walk up to such eyes, just look at them, and say "they're *good* enough;" when the fact is, they might be quite *bad* enough: for though, on looking at eyes in this hasty way, an experienced judge would not, probably, buy a half-blind horse, still there are little defects that even the professional man will not be able to detect in the glare of open day.

"Slight temporary inflammation, if known to proceed from great excitement of the system, though it would quite warrant an examiner in rejecting a horse brought to him in such a state, need not cause the purchaser to decline him altogether, if, in a few days, the eyes became healthy; but I certainly would not make the purchase till they were so; and even then, only on ascertaining that the disease had not been one to which the animal had been subject before.

"Of course, in this disorder, as in many others, a great deal would depend on the value of the horse, and the purpose for which he is intended. If buying a horse as a wheeler to a coach, you might do so, though having suspicion of his sight being good, or likely to last so; because, if he went stone blind, it would only deteriorate his value a few pounds, and, with a little attention on the part of the horse-keeper and coachman, his utility would be but little diminished. A horse of great beauty, and with very splendid action, would, of course, be much diminished in value to sell again if bought for a nobleman's carriage, and his eyes failed him: still, he would be valuable for such a purpose: but, if a hunter got so afflicted, it would bring him down from two hundred to thirty or forty, indeed, to still less, unless he had harness action, which few hunters have: in fact, for the purpose of a hunter, he might as well break his neck as become in any way defective in his sight."

The reader who has carefully perused these minute directions, first, for the general examination, as buyer, of the

animal he desires to possess,—and, secondly, for the more frequent causes of unsoundness, will thank us for the following summary recapitulation, by Professor Stewart, of the points to be attended to :—

"*The head.*—For the eyes ; for cataract, glass-eyes, and specks. The nostrils ; for glanders, tumours, and cold. The glands between the branches of the lower jaw ; for enlargement. The throat ; for mark of crib-biting strap, and the tenderness which accompanies cold. The teeth ; for the age, and marks of crib-biting. The veins of the neck ; to see that both are entire.

"*The fore-leg and shoulder.*—The seat of the collar ; for tumours. The point of the elbow ; for tumours. The knee ; for blemishes and stiffness of that joint. The shank ; for speedy-cut, splint, and strain. The fetlock-joint ; for enlargement, windgalls, neurotomy, stringhalt, and marks of cutting. The pastern ; for ring-bone.

"*The foot.*—For side-bones ; sandcrack, contraction, thrush, corns, and flatsoles. The shoe ; for signs of cutting.

"*The trunk quarters.*—Each side of the chest ; for marks of blisters and rowels. The space between the fore-legs ; for the same. The stifle ; for enlargement. The groin ; for rupture.

"*The hock.*—For capped hock, thorough-pin, bone-spavin, and bog spavin (not blood spavin). Then the horse should be mounted, and ridden a few hundred yards at a gallop, in order to quicken his breathing, and thereby display the presence or absence of roaring, thick-wind, or broken-wind."

This brief summary will assist the memory, bringing, as it does, the seat and causes of unsoundness into one point of view. It includes, however, some *objectionables*, which, properly speaking, do not constitute unsoundness ; such as windgalls, thorough-pin, capped hock, and string-halt. The first two are objectionable, indicating that the horse has been severely exerted, and may be otherwise more seriously injured. The two last are eyesores, and to be avoided as such.

We will remark on a few of the points here specified, which relate to fraud and warranty. The eye is a point difficult to decide upon, and often a subject for fraud, particularly amongst the lower order of dealers, who used formerly to have very bright *white* walls, against which they showed their horses, when the reflection concealed cataracts, which are in themselves white. But this important organ is difficult to judge of even in its healthy state, by reason of the varieties in its organisation ; and still more so to detect the extent of disease which may have, at some time or another, attached to it. Even the best judges of horseflesh have purchased horses without having detected deeply-seated cataracts, which shows the necessity of caution ; and the best security is the inspection of a professional man, who is alone equal to form a correct opinion on the subject, which will be at once apparent on perusal of Mr. Percival's lecture, "On the Eye," Part III., p. 131.

The foot is now so generally understood, that it may be needless to say more than to remind the buyer of the proverb—"No foot, no horse." "The hock" is the most complicated, therefore most difficult, joint for the uninitiated to form a judgment upon. It is not in every person's power to detect the absolute presence of disease in this part, still more so to foretell the probability of it in future ; but there is a certain conformation of this joint which almost ensures disease, and consequently it should be most minutely examined as to its shape, substance, &c.

Broken wind is easily discoverable ; and it is only amongst the most disreputable of the fraternity that it is ever attempted to be concealed, which can be done for a few hours, by administering a certain quantity of lead, which, by its pressure, checks the violent action of the abdominal muscles, or what is called heaving of the flanks. But "roaring," "wheezing," and "thick wind," are by no means always discoverable in a common trial of a horse, such as a dealer is disposed to give, on a good sound road. Nothing but a gallop over soft ground, or against a hill, can be depended upon in certain stages and degrees of either of these complaints.

Your examination having proved satisfactory, you decide on purchasing ; but before you part with your money, pray learn something of the seller. For should your bargain not turn out as you expected, upon further acquaintance, trial, and second examination, you will be aware what chance of satisfaction or redress you have against the vendor.

The horse, if returned, must of course be in the same condition in which he was received, except so far as the disease for which he is returned may have progressed in the mean time.

It is advisable to inquire of the seller how he has been accustomed to diet and clothe the animal ; whether his feet were stopped ; and the same treatment should be pursued till his soundness is ascertained.

Note the temperature of the stable ; if his new habitation should be hotter, you may probably induce an inflammatory attack of the lungs.

Beware of putting a saddle on a new horse that does not fit him. While the question of soundness is still doubtful, it is far better to use the saddle he has been accustomed to, for if his back becomes galled while trying him, which is not unusual, the dealer will object to take him back unless full compensation is made ; and reasonably so, for he is unfitted for sale or for work till it is healed, which is not to be effected in a day. It is also a point for calculation, whether he may not chance to fall sick while standing in high condition in stable—in which case the dealer is subjected to loss.

As we intend to devote a chapter specially to UNSOUNDNESS AND WARRANTY, with the leading ancillary points in law and practice, we shall here break off, as we commenced, with a few general observations.

The horse trade, as now conducted in London, or we may

rather say in these days of facile and rapid railway communication throughout England, is a business in which as much capital, skill, and activity are embarked, as in any other trade of this great commercial country. Agents from all the great London dealers' establishments are constantly travelling through the breeding districts, and competing with the country dealers for every good-looking horse reared, as soon as it has completed its fourth year. To breed a well-bred colt, break it, and maintain it until it is four years old, cannot cost less than £60. Before the animal sold at a fair for that sum reaches the London dealer's stable it has to pass through the hands of one or two agents or intermediate dealers, who all require a profit on its sale; its travelling expenses and its keep must be paid for; losses from accident and sickness must be provided against; and the maintenance of the London dealer's establishment, and his fair profit, must be duly considered. It is not, therefore, easy to see how a colt bought at Horncastle or Rugeley for £60 can be sold to a customer in London much under £100. But if the colt be extraordinarily handsome, or if it possess remarkably good action, the breeder will be much more likely to require £100 than £60 for it; and the buyer, knowing his business well, will have no objection to pay that sum—being well aware that for extraordinary beauty and action almost any price demanded can be obtained in the London and foreign markets. For first-rate saddle-horses, able to carry high weights, from £150 to £200 are every-day prices; and the large bay and brown carriage horses used for first-class equipages are, when well-bred and well-actioned, more valuable still. Ladies' horses cost from £80 to £100, according to the weight of the rider and the training the animal has received; brougham-horses, from £100 to £120; and light harness-horses for broughams and sociables, from £160 to £200 the pair. Inferior horses may, of course, be bought at inferior prices, but the first-rate dealer in first-rate animals will ask and get the sums we have named.

Lord William Lennox, a good practical writer, sets his figures on a much lower scale: and we can safely indorse them as nearer the mark than those in the last paragraph. His lordship says—

"In setting out to purchase a horse, it would be as well to resolve on a fixed price, from which you must resolve not to deviate *easily*. The following I should say would about fit.

"A hunter of the best description (counting the circumstance of its being in a dealer's possession), say,	£150. [The odd fifty more or less, as the horse seems worth it.]
"A hack, strong and likely (counting, &c.),	£40 to £60. [But give no more. You can always get good ones at that price.]
"A general (when I say general, I mean a horse that would be fit to take the field or harness when required),	£60 to £80. [This is as nearly as we can guess about the price, though it may be advisable to give a little more or a little less.]

Remember, too, to have clearly in your mind the sort of horse you want. And never forget that every horse is adapted to some particular purpose; for horses not only differ in kind, but, like men, in courage, temper, intelligence, stamina, &c.; and the selection of them, in regard to these particulars, constitutes the most arduous and nicest duties of the buyer. He should be able readily to acknowledge good or bad conformation; trace breeding in the outline, and discover what indicates good or bad in instinctive or in constitutional qualities.

It requires some experience, but more attentive observation, to be what is termed a "judge" in horse-phraseology. To know at once, almost by a cast of the eye, whether the nag is likely to suit. Is he cut out for a hackney, or is he calculated for harness? Does he look like a hunter, or has he serviceable stoutness, a quiet eye, and look likely for the road? Does he show blood, or is he all over a "cross bred 'un?"

Some persons, though accustomed to horses all their lives, and anxious to become judges, never can select from appearances; while those differently gifted can swear to a good one, to a considerable extent, the instant they behold him. And the questions that suggest themselves to a judge on purchasing the first description of horse, are,—if he can ride him? if he will not prove too much for him? if he will be sufficiently under his control with hounds? if his energetic disposition will suffer the trammels of harness?

There is an observation, common among horsemen, that it is all nonsense about the make and shape of horses; for, say they, "the best horse I ever possessed was the worst shaped;" but, on inquiry, you will and must find, that he possessed in a great degree the will and the power—they must accompany each other—the one is of little use without the other. What avails it if he is willing without the power, or if he has the power and is not willing? If it were possible to mould a horse in perfectly symmetrical form, in every way formed for speed,—still, without that great essential, that peculiar nervous excitability, he would at best prove but an indifferent animal. Remember, therefore, that, however important a good judgment of the outward indications of qualities may be, what he will prove in continuous exercise is more than the most skilful and experienced can fairly pronounce. Those who do are presumptuous or dishonest pretenders to a knowledge not attainable. Appearances are so deceitful, that those most skilful in the subject will find themselves occasionally mistaken, and, even after the best advice, much must be left to the operation of chance.

If you can answer the questions submitted in this chapter to your own satisfaction, buy a horse for yourself. If you cannot, and distrust your own opinion, get some more experienced horseman to look over the animal you desire to purchase, before you part with your cash.

In the next chapter we will, as connected with the subject in hand, take a look into THE HORSE'S MOUTH for indications of his age.

CHAPTER X

THE AGE OF THE HORSE FROM HIS MOUTH.—PRELIMINARY REMARKS: TRICKS OF DEALERS: THE STRUCTURE OF THE TEETH: THE INDICATIONS OF AGE: THE TEETH AT BIRTH: AT SIX TO SEVEN MONTHS: FROM ONE YEAR TO TWENTY YEARS: IN EXTREME OLD AGE. CONCLUSION.

The knowledge that the teeth of the horse indicate the age of the animal seems to be a part of the transmitted "wisdom of our ancestors," and as an axiom is certainly not controverted by modern research. Common observation of the natural mouth tells us that the colt of two years and a half old, or thereabout, will be putting up his two permanent incisor teeth of the upper and lower jaw, indicating his becoming three years old; and between three and four the two adjoining teeth in each jaw; and between four and five the two last, or corner teeth, in each jaw; and the tusks appear between four and five: but there are variations from this general rule, and we must not hastily conclude in this, any more than most other branches of human knowledge, that infallible and exceptionless rules can be laid down, and unerring accuracy attained. There is no magic spell, except in puerile romance, by which nature's mysteries can be commanded; "her ways are regular, but they are not uniform—her laws are fixed, but they cannot be defined by rule and compass. The veterinary practitioner knows, from repeated trials and long experience, that the teeth of the horse are a worthy study; he feels that their indications, attentively read, will seldom mislead him; but he does not regard them with a reverence resembling that originating from an antiquated superstition, or look on them as the exemplification of a principal which admits of no exceptions." *

In the generality of common bred stock, foaled between the beginning of April and the end of June—that are living pretty much in a state of nature, on succulent food, to the end of three years old before they are handled—a considerable uniformity in the approach of their permanent teeth, and the age in general may be told without contradiction. But man, for his own ends and purposes, has used such artificial means in the rearing and treatment of the young horse, that he has in a manner subverted nature's laws in this particular; and it is not an uncommon occurrence to see a two, three, and four years old colt, showing a three, four, or five years old mouth; that is, the teeth indicating those particular ages will be up, and nearly matured, a full year before nature seems to ordain they should be. This may be seen in three parts of the young horses brought into the market in the spring of the year, as four and five years old, which are in reality only three and four. This deception is accomplished by pulling out the sucking-teeth at an early period. The mouth thus altered is comparatively easier of detection than the one which has obtained this forward appearance in its natural development.

The case is different in racing, or thorough-bred stock, inasmuch to some the object would appear of more advantage to make them, if possible, appear even younger than they really are. But "query," are not the peculiarities of nature so much altered in these young animals, by the early period in which they are foaled, the manner in which they are fed, and the early age at which they are broke and trained, as to occasion them to be more early matured in their general organization, and consequently their teeth to appear at a much earlier period (in many instances in colts) than if bred as common stock? Examples of this forward growth of the teeth have occurred, whereby the age might be doubted. We have also seen the reverse of this, though a rare occurrence, where the colt had arrived at the age of three, and not moved a tooth. These variations are commonly considered the result of early or late foaling, but as likely to occur from peculiarity of constitution.

The horse, as noted in natural history, *ante*, pp. 9—11, has twelve incisors or nipping teeth in the upper and lower jaws, opposed $\frac{6}{6}$; four tushes or tearing teeth, placed $\frac{1}{1}$, $\frac{1}{1}$, on each side of the cutting teeth; and six molars or grinding teeth, in the branch of each jaw above and below. The mare not having the tushes or canine teeth has but thirty-six, while the full-mouthed horse has forty. A reference to the coloured maps, I. and II., entitled "THE AGES OF THE HORSE" (Anatomy Plates III. and IV.) will, we trust, give a clear idea of the progress, perfection, and decay of the dental system of the horse, and thus furnish a chart for the guidance of the reader to a true decision on that oft-debated point, the age of the horse, should such question come before him in his own interest or as a referee.

In ordinary cases, the teeth will be found a sufficient criterion of the animal's age, if examined by one who can properly read their criteria. There is a prevalent notion about, that dealers can make horses appear of any age that

* Mayhew on the Horse's Mouth, p. 3.

is desired by torturing their mouths, and this idle belief is fostered by those who pretend to extraordinary acuteness in discovering and exposing the "tricks of horsedealing." We have several of these catch-pennies now before us, in the guise of "Confessions of a Coper," "The Mysteries of Horse-chaunting," "A Guide to the Horsebuyer, with Exposures of the Tricks of Dealers," &c., &c., and such-like taking titles. They are, we need scarcely say, as rank impositions on the credulous purchaser as the swindles they pretend to expose.

Mr. Mayhew sensibly says, upon this point, and gives in an after part of his book full practical proof of "speaking as one having authority,"* that the credulity of the public in this matter of the teeth has no foundation. "A colt cannot be made by any barbarity to look like a horse, nor a horse be made to exhibit the mouth of a colt. That attempts are made to disguise the teeth, and that such attempts occasionally impose upon the buyer, is not denied; but all of such practices are shallow in the extreme, and so easily detected, that the person deceived by them is not an object of pity. If people will presume to judge before they have learnt to recognize, their temerity is more to be blamed than its consequence is to be commiserated. No one goes to buy a horse unwarned of the dangers that will surround him; and if in his conceit he rather prefers to hazard these than to seek protection, what right has he to murmur at a result which it needed no conjuror to foretel? Is there any market in the world where ignorance is secure from imposition? The world is not yet so honest that the affairs of the horse-mart are a subject worthy of its special wonder; and it may be doubted if the principles which regulate the conduct of the horse-dealer, are not those which influence the transactions of the most honourable traders. There are men of the highest character living by the sale of horses; and it is creditable to humanity that, after all of a certain class have been unscrupulously stigmatized and openly reproached, there may still among its members be found beings preserving honour for the sake of itself alone. The liberal public, however, in its wisdom, has pronounced the character of the horse-dealer; it has rejected his attestations, and refused to listen to the testimony of those with whom he has communication. The age of a horse is not taken from the mouth of its owner, but looked for in that of the animal. This mode of procedure is convenient—the record is at hand, the evidence brief, and the decision to which it leads is that to which the purchaser by choice appeals. The dealer stands by and knows that his voice is to be restrained. The teeth denote the age, and when the word of the owner is not to be accepted, there is no other evidence at hand. Were additional proof to be required, in some instances it could not be procured, and in the majority its production would be attended with an expense perhaps equal to the price of the horse which it concerned. The expense, the seller of course could not be expected to bear, and the buyer equally would resist its infliction. Nothing is more high priced than absolute proof of any kind; and there is always a further difficulty in the difference of opinion which prevails, as to what constitutes absolute proof. A cursory glance at the matter is enough to convince us, that the custom of inspecting the teeth of the horse to ascertain the age of the animal, is one which has had its origin in necessity. Experience has taught that the mouth of the horse affords the most satisfactory evidence, and the author's investigations on this subject have convinced him that the public need require no better or more conclusive testimony."

With these preliminary remarks we shall proceed to a description of the teeth—their structure, growth, and changes, as auxiliary to the determining of the age of the animal by their inspection.

THE STRUCTURE OF THE TEETH.

Each tooth is divided into three parts for the purpose of description, the *crown* or *table*, which is its upper surface, the *neck*, which is the part surmounted by gum, and where it usually begins to diminish in size, and the *fang*, or root, which is the part out of sight in the alveolar cavity.

The teeth are contained in the upper and lower jawbones (or maxillaries), in small bony cups or holes, each tooth being contained in a separate cavity, called collectively alveolar cavities; and in the molars, where there are more than one fang, each root has its separate cup, with bony matter intervening between itself and other fangs.

The teeth are organised bodies; as is shown by the absorption of their substance, in case of the roots of the temporary teeth; their sensibility to pain upon application of extreme heat, cold, or strong acids; their growth and changes of form; and their resistance of decay, while possessed of vitality. They possess, for their supply and sustainment, arteries, veins, and nerves.

The teeth are built up of three distinct substances, distinguishable from each other by the naked eye, and differing materially in density, hardness, and composition. They are known as the ivory, the enamel, and the crusta petrosa (or stony crust).

The *ivory* (called *bony* or *horny* substance, by old writers), constitutes the larger portion of the bulk of each tooth, and has numerous small pores or cavities. Like the small canals in the substance of bones they seem to contain some colourless fluid, which nourishes or maintains the part in which they are situated. The ivory is by no means so close and hard as the next noticed substance, the enamel. In MAP II. the delineations of the tables of an upper and lower molar will give a clear idea of the arrangement of these two substances. The dark parts there delineated show the ivory of which the

* The reader who would go farther into the subject of the "Tricks of Dealers," is referred to pages 123 to 138 of Mr. Edward Mayhew's volume "The Horse's Mouth," published by Messrs. Fores. He will there see an exposure of the wretched trash of these pretended guardians of the public, against frauds that exist chiefly in the scribblers' own practice.

body of the tooth is composed, the lighter convoluted lines, the enamel. In the "COLT'S INCISOR," back view, in the same plate, the enamel is shown, with the ivory sunk in the centre, in a cavity called the infundibulum (funnel, or pit). It is lined with enamel, and presents ivory filling up to the table of the tooth.

The second substance, the *enamel*, is so close, hard, and homogeneous, as to seem without animal matter. It is thin, white, and somewhat transparent, and so hard that it will strike fire with steel, like flint.

The third substance is the *crusta petrosa* or stony coat. This forms the outer covering of the tooth, and having a dirty-yellowish or dark appearance, was mistaken by ignorant farriers for a deposit of tartar, or "fur." It contains a great proportion of animal substance, and, under the microscope, is full of small vessels or tubes. It is plentiful in the alveolar cavities, and is there yellowish-white; but when at the neck of the tooth, above the gum, it becomes exposed to the chemical action of the air, the animal juices, and the food, it receives a dark stain, and looks like an accumulation of tartar. The crusta petrosa will be found filling up the pits (infundibula) of the grinding teeth of the upper jaw, and lining the top cavity of the incisors. It is full of vessels for nutriment and increase. Let us now consider the use of these three structures of the teeth, of various densities, cutting capabilities, and power to resist friction.

The outer coat, or crusta petrosa, which at first covers the tooth, is soon rubbed away from the greater part of the sides, so as to show the enamel. It is not reproduced there, but remains round the neck of the tooth, and appears to enact a part within the alveolar cavity, in which the fang or base of the tooth is situate. It is with the ivory and enamel, however, which build up the substance of the tooth, we have most to do.

Upon the ivory, and its wear in relation to the enamel, depends the great criterion, the presence, in a greater or less degree, or the absence of "the mark in the mouth." The ivory in the molars will be found generally nearly on a level with cutting ridges of enamel, in spite of the greater attrition which the substance forming the larger portion of the surface of the table must receive. There is, however, sufficient projection of the enamel ridges to enable you to feel that the latter material is the great resisting power, and saves the destruction of the ivory by the grinding wear, to which, but for such support, it would be inevitably exposed.

THE MAPS OF THE MOUTH DESCRIBED.

MAP I., FROM BIRTH TO FIVE YEARS OLD.

We will next proceed to give a description of the two coloured maps entitled "THE AGES OF THE HORSE."

At Birth.—Many months, at least seven, before the foal is produced the germs of the teeth are visible in the cavities of the jaws of the fœtus, as small bags of jelly-like consistence. As these grow they harden and press towards the surface of the gum, forcing their way through it; so that, about the time of birth, three of the grinding teeth are discoverable in each jaw; and generally two front cutting teeth, in the colt called *nippers*, which are placed almost laterally (see figure), and are remarkably large in comparison with the size of the animal. In a less developed colt the nippers will present themselves as in our drawing, at the end of a week or nine days. In the next two months, two more cutting teeth in each jaw, above and below, will bring the number up to eight. And now the jaws having widened, as is seen more fully in our second figure (six to seven months), the two nippers, which filled all the forepart of the narrow jaw, will have taken their proper places in front of the mouth. They will now begin to wear a little, and the outer edge, which was raised and sharp, will be brought on a level with the inner edge. The mouth, too, will alter little now until it forms as in our second figure, when yet two more nippers begin to be felt, and then seen, making up six below, and a like number above—thus filling up the "*colt's mouth*," as shown in the third drawing, inside and outside being figured. The name of "nipper" is peculiarly applicable to the front teeth of a colt's mouth. Those of *incisor* or *cutter*, adopted by professionals and anatomists, do not so well convey the idea of their action. The twitch of the head in the act of browzing or grazing is rather the act of "nipping," and partly snatching, than merely *cutting* off.

It may be noted at the seventh or eighth month, that though the corner milk teeth are up, their edges do not meet, except at the front corners. This may be seen by our drawing, where the two outer teeth are remarkably low to the gum at the hinder part, towards the gape.

One Year old.—Here we see the four middle teeth level, and the two outer ones becoming so. The mark in the middle teeth is wider and fainter; in the two next it is somewhat darker, longer, and narrower. By this time two pairs of the permanent teeth, the fourth molars, have made their appearance. A yearling has, therefore, twelve incisors and sixteen molars, or twenty-eight teeth in all. Of the molars we may here remark that they offer little guide as to the age of the animal. Indeed, it is not easy to get a fair look at them; yet a few particulars are good to be known. They are covered outside with enamel, but not at the top, though several pieces are incorporated, if we may so term it, in the substance of their ivory—not being infundibula or pits as in the incisors, but forming grinding edges of irregular form in the face of the table (see MOLARS, Map II.). The grinders in the lower jaw (see Plate) are much smaller in surface than those of the upper. The wisdom of this provision is evident. The upper molar is fixed, the lower is movable by the lateral grinding motion of the lower jaw. Hence it is passed over the larger surface in the act of triturating the food; the peculiar action of the horse's jaw in this operation is open to the most superficial observer.

Two Years old.—About two years old a fifth grinder is out. The incisors in forward animals show considerable wear. Some care is required now, for the "milk-teeth" are very like the "horse-teeth" at five years old. The teeth only are now being spoken of; for of course the colt is not "furnished" to the horseman's eye. And now an important process is about to begin.

The first teeth were adapted to the size and wants of the young animal; and sufficiently large to occupy and to fill the colt's jaws; but when the jaws expand with the increasing growth of the animal, another and larger set is required. Evident provision is made for these, even before the colt is foaled. In cavities in the jaw, beneath the first and temporary teeth, are to be seen the rudiments of a second and permanent set. These gradually increase, some with greater rapidity than others, and, pressing upon the roots or fangs of the first teeth, the consequence of this pressure is, not that the first teeth are forced out, but the portion pressed upon gradually disappears; it is absorbed—taken up, and carried away, by numerous little vessels, whose office it is to get rid of the worn-out or useless parts of the system. This absorption continues to proceed as the second teeth grow and press upon their predecessors, until the whole of the fang is gone, and the crown of the tooth, or that part of it which was above the gum, having no longer firm hold, drops out, and the second teeth appear, larger and stronger, and permanent. In a few instances, however, the second teeth do not rise immediately under the temporary or milk teeth, but somewhat by their side, and then, instead of this gradual process of absorption and disappearance from the point of the root upwards, the root being compressed sideways, diminishes throughout its whole bulk; the crown of the tooth diminishes with the root; and the whole is pushed out of its place, to the forepart of the first grinder, and remains for a considerable time, under the name of a wolf's tooth; causing swelling and soreness of the gums, and frequently wounding the cheeks. These would be gradually quite absorbed, but the process might be slow and the annoyance would be great; therefore it is proper to get rid of these diminutive teeth, either by punching them out, or drawing them as soon as they are perceived.

Three Years old.—At three years old the two centre horse-teeth are so defined in their appearance, indeed so well-grown as to be unmistakeable. The superior length and squareness over the colt or milk teeth (see Two Years Old) is manifest; outside, too, they are darker in colour, the new coating of the stony covering (*crusta petrosa*) being only partially removed at the front edges. At "three off" the side milk teeth are shed, and horse-teeth take their places. In our drawing of a three year old mouth this has not yet occurred; but the inflammation of the gums, visible, though it does not appear painful to the animal, shows itself. The milk teeth are finally shed about the seventh month after the completion of the third year, those of the lower jaw coming out first. It is often asked, cannot this mouth be given to a forward two-year-old? We are told so; and here is the process, which we insert for what it is worth. The central nippers are punched or drawn out, and the others appear three or four months earlier than they otherwise would (?). In the natural process, they could only rise by long pressing upon, and causing the absorption of the first set. The first set mechanically oppose their rising, and that opposition being removed, it is asserted their progress will be more rapid. Three or four months will be gained, and these three or four months may enable the breeder to term him a late colt of a preceding year. To the observer accustomed to horses (although it is long practice alone which could give this facility of judgment), the general form of the animal—the little development of the forehand—the continuance of the mark on the next pair of nippers, its more evident existence in the corner ones—some enlargement or irregularity about the gums from the violence used in forcing out the teeth—the small growth of the first and fifth grinders, and the non-appearance of the sixth grinder, which, if it is not through the gum at three years old, is swelling under it, and preparing to get through—any or all of these circumstances, carefully attended to, will be a sufficient security against deception.

It is so unusual to look at the teeth in the upper jaw of a young horse, that the dealer who wishes to give a false appearance of age, frequently confines his operation to the lower jaw; and, in consequence of this, when the teeth of the lower jaw are thus made to push out, they are still below the gum in the upper jaw, although, in the natural process, they are cut a little sooner in the upper than in the lower jaw. It may, therefore, be good and cautious policy to examine both jaws.

A horse then at three years old ought to have the central permanent nippers growing—the other two pairs wasting—six grinders in each jaw, above and below—the first and fifth molars level with the others, and the sixth protruding. The sharp edge of the new incisors, although it could not be well expressed in our drawing, will be very evident when compared with the neighbouring teeth. As the permanent nippers grow, and press upon the teeth at their side, those teeth will begin gradually to diminish. Not only will the mark be wearing out, but the crowns of the teeth will be considerably smaller.

At Three Years and a Half, or between that and four, the next pair of nippers will be changed, and the mouth at that time cannot be mistaken. The central nippers will have attained nearly their full growth; a vacuity will be left where the second stood, or they will begin to peep above the gum,—and the corner ones will be diminished in breadth—worn down—and the mark becoming small and faint. At this period, likewise, the second pair of grinders will be shed, and, previous to this, will be the attempt of the dealer to give to his three-year-old an additional year,

but the fraud may be detected by an examination similar to that which we have already described.

Four Years old.—Here the two lateral horse teeth are seen with the full "bean" in them, the two front incisors doing the principal work, as is shown by their surfaces and the inner-enamel edge. We have here four pairs of horse-teeth well up (in the two jaws), the two outside milk-teeth in each remaining. In the outside view the gum is swelling, and the corner milk nippers are about to go. The horse incisors will soon come in their place. The surface of the teeth is clearly delineated in our dental map. You here perceive the central nippers fully developed; the edge somewhat worn off; the mark shorter, and wider, and fainter: the next pair will be up, but they will be small, with the mark deep, and extending quite across them; the corner nippers, larger than the inside ones, yet smaller than they were, flat, and the mark nearly effaced. In the back part the sixth grinder will have risen to a level with the others, and the tushes will begin to appear.

Now, more than at any other time, will the dealer be anxious to put an additional year upon the animal, for the difference between a four-year-old colt, and a five-year-old horse, in strength, utility, and value, is very great; but the want of wear in the other nippers—the small size of the corner ones—the little or no growth of the tush—the smallness of the second grinder—the low fore-hand—the legginess of the colt, and the thickness and little depth of the mouth, will, with the man of experience, detect the cheat.

The tushes (see Map II. Tush) are four in number, two in each jaw, situated between the nippers and the grinders, much nearer to the former than the latter, and nearer in the lower jaw than in the upper, but this distance increases in both jaws with the age of the animal. In shape they somewhat resemble a cone, protruding about an inch from the gum, and having their extremity sharp-pointed and curved. At the age of which we are now speaking, the tushes are almost peculiar to the horse, and castration does not appear to prevent or retard their development. All mares, however, have the beginnings of them in the chambers of the jaw, and they appear externally in most old mares. Their use is not evident:—perhaps in the wild state of the animal they are weapons of offence; so that he can more firmly seize, and more deeply wound his enemy.

The breeder often attempts to hasten the appearance of the tush, and he cuts deeply through the gum to remove the opposition which that would afford. To a little extent he succeeds. He may possibly gain a few weeks, but cannot gain more; for the resistance of the gum is not like that of a solid and firmly fixed tooth, and is much more easily overcome by the regular process of nature. After all, there is much uncertainty as to the appearance of the tush, and it may vary from the fourth year to four years and six months. It belongs, in the upper jaw, both to the inferior and superior maxillary bones; for, while its fang is deeply imbedded in the inferior maxillary, the tooth penetrates the process of the superior maxillary at the union of those bones.

At four years and a half, or between that and five, the last important change takes place in the mouth of the horse. The corner nippers are shed, and the permanent ones begin to appear; the central nippers are considerably worn, and the next pair are beginning to show marks of wear. The tush has now protruded, (see our drawing, Five Years Old,) and is generally a full half inch in height; outside it is rounded, with a groove on each side (see drawing), and within it is hollowed. From the period of the rising of the corner nipper, the animal changes its name. The colt is called a horse, the filly a mare, thenceforward.

Five Years old.—At five years old the horse's mouth is all but perfect. The whole of the incisors are there; the edges of all the teeth meet fairly, and the whole apparatus looks more powerful and larger than in the fourth year. The tables of them all are, however, not yet formed, the two outermost displaying the bean perfect. The tush shows a mark of wear, the grooves, already spoken of, are disappearing. The outer edge is bulging, but the inside hollowed out and sharp. The sixth molar tooth is quite up, and the third grinder is wanting. This circumstance, with the general aspect of the horse—the wearing of the centre incisors—the growth and shape of the tushes—will prevent a late four year old from being substituted for a five. Though the incisors may be got up a few months before their time, and the tushes a few weeks, the grinder is with difficulty displaced. The three last grinders, as well as the tushes, are never shed, but come at once permanently. At "five years old off," the corner teeth are still but slightly worn, and the margins inside are rounding. Much of the original stony crust (*crusta petrosa*) is remaining, and the enamel, where bare, is transparent and pearly. The corner-nippers are so clean in their coat and mark as to procure them the name of "shell-teeth." The fifth year "off," ends our first map.

MAP II., FROM SIX YEARS OLD TO EXTREME OLD AGE.

Six Years old.—At six years the corner teeth seem set more firmly, the enamel mark is irregular, and the edge uneven. The teeth, too, are getting more square on the external surface. All the edges (as seen by the second drawing in Map II.) meet with accuracy. The semicircle which the teeth formed in the fifth year is widened out. The mark in the centre incisor is now growing indistinct. There will still be a difference of colour in the centre of the tooth. The cement filling the hole made by the dipping in of the enamel will present a browner hue than the other part of the tooth; it will be evidently surrounded by an edge of enamel, and there will even remain a little depression in the centre, and also a depression round this case of enamel; but the deep hole in the centre of the tooth, with the blackened surface which it presents, and the elevated

edge of enamel, will have disappeared. Persons not much accustomed to horses have been sadly puzzled here. They expected to find a plain surface of an uniform colour, and knew not what conclusion to draw when there were both discolouration and irregularity.

In the next incisors the mark is shorter, broader, and fainter; and in the corner teeth the edges of the enamel are more regular, and the surface is evidently worn. The tush has attained his full growth, being nearly or quite an inch in length, convex outwards, concave within, tending to a point, and the extremity somewhat curved. The third grinder is fairly up, and all the grinders are level. Mr. Youatt says: "Now, or perhaps at a period of six months before, the horse may be said to have a perfect mouth. All the teeth are produced, fully grown, and have hitherto sustained no material injury. During these important changes of the teeth the animal has suffered less than could be supposed possible. With children, the period of teething is fraught with danger. Dogs are subject to convulsions, and hundreds of them die from the irritation caused by the cutting or shedding of their teeth; but the horse appears to feel little inconvenience. The gums and palate are occasionally somewhat hot and swollen, but the slightest scarification will remove this. The teeth of the horse are more necessary to him than those of the other animals are to them. The child may be fed, and the dog will bolt his victuals, but the food of the horse must be well ground down, or the nutriment cannot be extracted from it.

Seven Years old.—At seven years, although the corner teeth do not decidedly show age, they give further proof of wear. The teeth are yet whiter, the tushes are fully up, the mark is disappearing from the four central nippers, and is on the go in the corner teeth. The tushes, too, are changing shape, rounding at the point, at the edges, and inside; and the teeth generally seem beginning to "crowd one another."

Eight Years old.—At eight years the processes above noted are still in progress. The "beans" are gone from the bottom incisors—in short, as the phrase goes, "the mark is out of the mouth."

And now steps in the most common and vulgar of frauds, that of "bishoping," as it is termed, from the name of the rascal who invented it, or was its most extensively known practitioner.

There are two modes by which this is effected. The eight or nine year old is thrown, and the teeth are simply touched with a red hot wire, which makes a black mark at its point of contact. This is a very clumsy and inartificial imitation. The more general one is to gently scoop the softer ivory in the cavities with an engraver's tool, and then to darken the spaces thus hollowed. Remember, however, that the shape of the table of the old tooth, with its inner edge of enamel, cannot be altered, nor can the line of enamel which surrounds and lines the infundibulum (or pit) be preserved. This coarse expedient cannot impose upon a veterinarian, or an experienced horseman. It will be as well to look at the upper nippers as there the very marks; which, without fraud, would be found strongest and best defined, will be found weakest. The diffusion of the "black" too at once strikes the practised eye as unnatural. Of the better class of dealers Mr. Mayhew justly says, "they will not, knowingly, allow the character of their stables to be injured by the presence of a 'bishoped' animal. The dealers are not the rogues the enlightened public are fond of believing—many among them are as honourable as all men should be—some of the class, however, never let a horse escape out of their hands unmutilated. The teeth invariably receive the primary attention: if long, they are, by the application of a file, reduced to the length which the self-taught equine dentist supposes proper to youth. An acid is also applied to the enamelled surface, in order to render it white. No vast good is effected, but, if the means were not designed to impose, no great harm would perhaps be done. The acid is not allowed to corrode the tooth, and the diminution of the length may possibly in some degree benefit the animal. The welfare of the creature, however, is not the object sought—the hope is to cheat; but no person who ought to be trusted, or even to trust himself to purchase a horse, should be so imposed upon. Whiteness is no sign of youth in the tooth of a horse, and the file cannot make the tables assume the juvenile figure. Horses that show such mouths, may be easily recognised—perhaps they are quiet while their legs are handled, but shy when the head is touched—they are not vicious, but timid, and the teeth tell the reason of their fear. It is well to pass them by, and dangerous to accept them at any price. If the teeth have been tampered with, what tricks may not have been practised to conceal other defects?" (*On the Horse's Mouth*, at end of Vol.)

Twelve to Twenty Years old.—It is a generally received opinion that after the disappearance of the mark from the outer incisors, at the eighth year, all certainty with regard to the horse's age is over. As to the marks, this is true; as to other criteria, enlarged research has shown it to be only partially so. The teeth increase in obliquity, and apparently in length, and the "crowding" which renders them more and more misshapen is clearly perceptible by a reference to the drawings of eight, twelve, and twenty year old mouths in Map II. From birth to six years the study of the regular progress of the development of the mouth has almost the character of an exact science, and the age to a year can be pronounced. At the period we have now arrived at, mere generalities supply the place of particular marks; and further then the fact that the horse is old, growing rapidly old, prematurely old, or on the contrary sound and good, his years being taken into account, our chart-knowledge does not exactly guide us. We think, however, with M. Girard, that the characteristics of the mouth at twelve and say twenty years (see Map), are sufficiently distinctly marked to enable an approximate judgment, if not a confident and exact one. Some continental writers of eminence resort to

the upper nippers as showing the "mark" from the ninth to the twelth year, but we must confess we have little faith in their guidance in this respect. We may, however, note incidently that the "bars," * (rough palate) of the mouth become less and less prominent as age draws on, first losing rugosity about the ninth or tenth year and becoming less prominent with advancing age. We may note that stabled horses kept on hard meat do not, as might be expected and has been asserted, show an earlier diminution of this rugosity of the palate than grass or softer-fed animals; this may be due to the active stimulation of a part well calculated to keep up its bulk and healthy renewal by its numerous bloodvessels and its protected position.

As a pendant to these remarks, we will present the reader with a brief summary of the observations of some of the leading continental and English writers on this important and interesting branch of horse-knowledge; beginning with St. Bel, La Fosse, &c., and passing to Girard, Blaine, Percivall, Goodwin, and Mayhew.

M. St. Bel, of whom a notice will be found under the article Eclipse, ante, taught a system averaging *two years* between each marked change in the horse's dentition; and he carried on his periods at which the "dental funnel," or mark, was obliterated from each pair of nippers at *two years'* intervals. Ten years for the front (upper and lower); twelve years for the middle; fourteen years for the corner nipping teeth; were fixed for them to present plane surfaces. These prolonged criteria of M. St. Bel are now entirely repudiated. The successive changes wrought on the substance and general form of the lower or posterior nippers, after the *central* funnel is worn out, were early noted as characteristic of the age to a very prolonged period. La Fosse many years ago described indications of age to be gained by examining the figure of the nipping surface of the lower incisors, long after it has become plane. M. Pessina, professor and director of the Veterinary Institution at Vienna, carried out a similar examination to an extraordinary length, and his descriptions are given with much minuteness of detail. He explains the gradations of years, beyond the age of eight, uniformly, by the shapes that the incisors assume in consequence of their wear; which has led him to distinguish four successive periods, "the oval, the round, the triangular, and the biangular." After the disappearance of the central enamel, the table presents a coloured point, that appears before the wear of the funnel is completed, and takes different shapes; it is not even uncommon that, in very old teeth, this gives place to a small black cavity.

M. Girard—who published a capital treatise on the teeth, in French, which has been translated by Mr. Ganly, V.S., and published, with very poor copies of the plates, in New York and in London—generalises the criteria of age up to a late period. If we do not quite agree with the professor up to the last, his observations are worthy of respect and consideration, from his extended experience in the greatest veterinary school and haras in France. They may be thus summarised from eight years. At this age there is usually complete obliteration of the mark in the nippers, the dividers, and the corner teeth; in the lower jaw the central enamel becomes triangular, and nearer the posterior than the anterior edge of the tooth; the termination of the cavity next the root appears near the anterior edge in the form of a yellowish band, extending lengthwise from one side to the other. At nine years old the nippers appear rounded, the dividers oval, and the corner teeth have become narrow, the central diminish, and approach the posterior edge. At ten years old the dividers are become rounded; the central enamel is very near the posterior edge, and rounded. At eleven years old the dividers have become rounded; the central enamel is hardly any longer apparent in the teeth of the lower jaw. At twelve years old the corner teeth are rounded; the central enamel has completely disappeared; the yellowish band is of more extent, and occupies the centre of the wearing surface; the central enamel, however, still remains in the teeth of the upper jaw. At thirteen years old all the lower incisor teeth are rounded; the sides of the nippers extend lengthwise; the central enamel is found to remain in the teeth of the upper jaw, but it is round, and approaches the posterior edge of the tooth. At fourteen years old the lower nippers assume a triangular form, the dividers become long at the sides; the central enamel of the upper teeth diminishes, but still remains visible. At fifteen years old the nippers are triangular, and the dividers likewise are beginning to become so. At sixteen years of age the dividers are triangular, and the corner teeth begin to be the same; at the same time the central enamel of the teeth of the upper jaw also will, in many instances at this age, be found to have disappeared. At seventeen years old all the teeth of the lower jaw have become completely triangular; but, as we have before noticed, the sides of the triangles are all of a length. At eighteen years of age the lateral portions of the triangle lengthen in succession, first the nippers, then the dividers, and afterwards the corner teeth; so that, at nineteen, the lower nippers are flattened from one side to the other. At twenty, the dividers are of the same shape. Finally, at twenty-one years of age, this shape appears in the corner teeth also.

We think the reflective reader who peruses these lines with an eye to the 8, 12, and 20 figures of our second map, will see much worthy of remembrance in M. Girard's "History of Dental Changes." Thus far of the teeth; we will now pass to other criteria of age.

The indications of age connected with decay are not equivocal, but show themselves in the sunken eyepits and dimmed eyeballs. In such an one the lips will also be thin and pendulous, the under or hinder lip extremely so;

* The term "bars" is applied to that firm and dense furrowed substance which lines the roof of the mouth, and is known as the hard palate. Its ridges are called the "bars." See *post*, Anatomy (The Palate), in Part II. *Veterinary Surgery*.

the anus, not wedged up by interstitial matter heretofore, and not sufficiently retracted by its weakened muscles, now projects considerably. The grey horse becomes white, and the darker colours become intermixed with grey, particularly about the head; the bony processes in every part of the body stare out, and give a rigidity of appearance which well accords with the actual state of the body. So much greater is the absorption of parts now than their increase, that even the diseased deposits of more youthful times, as windgalls and bony exostoses, are lessened or disappear altogether; the mouth likewise will present some appearances beyond those noted by the French writers. The incisors are sloped outwards and project, the upper corner one is often sawed in two parts by the action of the lower, which, in turn, loses its outer edge by the wear; the whole of the teeth become yellow and stand wide apart at the roots, which are gradually being thrust up out of the jaw by the filling up of the alveolar cavities with bony deposit.

It is an absurd piece of pedantry, as every horseman knows, to date the decay of a horse from his becoming "aged" in professional phrase. At seven and eight he is in his full bloom of his strength and fully matured powers, and, but for inordinate or premature hard work, is at a point of perfection which will last in full vigour for a period corresponding with the more extended manhood of the human being. A short parallel will elucidate our meaning, and show the error of allowing the idea of eight years as fixing the period of decay in the horse. Blaine is here our authority: "A very considerable attention to the subject, over a wide field of observation, has impressed the writer with the propriety of drawing the following comparison between the ages of horses and men; that is, at these several periods of comparison, the constitution of horses and of men may be considered as in an equal degree of perfection and capability for exertion, or of debility and decay, according as youth or age preponderates. Thus, the first five years of a horse may be considered as equivalent to the first twenty years of a man; or thus, a horse of five years may be comparatively considered as old as a man of twenty; a horse of ten years, as a man of forty; a horse of fifteen, as a man of fifty; a horse of twenty, as a man of sixty; of twenty-five, as a man of seventy; of thirty, as a man of eighty; and of thirty-five, as a man of ninety. So far from this comparison being too much in favour of the horse, we are disposed to think it too little so. Horses of thirty-five years of age are as common as men of ninety, provided it be taken into the account that there are at least fifty human subjects for every horse; and, unquestionably, a horse of forty-five is less rare than a man of a hundred and ten."

Coinciding entirely with this most experienced veterinarian, we may be excused for pursuing the subject a little further. The eight years currently received as the incipient period of degeneration should be removed another seven years forward, as regards the powers of the animal in their natural state. We again quote Blaine:—"To those who are simply interested in horses on the score of their utility, and are not called on to certify the exact age for sale, purchase, or matching, the indications yielded by the teeth are in many cases less important than those offered in the appearance of the wear and tear of the limbs. The practical judge, instead of refusing what is conventionally termed 'an aged horse,' provided he has limbs undeteriorated, on the contrary, hails an opportunity of possessing himself of such an one, conscious that the reputed age has produced only the best effects, by condensing the solid parts of the frame, and rendering them capable of continued exertion. Such an age is also usually accompanied by a steadiness of temper and disposition, that teaches him to employ his powers judiciously. Where is the foxhunter who fortunately has met with a nine, ten, or twelve-year old horse fresh on his limbs, that would exchange his hardihood, his judgment, steadiness, and method of husbanding his resources, for the impetuosity, and consequently more early tiring, of the young horse of five? What is eight years in the life of a horse that has been used as he ought to be? It is, on the contrary, not too much to affirm that all his 'points,' that is, all those external appearances or characters on which his most valued qualifications depend, do not show themselves until, according to the conventional notion of age, he is unfit to be looked at! Regard the well-marked head of the horse at ten or twelve, how angular! His fine eye, divested of much cellular matter, now stands out without a foil; his thin and thinly clad crest carries itself into withers which seem to rise to receive it. His circular carcass, trussed up by exercise, unites with hind quarters, square and muscular, supported on limbs equally well furnished. Would you refuse such an one because he had lost a mark from his teeth, when he had gained so many superior marks all over?—marks which make him at once an interesting and most picturesque object. It is true, premature age is apt to overtake our horses, because we use them as though they could not wear out."

There is no rule laid down by man which nature will submit to be strictly bound by, either in the material or the moral world. She will have her wise irregularities, her apparently wilful exceptions, her "proofs" of the rules laid down by his limited judgment. Constitution in one horse is less robust and fails earlier, acute disease levels the strongest and handsomest, as it takes the best and bravest among men. Premature old age has come, and will come, upon the most promising colts; and the cleverest actuary in calculating risks in life assurance would find as many disturbing influences calling for his "averages" among horses and their "chances of life." The excellence of our roads enables the horse not only to be put early to work, but to be called upon for "pace;" and thus it is that nature, stimulated inordinately, seeks with her *vis medicatrix* to strengthen the overtaxed organs. How she does this is the subject of veterinary inquiry. Inflammation comes on, the cavities between the tendons and their sheaths are destroyed,

and they become filled up by hurtful deposits; parts take on a bony structure whose original formation was cartilaginous; as the lateral cartilages of the feet, and the articular processes of the vertebræ. A greater quantity of ossific material is deposited on the surface of some bones than is natural, by inordinate exertion. It is thus that splints, spavins, ringbones, &c., are formed; and, to counteract the unnatural waste, other secretions are likewise preternaturally augmented producing, in the mucous capsules windgalls, and blood-spavins in the obstructed veins. But where horses are suffered to attain their full growth and the complete development of their organisation, if they are afterwards put to full exercise, not altogether inordinate, they become competent to the exertions expected of them, and reach old age sound and vigorous. Many good judges will not purchase a horse for hunting earlier than eight years old, and regard him only in his prime at ten or twelve. It is too little considered that the period of a horse's life, with moderate care and good usage, is protracted to twenty-five, thirty-five, and forty-five years; and an instance lately occurred of a horse dying at fifty. The accounts of their being vigorous and strong at thirty and thirty-five are very numerous, and nearly as frequent as activity in men of eighty and ninety. Blaine speaks of an acquaintance of his at Dulwich, near London, who had three monuments of three horses, who severally died in his possession at the ages of thirty-five, thirty-seven, and thirty-nine years. The oldest, it is to be remarked, was in a carriage the very day he died, strong and vigorous; but was carried off in a few hours by spasmodic colic, to which he was subject. At Chesham, in Buckinghamshire, there was a horse thirty-six years old, which exhibited no symptoms of debility, nor any external signs of age, except being nearly covered with warts. It was remarkable, with regard to this four-footed Nestor, that when an unusually hard day's work was required he was always chosen, as never failing in what was expected from him. A horse named Wonder, belonging to the riding school at Woolwich, may be quoted as living to forty years. Mr. Culley, in his "Observations on Live Stock," mentions one he knew which lived to forty-seven years, having during all that time a ball in his neck, received in the battle of Prestonpans, in the rebellion of 1715, which was extracted at his death in 1758: thus, judging him to be four years old at the time he received the wound (and it is probable he was more), he must, at his death, have been forty-seven. But even these venerables were mere babies to the barge-horse of the Mersey and Irwell Navigation, which was well known to have been in his sixty-second year when he died. It is true that these are not very common instances, but it is not the natural economy of the animal which makes them uncommon; it is, on the contrary, the circumstance of horses being so early brought into hard work, and so unremittingly continued in active labour.

The subject of Warranty and Unsoundness, will properly follow these chapters of examining and buying the Horse, and the Criteria of his Age.

CHAPTER XI.

HORSE-LAW: SALE: DELIVERY AND ACCEPTANCE: EARNEST: SIGNED NOTE: WARRANTY: SALES BY AUCTION: LIEN: FRENCH LAW: CONCLUSION.

The law, as it relates to the buying and selling of horses, either at the hammer, by private contract, or in market overt, seems to be totally overlooked in most works relating to the horse.

Lawsuits, it has been justly remarked, originate less frequently in the positive dishonesty and bad faith of the unlucky litigants, than in their gross misconception of each other's rights and liabilities.

We therefore conceive that an occasional purchaser would often, by a very slight acquaintance with the first principles of the law of sales and warranties, be not only delivered from much anxiety in negotiating this delicate bargain, but also, in many instances, would escape the misery of being driven to contend for his rights in the dreaded arena of a court of justice. Our observations on warranty shall be preceded by a cursory survey of the general contract of sale itself.

What is Sale.—A sale is defined by Blackstone to be "a transmutation of property from one man to another, in consideration of some price or recompense in value."

To enable society to enforce the obligations resulting from such an engagement, some marks are obviously requisite of the mutual consent of the contracting parties having existed in a serious and deliberate form. By the Statute of Frauds it is enacted, "that no contract for the sale of any goods, wares, or merchandize, for the price of £10 or upwards, shall be allowed to be good, except the buyer shall accept part of the goods so sold, and actually receive the same, or give something in earnest to bind the bargain, or in part of payment; or that some note or memorandum, in writing, of the said bargain be made and signed by the parties to be charged by such contract, or their agents thereunto lawfully authorized."

Delivery and Acceptance.—It is necessary to observe that a manual transfer, or "actual" delivery and acceptance, is not in every case essential; for the law will often, from certain acts, "imply" a delivery to satisfy the statute. Thus, in a case where the plaintiff, who kept a livery stable and dealt in horses, was in treaty with the defendant for the sale of two horses, and the defendant offered a less sum than was demanded, but at length sent word that "the horses were his, but that, as he had neither servant nor stable, the plaintiff must keep them at livery for him;" the plaintiff, upon this, removed them out of his sale stable into another stable; and it was held that there was here a sufficient delivery to satisfy the statute. The key to this and similar cases seems to be, that the vendor, by the terms of the bargain, is converted into an "agent for the vendee," and thus occupies the double character of principal during the sale, and servant upon its completion. It is also sufficient evidence of a delivery, if a purchaser, with the privity and approbation of the vendor, exercises any act of ownership over the goods, though their local situation remains unchanged; as by selling (or even showing the animal out for sale) to a third person, or marking the animal in any manner. Delivery to a servant or agent is equivalent to a delivery to the employer himself.

Earnest.—It would seem that giving a piece of money, however low its value (supposing it to be "altogether parted with"), is sufficient to bind the bargain.

Signed Note or Memorandum.—It may be useful to observe that, although the names of *both* parties must appear upon the face of the memorandum, or, at least, in some *writing* capable of being connected therewith by sound legal inference, yet the signature of the party sought to be charged, or of his agent, is sufficient. And this term "signature," be it observed, is not here used in the limited sense of subscription, so as to require the party to sign his name at the end of the instrument, but is equally applicable in whatever part the name is written. Whether sales by public auction are within the Statute of Frauds has long been a disputed point; the later opinion is in favour of their being so; and it, therefore, becomes necessary to mention here that the auctioneer is, in such sales, the "agent" of "both" parties.

Upon the regular completion of the sale, the property in the article is transferred to and absolutely vested in the vendee; and the purchaser thenceforward stands by all risks, and is the sole sufferer from any injury which may happen to the animal, otherwise than through the negligence of the vendor. As in the example given by Blackstone: If A sells a horse to B for £10, and B pays him earnest, or signs a note in writing of the bargain, and afterwards, before the delivery of the horse or money paid, the horse dies in the vendor's custody, still he is entitled to the money, because by the contract the property is in the vendee."

But although the right of property is thus absolutely transferred by the contract, yet, unless payment be expressly postponed to a future day, the buyer will not be entitled to "possession" without tendering the stipulated price.

Warranty.—We now come to the important doctrine of Warranty, which is thus summed up by Coke: "By the civil law, every person is bound to warrant the thing that he sells or conveys, although there is no express warranty; but the common law binds him not, unless there be a warranty, either in deed or in law, for *caveat emptor:* the meaning of which Latin expression is, that the buyer takes the article sold with all its defects, and must not look to the law for any redress if its intrinsic worth do not correspond with its outward appearance. It cautions the buyer, therefore, according to the Italian proverb, 'that he has need of a hundred eyes, but the seller of only one.'"

By the law of England, warranties are divided into "express" or "implied:" the latter, however, differ in no respect from the former except in the circumstance of "proof." The intention to warrant is collected from the whole circumstances proved, and as a legitimate deduction from them, like the presumption of any other part not established by direct evidence; while the "*express*" warranty is proved by direct and express testimony to the fact itself. To give a single instance: In *Jones* v. *Bowden*, it was proved to be the uniform course and habit of dealing in a particular place, if the article were sea-damaged, to state that fact on the sale of it: a sale was made without any such statement, and it was therefore held that the article was warranted not sea-damaged. This was an "implied" warranty.

A warranty can only exist as a term and condition of the contract of sale, into the very essence of which it so completely enters, that a breach of it entitles the buyer to treat, if he pleases, the whole contract as a nullity. It constitutes part of the inducement or consideration for the purchase. It follows that, for a warranty to be valid, it must exist or be made "at the time" of the sale; or, at least, that, being agreed to be made before, there should be an understood reference at the actual sale to that agreement. As, for instance, if previous to the time of sale, the vendor says he "will" warrant the goods, and having named his price, gives the vendee two or three days to consider of it, and the vendee then agrees to purchase, the warranty, though only made hypothetically, is tacitly incorporated into the terms of the sale, and is a valid warranty.

But a warranty made "after" the completion of the sale is of no value whatever, being without any consideration.

From these premises also, coupled with the rule that where a contract is reduced to writing, the writing is the sole legitimate evidence to prove its terms, we may further deduce that an oral warranty made previously to a sale by written contract, but not inserted in the instrument, will not be valid. Thus in *Pickering* v. *Dowson*, Gibbs, C. J., says, "I hold that if a man brings me a horse and makes any representation whatever of his quality and soundness, and afterwards we agree in writing for the purchase of the horse, that shortens and corrects the representations; and whatever terms are not contained in the contract do not bind the seller, and must be struck out of the case."

It is also a rule of law, that where a commission is given to execute any work, every power necessary to carry it on will be implied. A servant, therefore, employed to sell a horse, has an implied authority to warrant that it is sound; and in the case of a "general" agent—for example, the servant of a livery-stable keeper—this warranty will bind the master, though made contrary to his express directions; and, in every case, the warranty of a servant or agent, so entrusted to sell, will bind the principal, if he do not expressly prohibit it being made.

With respect to what declarations of the seller will amount to a warranty, the primary rule for the interpretation of contracts in general is applicable. It depends upon the "intention" of the parties.

Thus, a simple affirmation of the goodness of an article is a warranty, provided it "appear to have been so intended;" whereas the sublimest epithets that seller ever employed to recommend his goods to a credulous buyer, will be regarded as the idle phraseology of the market, "unless an intention to warrant actually appear." For example, when the vendor declared at the time of sale, that he "could" warrant, it was held to mean that he "would" and "did" warrant. So when the seller affirms that the goods are his property, he is held to "warrant the title." And, on the other hand, when at the time of sale the seller showed the buyer a written pedigree, which he had received from the person of whom he bought the horse, and said he sold him according to that pedigree, the mark being out of his mouth when he bought him, and the pedigree was proved to be false; it was held that this was no warranty. No general rule, therefore, can be laid down further than this—that it is from the "intention" of the parties, as collected from the whole transaction, and from the meaning they appear to attach to particular expressions, that the existence or non-existence of a warranty is to be inferred.

But the most important part of our investigation relates to the "extent" of the warranty. We must here observe, in the first place, that although a warranty may be made to extend to temper, freedom from blemish, age, aptitude for particular work, and many other similar qualities, as well as to soundness; yet, unless expressly so extended, it will be construed to apply to soundness alone. Thus, when an ambiguity arose from the insular position of the word "warranted" in the following notice:—"To be sold, a black gelding, five years old; has been constantly driven—warranted," the warranty was held to apply to soundness alone.

"Unsoundness" is a term the exact limits of which are not very clearly defined. According to Lord Ellenborough, any infirmity which renders a horse less fit for present use or convenience, is an unsoundness. This doctrine was laid down by his lordship in a case which turned upon an alleged lameness, and wherein it was admitted by a witness for the defendant, that one of the fore legs had been bandaged, because it was weaker than the other: upon this admission,

the verdict in favour of the plaintiff seems to have been founded; and it was then observed by the court, "to constitute unsoundness, it is not essential that the infirmity should be of a permanent nature; it is sufficient if 'it render the animal for the time unfit for service:' as, for instance, a cough, which renders it for the time less useful, and may ultimately prove fatal." Now this decision appears to contradict a prior one, in which Eyre, C. J., held, that a slight lameness occasioned by the horse having taken up a nail at the farrier's was not an unsoundness. This learned judge, in his observations to the jury, remarks:—A horse labouring under a temporary injury or hurt, which is capable of being speedily cured or removed, is not for that an unsound horse within the meaning of the warranty. If these decisions are not to be regarded as conflicting, one deduction ought possibly to be, that such slight injuries as proceed from external causes, and are with moral certainty to be speedily and effectually cured, do not fall under the head of infirmities, which term properly comprehends such diseases only as may without much improbability hang by the animal through life, while they impair his present usefulness.

"*Crib-biting*," in its incipient state, has been held to be "no unsoundness"; but when inveterate (and interfering with the health of the animal) it then falls within the meaning of the term.

It is commonly asserted that a warranty will not bind when it is obviously false. The instance given being that of a horse warranted sound, when it is apparent that he is blind; and for this doctrine, the venerable argument, which makes so conspicuous a figure in legal logic, is usually urged—for that it is his own folly. "For that it is the other's roguery," might, we think, be an argument of greater cogency the other way, unless knaves in this country are to be regarded with peculiar favour, like idiots in Turkey. We apprehend that this rule—if any such indeed exist—is one of presumption only, it being inferred that both parties meant to exclude the particular defect from the warranty. The case of *Shillitoe* v. *Claridge*, however, goes far towards disproving the existence of such a rule.

Let us now consider how the rights of the parties are affected by the horse being unsound at the time of warranty. The contract being thus broken on the part of the seller, it is at the buyer's option either to treat it as a nullity, and return the horse, or to retain him notwithstanding, and bring an action on the warranty. In the former case, the price paid is the measure of damages which he will be entitled to recover in an action; in the latter, the difference between that price and his real value. If he offer to rescind the contract, and return the horse, he may also recover the expenses of his keep; but in order to this a positive tender is said to be necessary. No notice of the unsoundness need be given to the vendor to entitle the vendee to maintain the action; nor is it necessary to bring the action immediately on discovering the unsoundness. As in a case where a mare was warranted to be sound, quiet, and free from vice and blemish, the buyer, soon after the sale, discovered that she was a roarer, had a thorough-pin, and also a swelled hock from kicking, yet kept her after this for three months, gave her physic, and used other means to cure her. At the end of that time he sold her, but she was soon returned to him as unsound. He subsequently sent her back to the seller as unsound, who refused to receive her, and in returning to the stables she died. He recovered the full price.

But although such notice be not essential, yet it is always advisable to be given, as the omitting to do so will furnish at the trial a strong presumption that the horse, at the time of sale, was free from the defect complained of, thus rendering the proof of a breach of warranty more difficult. Common justice and honesty, it has been remarked, require that the commodity should be returned at the earliest period, and before it has been so changed by lapse of time as to make it impossible to ascertain, by proper tests, what were its original qualities.

To entitle the buyer to the benefit of the warranty, he must, of course, strictly fulfil the conditions stipulated to be performed on his part. Thus, if, as is frequently the case, a condition be introduced into the warranty, that the horse, if objected to as unsound, shall be returned within a limited time, no action can be maintained for the unsoundness without the strict performance of this condition. So where the warranty was qualified by the vendor by an undertaking to take back the horse, if, on trial, he should be found to have any of the defects mentioned in the warranty, it was held, that the buyer must return the horse immediately upon the discovery of them. When the contract is rescinded by the buyer on account of the warranty being broken, the seller has a right to require that the horse shall be returned in as good condition as he was when the defect was discovered; and, therefore, "if the animal fall into a worse state subsequently to such discovery, the buyer cannot then return him, but must rely on his action to recover back a proportional part of the price."

There being no warranty, but the purchaser having been imposed upon, and entrapped into a losing bargain by the artifices or wilful misrepresentations of the seller, his remedy is an action "for the deceit;" to support which "he must prove a fraud" to have been committed by the seller, and also "that it was such as might well impose upon a person of ordinary circumspection;" or, in other words, that "he was deceived and misled by relying upon the integrity of the seller," in a point where he might reasonably have placed trust and confidence in him.

"Any wilful misrepresentations by the vendor of the qualities of the commodity to be sold, whereby the vendee

* See under heading VICES, *post*.

is induced to purchase, falls within the legal idea of fraud, and will vitiate the contract," as being a breach of that good faith which ought to reign throughout every commercial transaction. This is called "fraud in words." Thus, if A, knowing his horse to be broken-winded or lame, induce B to purchase, by an assurance that he is sound in wind and limb; then, although A may have expressly refused to warrant, B will nevertheless be entitled to recover from A in an action for the deceit. It is obvious, however, that this action could not be here maintained upon mere proof of the abstract falseness of the representation made by the seller; but that evidence of the moral falsehood is requisite—the seller's "knowledge" of the falsity, which is called in technical language, the *scienter*. And herein it is, principally, that this action is distinguished from actions on breach of warranty; for the warranty extends to "all" faults, "known or unknown" to the seller.

The other kind of fraud may be termed "fraud in deed." An instance which may serve to exemplify the nature of those acts of the seller which would fall under this head. "I remember," says Gibbs, C. J., "the case of the sale of a house in South Audley Street, where the seller, being conscious of a defect in the main wall, plastered it up, and papered it over; and it was held that, as the vendor had expressly concealed it, the purchaser might recover." To extend this principle to our subject-matter:—it is conceived if the vendor were to deceive the purchaser, either as to colour, which may be easily done by chemical means; or as to age, by bishoping the animal; he would be liable for the deceit, although no verbal representations had been made.

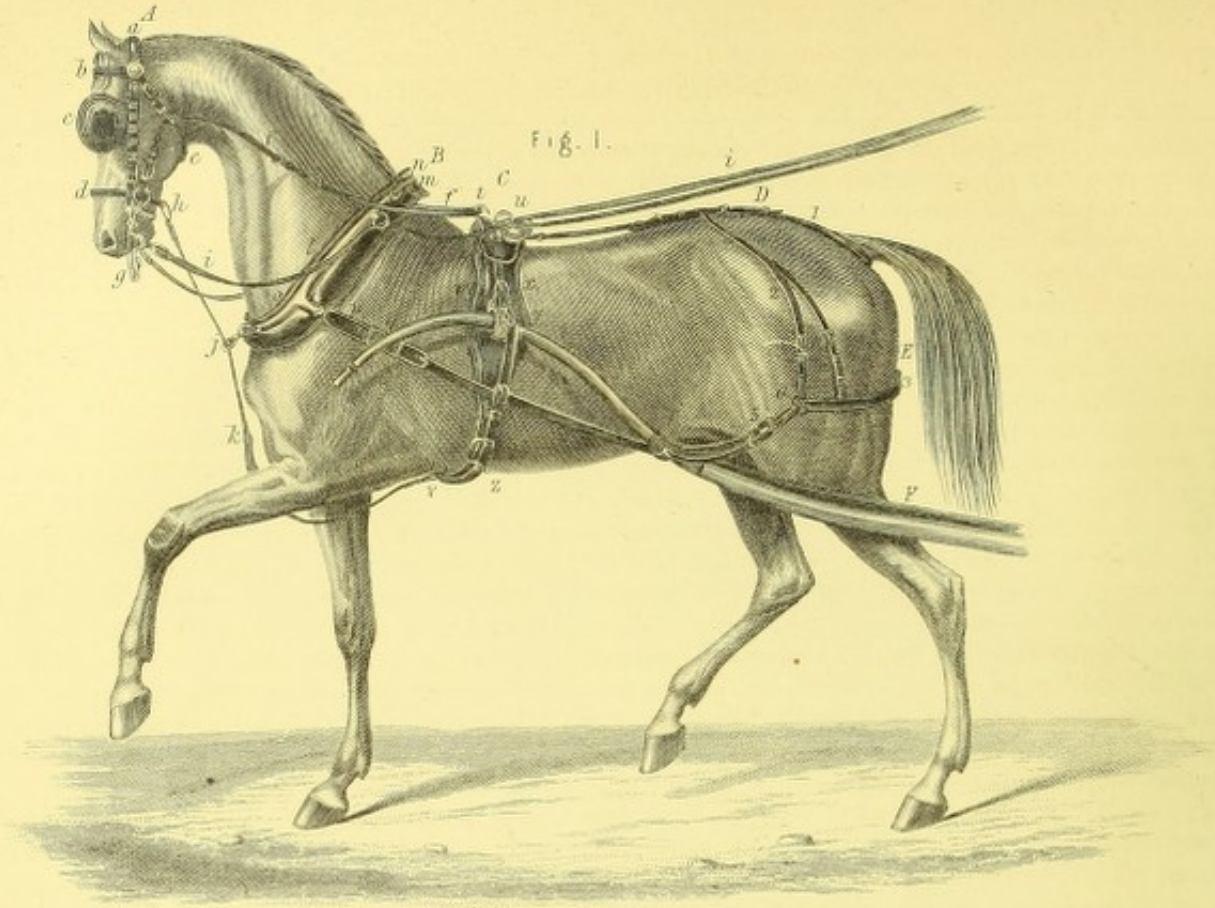
Thus far on the specially dry ground of the law; we cannot, however, quit this subject without a few illustrations, which may be of value as not being within the reach of a ready reference by those "perplexed in the extreme" as to their "rights" or their "liabilities" in the matter of sale or purchase of a horse. And first of

Sale by Auction.—In selling your horses by auction you avoid not only a world of trouble, but obtain immunity from many prospective responsibilities. This security (although not absolute) against an action at law is something; since the judges, a quarter of a century back even, were getting stricter and stricter in their construction of general warranties of soundness, and qualified ones do not answer the purpose of sellers, as they necessarily diminish the prices obtained. "The owner of a good horse," observes Mr. Surtees, "has the same advantage of warranting him sound as he has on a sale by private contract, without incurring the risk of having him returned at the end of five or six weeks, or perhaps as many months (unless, indeed, it can be proved that the cause of the breach of warranty existed at the time of the sale), while the less fortunate owner of a bad horse puts him up for public competition, and though he may expatiate as largely as ever he likes on his good points, still (if he does not warrant him) he is not bound to mention any of his imperfections." Nor does either the owner, or the auctioneer for him, ever do such a silly thing. Undeserved praise does not lay grounds for an action. *Simplex commendatio non obligat:* the buyer ought not to be such a fool as to believe in laudations, and he consequently cannot in law procure the sale to be dissolved on any such pretext—in the absence, of course, of a warranty, either expressed or implied—for there are "constructive" warranties. All this goes to show the advantage which accrues to sellers by auction; to buyers the disadvantages are obvious. It is buying a pig in a poke. To dealers and such like, who are not a bit better judges than other people, it is quite a different thing; for they are the familiars of the yard—the depositories of the repositories, obtaining through the servants of the sellers and other channels the information that enables them generally to know all about every horse to be brought to the hammer. Then, as to a trial, of course that's quite out of the question: the animal is only run up and down a few yards—perhaps, all the while with a long whip at his quarters; and all that the most practised eye can possibly determine with absolute certainty, is the animal's style of going, with his visible symptoms of age, of soundness and unsoundness, of shape and make. But it must, nevertheless, be allowed that "the eye," as Tom Carlyle philosophically and justly remarks, "sees what it brings the power to see;" and, accordingly, a man who is an observer of horses will form a correct opinion of a horse's value and capabilities almost in a minute: supposing, though, all's right and aboveboard in the selling of the subject shown out and run down the auction-ride a dozen yards. But this presumption of honesty clearly implies too much.

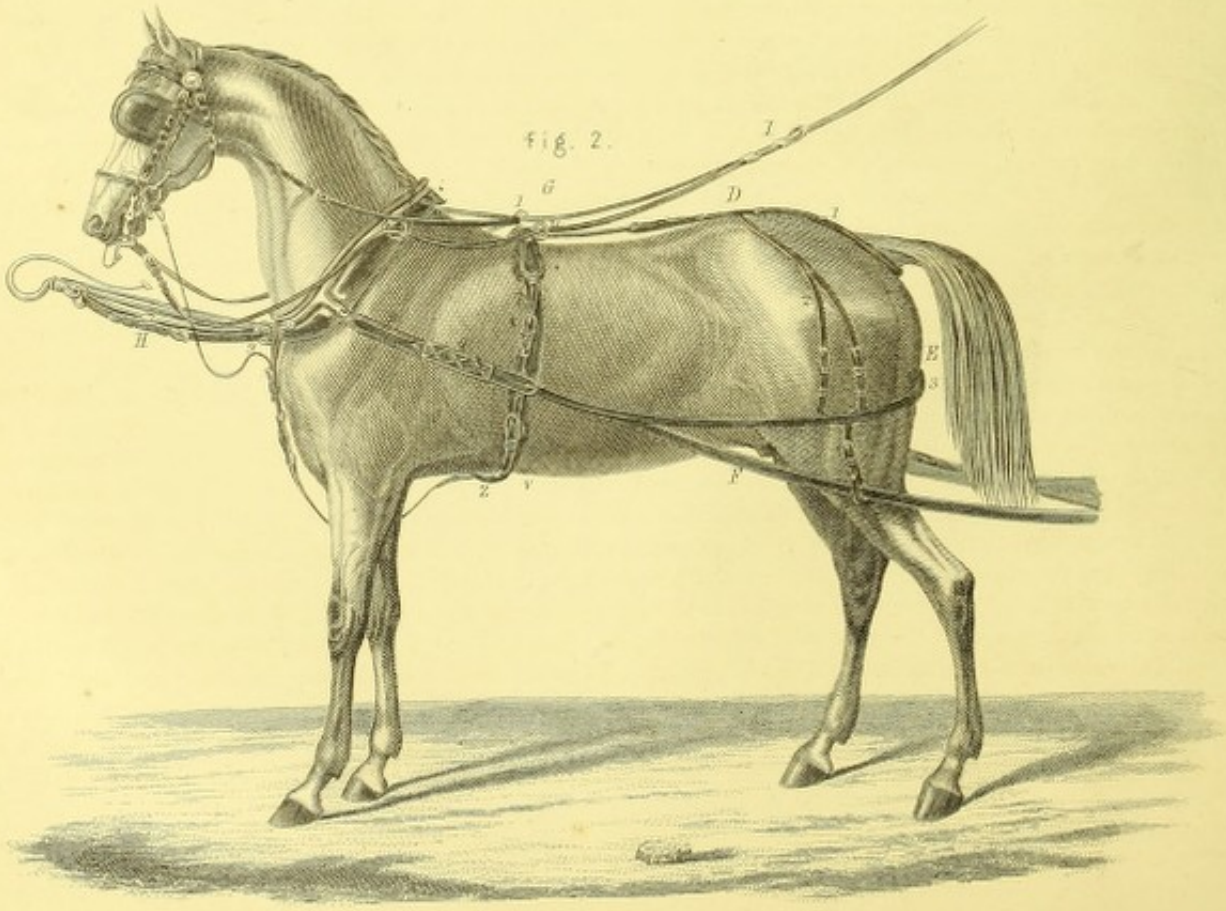
The law (through Lord Kenyon) said, in a case of *Mesnard* v. *Aldridge*, where the plaintiff brought an action against the auctioneer because the latter refused to receive a horse as unsound after the lapse of a second day, that the action could not be supported. Mesnard was nonsuited. But no lapse of time bars redress, and an action against the "owner" is maintainable on good and sufficient grounds.

An action would lie against Tattersall, Aldridge, Dixon, Gower, or any other auctioneer, for the amount of the horses or other property confided to them for sale, if they let the lot or lots go out of their possession without first receiving the price of them from the purchaser. The law was laid down to this effect in the case of *Brown* v. *Staton*, as on many other occasions. An action is also maintainable where any deceit is practised, or misrepresentation is made respecting the ownership. To sell a horse as a hunter which has never been ridden with hounds, or to describe a horse as the property of a man to whom the animal does not belong—against both of these dishonesties an action will lie. In all clear cases, both of misdescription as regards the horse, and of misrepresentation as to ownership, the law has provided a remedy for the injured purchaser.

It was observed, some twenty years since, that "many of



SINGLE HARNESS.
(see description)



PAIR HORSE HARNESS.
(see description)

the owners of horses sent to public auctions are persons whom fortune has placed in such a situation, that the difference of price obtained by selling their horses with warranties and without them is of no importance, and that many would prefer giving them away to running the risk of having them returned at a subsequent period as unsound." What is the case now? A horse put up at either Tattersall's, Aldridge's, or elsewhere, is seldom or ever warranted sound. What was imagined at that period to be a luxury, in which the rich alone could afford to indulge, is now discovered to be a profitable course for the million. Hence the universality of its adoption. Exemption from the plague of warranty is referrible to this plain cause: that all the parties concerned do better at the horse repositories without a warranty of soundness than they would do with it. Again, as to "the difficulty," if we may use the diplomatist's slang, doubtless a great number of desirable horses are not to be picked up at the repositories—or, for the matter of that, perhaps, anywhere else hardly. But the number of really nice animals, sound and fresh, bears a very small proportion to the number of brutes of screws, used up, stale things. Farther, you may go every sale-day for six months to every repository in London, and during the whole time of search after the right sort, see scarce a really good goer even; or if you do find one, the odds are high that he has done his work, and is not worth a straw to you. Success, however, it is not altogether impossible, may crown your search. Still, *caveat emptor:* it is not all gold that glitters, and every stable, as well as every garden, has some weeds. The latter are occasionally barrowed off—the former drafted to "the Corner;" care sometimes, perhaps, being taken that they are accompanied by other horses in the same stable much too good to be sold. Therefore, it happens sometimes, that when the stud of a nobleman is duly stabled and catalogued, the real thing, in point of fact, is that it is the weeds only, the refuse of the stable, and not the stud that is really to be parted with; the cracks are only colourable candidates for a new master, their old one causing them to be bought in.

To return to another "bit of law." If a man is so "infirm of purpose" as to bid for a horse, and the moment after his bidding desires it to be considered as no bidding at all, the law will stand his friend. It will be to him "faithful amongst the faithless;" for who would not be ashamed of being seen beside such a fellow, with his shabby backing-out? The loophole of retreat, according to law, is open to the bidder, and "his bidding may be retracted at any time before the lot is actually knocked down;" supposing, of course, that the conditions of the sale do not provide against the contingency. The reason assigned is this: a contract to be binding must be agreed to by both parties, and the auctioneer not having signified his by knocking down the hammer, there is no contract.

Another "bit of law" will surprise not a few. It involves a very nice point with respect to the instructions given to auctioneers as to the price for which they are to sell a horse. An action does not lie against an auctioneer for selling a horse at the highest price bid for him, "contrary to the owner's express directions" not to let him go under a larger sum named. But an action will lie if an auctioneer is told by the seller to put the horse up at a certain specified sum. This is the law; and to some persons, perhaps, it will be suggestive of a distinction without a difference. *Bexwell* v. *Christie* is one of the precedents cited as a case in point. Mr. Espinasse, in his "Treatise on the Law of Nisi Prius," says, "It was resolved in this case, that when a person sends an article to an auction which advertises to sell to the highest bidder, with orders not to have it sold under such a price, an action will not lie against the auctioneer if he sells it at a price less than that so mentioned, as 'such dealings are a fraud on buyers,' who suppose the lot to be knocked down to the best 'real bidder.' But it is otherwise, had he ordered it not to be set up under such a price."

Connected with the point of buying in, is that of "running up" the animal to be sold; and here we have legal protection for the purchaser beyond what is ordinarily supposed. Where a horse is bid up by a "puffer," and one condition of the auction is, that the highest bidder is to be the purchaser, the vendor cannot recover the price (*Pilmore* v. *Hood*, 5 N. C. 97). The law on this point was fully considered by the Court of Common Pleas in the following case: An action was brought by the plaintiff to recover the value of a horse sold by him to the defendant, at a public auction at Aldridge's Repository. It appeared that it was one of the conditions of sale, "that each horse should be sold to the highest bidder;" that the plaintiff's groom attended at the sale on the part of his master for the purpose of raising the price; that the last bonâ fide bidder had bid £12; after which, until the horse was knocked down to the defendant for £29, he and the groom were the only bidders; and that when the defendant discovered against whom he had been bidding he refused to take the horse.

Upon these facts Chief Justice Best said: "I am clearly of opinion that this action cannot be maintained. I have long been surprised that the objection has never been taken. A man goes to a sale, and is told that if he is the highest bidder he shall have the article. He bids a certain sum, and a person (employed by the seller) whom he does not know, attends and puffs against him, and in consequence of that he is compelled to pay a much larger price than he would otherwise have paid. Is not this a gross fraud? I am prepared to nonsuit the plaintiff." It was then proved for the plaintiff, by the evidence of the auctioneer, that the defendant was in the habit of attending sales of horses, and that he knew the plaintiff's groom was present; and it was stated that there was a case deciding that a seller has a right to have one person to bid for him at the sale, if he does not do it in order to impose. Chief Justice Best then said: "I agree that he has such a right, but then he must

declare it by the conditions of sale. I am of opinion that a person acts in opposition to the conditions of sale where the highest bidder is to be the buyer, if he employs a person to bid for the purpose of enhancing the price. In this case the other person at the sale did not go near the ultimate sum. It is impossible under these circumstances to say that £29 was the highest price contemplated by the conditions; for the defendant, under them, was entitled to have the horse at the next highest bidding to that of the only fair bidder" (*Crowder* v. *Austin*, 2 C. & P. 208). The Court of Common Pleas, on a motion for a rule, confirmed Chief Justice Best's ruling at nisi prius; and Justice Park said: "I entirely concur in the opinion expressed by Lord Mansfield;" as to which Lord Kenyon, in *Howard* v. *Castle* (6 T. R. 634), said: "The whole of the reasoning of Lord Mansfield in *Bexwell* v. *Christie* is founded on the noblest principles of morality and justice,—principles that are calculated to preserve honesty between man and man. The circumstance of puffers bidding at auctions has been always complained of. If the first case of this kind had been tried before me, perhaps I should have hesitated a little before I determined it; but Lord Mansfield's comprehensive mind saw it in its true colours, and made a precedent which I am happy to follow." And this decision has been further confirmed by a recent case in the Court of Exchequer (reported in the *Law Journal*, vol. xv. N. S., Exch. 230), where it was held that in "a sale by auction without reserve, if a puffer be employed without notice of his being there to protect the interest of the seller, the sale is void."

It is necessary here to warn the horsedealer that there is one point in which the luminaries of the law have decided he must not act "like a gentleman" if he would not lose his horse or his money. Thus, in *Fennells* v. *Ridler* (5 Barnewall and Cresswell, 406), the plaintiffs, horsedealers, sold defendant a horse on a Sunday, and Mr. Justice Bayley said, under the 27th of Charles II. c. 7, the plaintiffs could not maintain the action.* But if you are not a horsedealer the case is different. Sabbath-breaking is an indulgence extended exclusively to "gentlemen," in so far as horse-mongering is concerned. In *Drury* v. *De la Fontaine*, it being shown that neither of the parties was "exercising his ordinary calling,"—and were merely cheating each other as "gentlemen," *en amateur*,—Chief Justice Mansfield declined to apply the statute of the pious Charles. There is another case in confirmation of this view, reported in the books as that of *Bloxsome* v. *Williams*. In this case, Justice Bayley said: "When neither of the parties is a horsedealer, a contract between them for sale of a horse is good, though made on a Sunday. But if a party take a warranty on a Sunday from a person he *knows* to be a *horsedealer*, he cannot sue upon breach of that warranty." The cases upon this point may be found in Mr. Oliphant's book, and fully prove the Frenchman's satire, *avec le ciel il a des accommodemens*—even in the matter of keeping holy the Sabbath day.

From this digression we will return to warranty, unsoundness, and vice.

The most definite of legal *dicta* to be found on the general nature of unsoundness are contained in a couple of cases. The first was an action of assumpsit brought on a warranty; and under the direction of Mr. Justice Erskine, at the trial, a verdict was found for the plaintiff. In refusing a rule for a new trial Mr. Baron Parke said, "The rule I laid down in *Coates* v. *Stephens* is correctly reported; that is the rule I have always adopted and acted on in cases of unsoundness: although, in so doing, I differ from the contrary doctrine laid down my by brother Coleridge in *Bolden* v. *Brogden*. I think the word 'sound' means what it expresses, namely, that the animal is sound and free from disease at the time he is warranted sound. If, indeed, the disease were not of a nature to impede the natural usefulness of the animal for the purpose for which he is used, as for instance, if a horse had a slight pimple on his skin, it would not amount to an unsoundness; but even if such a thing as a pimple were on some part of the body where it might have that effect, as for instance, on a part which would prevent the putting a saddle or bridle on the animal, it would be different." * * * "An argument has, however, been adduced from the slightness of the disease and the facility of cure; but if we once let in considerations of that kind, where are we to draw the line? A horse may have a cold which may be cured in a day; or a fever, which may be cured in a week or a month; and it would be difficult to say where to stop. Of course, if the disease be slight the unsoundness is proportionably so, and so also ought to be the damages: and if they were very inconsiderable, the judge might still certify under the statute of Elizabeth, to deprive the plaintiff of costs." * * * "But on the question of law, I think the direction of the judge in this case was perfectly correct, and that this verdict ought not to be disturbed. Were this matter presented to us now for the first time, we might deem it proper to grant a rule, but the matter has been, we think, settled by previous cases: and the opinion which we now express is the result of deliberate consideration."

Upon the same point Baron Alderson said, "I am of the same opinion. The word 'sound' means 'sound,' and the only qualification of which it is susceptible arises from the purpose for which the warranty is given. If, for instance, a horse is purchased to be used in a given way, the word 'sound' means that the animal is useful for that purpose: and 'unsound' means that he, at the time, is affected with something which will have the effect of impeding that use. If the disease be one easily cured, that will only go in mitigation of damages. It is, however, right to make to the definition of unsoundness the addition my brother Parke

* The statute of that exemplary monarch is "An Act for the Better Observance of the Sabbath," and forbids any tradesman, artificer, &c., to "pursue his *ordinary calling* on the Lord's Day."

has made, namely, that the disqualification for work may arise either from disease or accident; and the doctrine laid down by him on this subject, both to-day and in the case of *Coates* v. *Stephens*, is not new law; it is to be found recognised by Lord Ellenborough and other judges in a series of cases."

The rule as to unsoundness applies to cases of disease and accident, which from their nature are only temporary, it not being necessary that the disorder should be permanent or incurable. This is laid down as law by Lord Ellenborough in *Elton* v. *Brogden*, and *Elton* v. *Jordan;* also by Mr. Baron Parke in *Coates* v. *Stephens*, and by the Court of Exchequer in *Kiddell* v. *Burnard*, although Mr. Justice Coleridge in *Bolden* v. *Brogden* was of a different opinion.

A vice is a bad habit, and a bad habit to constitute a vice must either be shown in the temper of the horse, so as to make him dangerous, or to diminish his natural usefulness; or it must be a habit decidedly injurious to his health.

The soundness or unsoundness of a horse is a question peculiarly fit for the consideration of a jury, and the Court will not set aside a verdict, on account of there being a preponderance of evidence the other way; and they should consider whether the effect said to proceed from the alleged unsoundness, is such an effect as in the eye of the law renders a horse unsound. It is also a question for them, whether a horse warranted sound was at the time of delivery rendered unfit for immediate use to an ordinary person, on account of some disease. And in case of vice they should consider, whether the effect alleged to proceed from a certain habit is such an effect as the law holds to be a vice in a horse.

Whether curbs, crib-biting (see *ante*, p. 259), or some other drawbacks, do or do not, according to law, constitute unsoundness, are vexed questions which conflicting verdicts have left sticking in the clay of litigation, the law all the while looking on, but doing little or nothing to settle points. To address ourselves to the ventilation of such debateable matters would take up too much time and space. All we can say on the subject is, that the law in relation to the buying and selling of horses is by no means in a satisfactory state. This glorious uncertainty is, perhaps, partly attributable to the profound ignorance of most of our judges of the actual *status quo* of the animal economy of horses, and of a thousand things besides, of and concerning horses, that cannot possibly be learned either in chambers, in banco, by an occasional ride in Rotten-row, or even by a run now and then with the beagles of old Sir Peter, or the harriers of young Paceleft. But whether or not our law judges are good judges of horses, knowing all about, or nothing at all about, the ills to which the animals are heirs and heiresses, it is certain that no person, learned or unlearned in the law, can *a priori* precisely say how the judge will direct the jury, and whether the verdict will be for the plaintiff or the defendant. As prevention is proverbially better than cure, it is prudent never to warrant a horse either by word of mouth (and mind, if your groom does, it is just the same as if you yourself did it; for the law says, *Qui facit per alium facit per se*), or by a written receipt.

The mentioning a receipt recals one framed by Mr. Surtees,* who observes, that if a buyer cannot induce a seller to be nailed in black and white, after the stringent fashion prescribed in his formula, he should get as much of it put in as the seller may be soft enough to insert! The form recommended by the learned "gentleman" is this:—

"Horncastle, Jan. 1, 1862.

"Received of A. B. the sum of —— pounds for a chesnut gelding, which I hereby warrant to be only six years old last grass (*sic in orig.*); and also that he is sound and free from vice, restiveness, and faults (particularly ———); and that he is quiet to ride and drive, without blemish."

As we have mentioned Surtees' book, we will revert to the question as to how far the servant's warranty binds the master. In the case of *Pickering* v. *Bush*, Mr. Justice Bayley said—"If the servant of a horse-dealer, with express directions not to warrant, does warrant, the master is bound, because the servant, having a general authority to sell, is in a condition to warrant, and the master has not notified to the world that the general authority is circumscribed." However, in an analogous case of *Fenn* v. *Harrison*, where the above opinions were quoted, Lord Kenyon doubted the propriety of a master's being bound by his servant's warranty, and said he thought the maxim of *respondeat superior* applied. In *Helyear* v. *Hawke*, Lord Ellenborough said—"I think the master having intrusted the servant to sell, he is intrusted to do all that he can to effectuate the sale; and if he does exceed his authority in so doing, he binds his master." The circumstances of the case were these:—The horse had been inserted in Tattersall's catalogue, but was not brought to the hammer, and Helyear afterwards, having the catalogue in his hand, inquired of Hawke's groom, who had the care of the horse, if the horse was but seven years old, and if free from vice; to which the latter replied "Yes, if you have him." And upon an objection to this evidence being received to bind the master, Lord Ellenborough said—"If the servant is sent with the horse by his master, and the horse is offered for sale, I think he thereby becomes the accredited agent of his master, and what he has said at the time of sale, as part of the transaction of selling, respecting the horse, is evidence; but an acknowledgment to that effect made at another time is not so: it must be confined to the time of the actual sale, when he was acting for his master." It afterwards appeared that nothing had been said about the price; and his Lordship was of opinion that it could not be deemed a complete contract for the sale of the horse, and would not support a warranty at all. Who shall

* In a work *On Warranty*, now superseded, by lapse of time, by Oliphant's *Law of Horses*, of which there is an edition brought down to 1859, in respect to the adjudged cases in the Courts.

decide when judges disagree? The best way is to write down the instructions, if the master either cannot or does not choose to be referred to.

From all that is here set down the common sense deduction seems to be that warranty should be given only in very exceptional and rare cases, and that soundness is so indefinite and complex a thing that it is courting trouble to guarantee it. Indeed there seems no reason why a person buying a horse should not act as he would in any other transaction where there is risk. For instance, a man buying a house does not merely examine it himself, and then, because he likes it, buy it with a warranty; but he takes his surveyor with him, who points out all its defects, and then, the purchaser being aware of these, buys it or not, according to the opinion he forms of its value after they have been taken into consideration.*

In all cases where a risk is run and an insurance effected, there are regular rules laid down by which such transactions are governed. Where too a person insures his life he submits to a regular medical investigation, and no company would act in so unbusiness-like a manner as merely to take a person's own "warranty" that he is sound in health and constitution, and so be put to the proof, in case of his death, that he was not so at the time he gave the warranty, for this would lead to endless disputes.

The best rule for a man therefore to follow, in selling a horse is, this: where the horse is of no great value, to refuse a warranty altogether, and such a horse is best sold by auction. Where the horse is of great value, if sound, but that appears doubtful, then to let the purchaser be satisfied by a veterinary examination, and so take the responsibility upon himself. Where, however, the seller is confident that the horse is perfectly sound, and that with a warranty he would fetch a much larger price than without one, he should have him examined and certified as sound, &c., by one or two veterinary surgeons of respectability and experience, and then, knowing on what grounds he goes, he may take the risk of warranting him sound.

The vexation and difficulty experienced in horsedealing arise, in a great measure, from the loose manner in which such transactions are conducted, and from the thoughtless manner in which people give warranties; and we generally find that the smaller a man's knowledge may be with regard to horses, the more ready he is to warrant, little dreaming of the responsibility he is thus fixing upon himself.

Mr. Oliphant* thus remarks on

Veterinary Certificates.—When a horse is in the possession of his natural and constitutional health, and is also in such bodily perfection as is consistent with his natural formation, a veterinary surgeon will of course certify him to be sound. But as there is in most horses some slight alteration in structure, either from disease, accident, or work, a veterinary surgeon in giving his certificate had much better describe the actual state of the horse, and the probable consequences, without mentioning "soundness" or "unsoundness" at all, and so let the purchaser buy him or not as he may be advised. Because in such a case a straight-forward statement would be made, and a man in the Veterinary profession would not be called upon in an off-hand manner to decide questions which are of the greatest nicety, being full of uncertainty, and upon which no conclusive decision can safely be arrived at. For we find the greater the difficulty, the more likely is a decision (if come to at all), to be the result of a slight preponderance of one over each of many conflicting opinions.

A man will sometimes warrant a horse in consequence of a veterinary opinion given in an off-hand manner, either without a sufficient examination of the horse having been made, or sometimes in the face of actual disease; for the giving a warranty seems to be considered quite a trifling matter. Thus, in the case of *Hall* v. *Rogerson*, tried at

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* In *The Veterinarian*, vol. vii., N. S., pp. 108—116, and pp. 162—167, is the translation of a lecture on Veterinary Jurisprudence, by Professor Renault, of the School at Alfort, from which a view of the law in France as to "warranty and unsoundness" may be obtained. Our neighbours *d'outremanche* are quite "as much to seek" as we are, though their written law looks plain. The *Code Napoleon*, arts. 1641—1649, chapter ii., § iii., of the *Code Civil*, attempted something; but the "anarchy of the law," as the Professor terms it, is complete in the practice of the Courts.

The laws of Sale and Warranty in France are as follow:—

"Art. 1. The vendor (providing he gives a warranty) is held responsible for all unapparent defects that may render the vended article unfit for the required purposes, or so diminish that fitness that the purchaser, had he been aware of their existence, would not have bought it at all, or else not at so high a price.

"2. For self-apparent defects, such as the buyer could not fail to discover, the vendor is not responsible.

"3. But for such as are not perceptible, even though he was ignorant of their existence himself, still is he amenable, unless stipulated that he would not hold himself chargeable with any warranty.

"4. In a case of false warranty, it is at the option of the purchaser either to return the article and claim back the price of it, or to retain it and claim the restitution of such proportion of the original cost as shall by judicious arbitration be awarded.

"5. If the vendor possessed a knowledge of such defects, he is responsible not only for the return of the price of the article, but for any damage or inconvenience sustained by the purchaser in consequence thereof.

"6. But if the vendor was unconscious of them, he will be only liable to refund the price of the article, and reimburse the purchaser for any expenses attending the sale.

"7. If such defective article becomes lost in consequence of its defectiveness, the loss belongs to the vendor, who will have to return the price paid for it, as well as make good other expenses incurred by it: should the loss, however, be the result of accident, it will remain chargeable to the account of the purchaser.

"8. Any action intended by the purchaser, in such cases as these, should be instituted with as little delay as the particular case demands, and as is consonant with the customs of the place.

"9. No such action will lie when the sale is one ordered by judicial authority."

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* *A Treatise on the Law concerning Horses, Racing, Wagers, and Gaming.* By G. H. Hewit Oliphant, Esq. London, 1859.

the Newcastle Spring Assizes, 1847, it appeared that a witness, who was a veterinary surgeon, had taken off the horse's shoes, and examined his feet, when he found a slight convexity of sole. The owner then asked him if he would be "justified" in warranting the horse as it had been warranted to him; the witness then asked him if he was satisfied the horse "went sound;" he replied, "Perfectly so;" he then said he was justified. On cross examination, the witness said, "I pointed out a slight disease in the sole, but thought he would have been justified in warranting him; if I had taken the precaution to see him go, things might have been different." So that a veterinary surgeon finding that a horse has a disease in the sole, and without taking the precaution to see him go, tells the owner he is "justified" in warranting. Now the use of the word "justified" shows that neither of the parties fully knew the amount of liability incurred by giving a warranty, and it seems as if they had considered it rather an affair of conscience or honour than of legal responsibility.

That the veterinary profession feel the greatest difficulty in dealing with the question of unsoundness when called upon for a certificate on that point, will appear from part of an article on "Soundness as opposed to Lameness," by Mr. Percival. He writes, "Reluctantly as we enter on this difficult and much debated question, we feel it our duty to make some observations on the subject, though these observations will be rather of a general than of a particular nature, and have especial reference to soundness, regarded as the converse of, or opposite state to, lameness. No person buys or sells a horse without feeling some concern as to the soundness of the animal; the purchaser is apprehensive lest his new horse should from any cause turn out unserviceable or unequal to that for the performance of which he has bought him; the vendor is apprehensive, either lest the animal, in other hands, should not prove that sound and effective servant he conceived or represented him to be, or lest some unrepresented or concealed fault or defect he is aware the animal possesses, may now, in his new master's hands, be brought to light.

"Soundness, as opposed to actual or decided lameness (or as synonymous with good health), is a state too well understood to need any definition or description; when we come, however, to draw a line between soundness and lameness in their distinguished form—to mark the point at which one ends and the other begins—we meet a difficulty, and this difficulty increases when we find ourselves called on to include, under our denomination of unsoundness, that which is likely or has a tendency to bring forth lameness. It will be requisite, therefore, for us to say, not simply that every lame horse is unsound, but to add these words, or who has that about him which is likely on work to render him lame. This will, it is true, open the door to difference of opinion and equivocation There may, as we have seen, spring up two opinions concerning the presence even of lameness. There will in more cases be two opinions concerning that which is accounted to be the precursor of lameness, or have a tendency at some period proximate or remote to produce it; all which differences are best got rid of by reference to the ablest veterinary advice. There will be less diversity of opinion among professional men than among others, and the more skilful and respectable the professional persons are, the greater will be the probability of a happy unison in their views of the case." (*Veterinarian*, vol. xviii. p. 366.)

Mr. Goodwin, Veterinary Surgeon to the Queen, makes the following sensible remarks on the certificates given by veterinary surgeons to the vendors and purchasers of horses. He says, "it is to be regretted that the members of the Veterinary profession have not been taught to adopt some rules for rendering the certificates they are required to give upon examining horses as to soundness, at least somewhat similar in the construction and expression of their opinions, so as to render them more intelligible to the persons who have to pay for them. I am quite aware of the impossibility of attempting to reduce professional opinions to one common standard; but I think that our leading practitioners might meet together, and agree upon some general principles for their guidance, that would make their certificates less liable to the censure and ridicule they both merit and incur. The occurrence is by no means uncommon for a buyer to lend a horse to be examined by a veterinary surgeon, and, not feeling satisfied with the opinion he obtains, to send him to another; and then comparing the certificates of the two, and finding them diametrically opposite in their statements, he finally trusts himself to the warranty of the dealer, purchases the horse, and at the end of six months has had to congratulate himself upon the possession of a sound animal, and the escape he has had in avoiding *two unsound* certificates." (*Veterinarian*, vol xix. p. 88.)

Lien.—A look at "the law of lien"—as it is a kindred topic to the law of warranty—may not be amiss. A livery-stable keeper, then, has not a lien on horses standing with him; an innkeeper, on the contrary, has; the latter being entitled by law to keep the horses in his stable until paid for their keep. The reason assigned by the lawyers for the difference in favour of the innkeeper is this:—The livery-stable keeper can refuse to receive the horses of any person; he is a free agent in the business; but the innkeeper has no choice. Willing or unwilling it is obligatory by law upon *him* to take a horse in to stand at livery, even though neither the owner nor his servant lodge at the inn. Of course, horses, like all other chattels, are liable to be seized at a livery-stable, under distraint for the landlord's rent; and the process of recovery is not seldom extremely unpleasant, although the result is pretty certain if people only go the right way about it. Again, if a horse be stolen from the stables of an innkeeper, its proved value can be recovered from him. In the case of *Wallace* v. *Woodgate*, Lord Wynford, Chief Justice of the Common Pleas, told the jury that a livery-stable keeper had not, by law, a lien for the keep of horses, unless by special agreement with the owner of them; and that if they were

satisfied that there was an agreement to that effect, and that Wallace had removed the horses to defraud Woodgate of his lien, then their verdict must be for Woodgate, which they accordingly gave. It appeared that Woodgate was a dealer, and had sold Wallace three horses, and taken his bills of exchange in payment. As well as being a horse-dealer, Woodgate kept a *livery-stable*, into which (out of the sale stable) he removed the horses in question ; but there was no evidence to show that there was any agreement made that they should remain there until their keep was paid for. Wallace was in the habit of using the horses whilst they were kept by Woodgate, and one day, under pretence of using them, took them entirely away to another stable. Woodgate, finding out where they had been removed to, in the absence of Wallace, repossessed himself of them, upon which Wallace brought his action ; and the defence was that Woodgate had a right to retain the horses until the keep was paid for, he having a lien by agreement.

There is yet another phase of the law of warranty we had nearly overlooked. We give it in the subjoined paragraphs:—

"As to resale by a purchaser with a warranty, where a purchaser, relying upon his warranty, sells the horse to another, giving a similar warranty to the one he received, and upon its failing an action is brought against him, and he gives notice of such failure and action to the original seller, who gives no direction for defending or abandoning the cause, the costs sustained thereby will be added to the amount of the original damage accrued by reason of the false warranty, and the second seller will be entitled to recover the sum from the original vendor. It must, however, be proved that the horse was unsound at the time of the first sale.

"Where a horse is delivered to a smith to shoe, and he injures him, an action can be brought. So if he delivers him to another smith, the owner may have his action against the latter. And it is said that an action lies for not shoeing according to promise, if the horse is injured from the want thereof.

"Formerly it was understood, if a veterinary surgeon undertook to cure a horse of any malady, and through negligence or unskilful treatment he died or was injured, that the owner could recover the value of the horse in an action against the surgeon, without proving any express agreement, on the ground that whoever undertakes a duty is bound to exercise proper and competent skill in his occupation. This doctrine, according to Professor Coleman, was reversed in an action wherein he was a witness, and bore testimony to gross mismanagement on the part of a veterinary surgeon ; notwithstanding which the jury, under the direction of the judge, returned a verdict for the defendant."

The latest case in the books of the perils of warranty is that of *Botterill* v. *Batty*, which lasted three days,—namely, December 5, 6, and 7, 1861,—in the Queen's Bench, before Chief Justice Cockburn and a special jury. The action was brought to recover £250, the price of a four-year-old chesnut hunter, sold by the plaintiff to the defendant on the 26th of July, 1861. The defendant paid £50 into court, and, as to the residue, pleaded "never indebted."

The horse, which was the subject of dispute between Mr. Richard Botterill, of Garton, in the East Riding, and Mr. John Batty, of Bishop Monkton, near Ripon, appeared to have been a remarkably fine animal. Mt. Botterill bought it in November, 1860, for £75. It was worked a little in a light chaise during the winter, and was broken in during the spring. On the 15th of July, 1861, there was a show at Leeds, and the horse carried off the second prize. On the 26th of the same month there was a very large show at Driffield, and the horse carried off three prizes—as a four-year-old, as a hunter, and as the best horse on the ground. In the interval between the two shows a little hair had been knocked off one of the hind legs, either in the railway truck or by some slight blow from shying at the station. But the material question did not turn upon the injury, which was noticed by the vendor and vendee at the time of the bargain at Driffield, but upon the question whether the horse was naturally sound or not. Mr. Botterill arranged to sell the horse to Mr. Batty for £250, and to deliver it in a day or two. Mr. Botterill sent it over to Malton on the 8th of August, and in a day or two it was taken thence to Bishop Monkton. Within a very few days Mr. Batty sold it for £260 to Mr. Chinnock, near Reading, and Mr. Chinnock subsequently sold it for £270 to Mr. Collins, a dealer, in London. Mr. Collins, however, returned the horse, and so did Mr. Chinnock, and Mr. Batty desired to return it for unsoundness, or to reduce the price to £50, which he had paid into court, as its full value.

The case for the plaintiff was that the horse was perfectly sound on the 26th of July, and that any defects now visible had arisen from subsequent causes, particularly from the effects of epileptic fits and a wound on the head. It was not denied that the horse was warranted sound to Mr. Batty, and Mr. Botterill relied upon the evidence of Professor Spooner, Mr. Bowman, Mr. Holmes, and other high authorities on horses who saw the animal at Driffield, and proved that at that time there were no indications of unsoundness. Mr. Holmes had a horse competing with the chesnut at Driffield for the prize, and if there had been any sympton of disease it would have been a disqualification. Mr. Holmes's horse took the second prize, and he said he should certainly have called attention to any defect in the chesnut had any been distinguishable on the day of the show, which was also the day of the sale.

The case for the defendant was that the horse was naturally unsound or affected with hereditary disease when Mr. Botterill sold it at Driffield, and Mr. Field, Mr. Mavor, Mr. South, Mr. Varrel, Mr. Cox, Mr. Greenway, Mr. Chinnock, Mr. Brewster, and other witnesses declared most unequivocally their opinion that the chesnut was a "whistler," had splints inside each hind leg, showed enlargement of the hocks, commonly called spavin, on both hind legs, and also

exhibited a curb on the off-hock. Great stress was laid on the enlargement of the hocks, and Mr. Field said the disease had probably existed for some months. No very great point was made of the curb, and that blemish was attributed to the accident before the horse arrived at Driffield. Mr. Collins, on discovering the "whistling," sent it at once to the Veterinary College, and it was there pronounced unsound, as a "whistler," and having enlargement of the hocks, of long standing, a little below the usual seat of spavin. Mr. Varrel, the assistant professor, admitted that the horse was not now a "whistler," and the enlargement of the bones of the hind legs was the unsoundness upon which reliance was placed.

Mr. Mavor (in reply to his Lordship) said that understanding that this horse had never done any hard work, he was of opinion the bony enlargement of the hocks was constitutional, and would therefore take more time to develop than if the animal had been hard-worked. He examined the horse on the 28th of October, and he thought the disease must have existed for at least three months.

Mr. Richard Barker, of Malton, to whom by defendant's directions the horse was delivered on the 8th of August, said that in his opinion the horse was not deliverable on account of unsoundness. The hair was off the leg and the hock looked large. Mr. Botterill bought the horse of him for £75, and promised him if he was lucky with it to give him something more. When the horse took the prizes at Leeds and Driffield, witness thought that as a gentleman plaintiff should have given him £5, but he had not found time to do so yet.

Mr. W. Rookes, of Exeter, and other witnesses, said that on the assumption that the horse was spavined it was not worth more than £40. Plaintiff's witnesses said that in their opinion the horse was worth £100 in its present condition, or £80 even if spavined, though they did not believe it. They admitted that the horse went lame to-day, when brought down to Palace-yard for the inspection of the jury, but they attributed it to the state of its feet. The jury, after three hours' deliberation, declared their inability to agree on a verdict, and were accordingly discharged. The Lord Chief Justice said that in this case every effort should be made to arrange matters, because it was very likely it would be tried again with the same result.

This case aptly illustrates that "uncertainty" against which, "glorious" as it may possibly be, we must protest. The phases that a horse-case may exhibit, we are perfectly aware, are all pretty well known beforehand; but who can predict the result, we should like to learn? Who can aver with anything like certainty what the verdict will be? unless, indeed, a dealer happens to be the defendant; then it is easy enough to give a shrewd guess that the poor devil will get his "gruel" from a jury of jewellers or drapers. For our part, we must think that this same "glorious uncertainty" is signally inglorious and unsatisfactory. We say, it is rather a serious fact that the hazy state of the law relating to the warranty of horses leaves a larger portion of the public, like so many foot-balls of fortune, to be kicked, and to be made the sport of chance and its thumbscrews. Every man in the kingdom who either buys or sells a horse may be robbed "according to law." He may be plundered owing to the prejudices of a jury, pushed out of court by a crowd of stout swearers, and victimized by the contradictory dicta of veterinary surgeons—who often sell opinions not worth a straw. Sometimes, though rarely, the party is sacrificed to the caprice of counsel, together with the indifference of a napping judge, who sees plainly enough that the little "law" there is in the case is entirely smothered by the matter of "fact," and that portion exhibiting such a mass of agglomerated contradictions as not only to disgust him, but to defy all ordinary perception to distinguish truth from falsehood. Now, no system of law, it is clear, can entirely prevent the patent wrong against which public opinion is roused. What, then, is to be done in order to get rid of this incubus—of this morbid, most mischievous excrescence on the law of warranty relating to horses? This has now become a very serious question. Sporting men especially ask, "How is such a thing to be remedied?"

For purity of administration, there is no place in the world like an English court of law. But who will deny that the law itself—always impartially, and, on the whole, admirably administered—is susceptible of some simplification in horse-warranty questions? Surely there is sagacity enough at bar and on bench to make it plainer to understand—to render it more uniform in its results, and less exposed to the scandal against which the public are in arms. The fraud and the folly, the clashing and the discord,—the exhibition of knaves making a harvest of fools, the conflicting opinions and contradictory statements that startle one's common sense almost every day, the chaotic and unseemly confusion revealed—this state of things, we think, supplies a valid argument for that reform in the law of warranty which the public urgently requires, and which has no practical effect but to favour the fictions, the anomalies, the ambiguities, and we may safely add the frauds, on which the low attorney fattens.

CHAPTER XII.

THE STABLE: CONSTRUCTION: VENTILATION: LIGHTING: DRAINING: THE HUNTING STABLE, THE LOOSE BOX: STABLE-FITTINGS: THE HARNESS ROOM.

Modern research and enlightened experience bring us back from the artificial to the natural—nay, more, prevent us from confounding two things so essentially different. Our fathers—those at least who could afford such a luxury to their quadrupedal servants—baked and starved their "terrible high-bred cattle" in a compound of their own effluvia, consisting of hydrogen, ammonia, vaporized water, with even small doses of carburetted hydrogen and other agreeable air-poisons—and then pointed to their "blooming coats" as proof positive and irrefragable of their success in producing "high condition." How often they shortened life, how they destroyed the respiratory organs, how they filled their stables with inflammatory disease, let the old farriery books show; we have, however, less reliable statistics on this point than on the frightful loss of human life in the miasmatic dens of our great cities at the same period. We have scarcely yet, except in the stables of the wealthy and the enlightened, entirely overcome prejudice and tradition in this and other respects; but we hope yet to see thorough ventilation, light (without which there is no true cleanliness), effectual drainage, and moderate temperature, in the abodes of our most valuable of servants. At any rate these desiderata should form parts of the new "Health of Stables Bill;" of which we propose to place the rough draft before the reader, and which we hope, for the sake of the horse-constituency and their masters, will soon become the general "practice" if not the "law" of the land.

We are not about to treat, in this place, of the special racing stable, in which the first favourite for the "Derby" or "Sellinger" is brought into form and fettle at three years old—to fly over about one mile and a half that he may show his nose first to Judge Johnson, Judge Marshall, or old White of Nantwich*—but talk about the fit dwelling in which the serviceable saddle-horse, or park hack, the useful carriage horse—and, where worldly wealth blesses the owner, the stout hunter, with as much blood in him as there is any use for—may be brought out, each and all, "up to their work," and the last-named animal fit for a "long day."

The regular hunting and training stables of large establishments are usually substantial and well-built edifices, and not a few, such as those at Goodwood (Duke of Richmond's), at Badminton (Duke of Beaufort's), at Billesdon Coplow, late (Mr. Lyne Stephens's), in Norfolk, and other places, exhibit great skill in design, and lavish outlay in construction. As a town stable, that of the Earl of Shelburne, in Bruton Street, though necessarily irregular in its form, from its adaptation to existent surrounding buildings, is a good example of plain and judicious arrangements, and comfortable provision for horse and man. However, as it is preposterous to suppose that all stables can be brought to their standard of excellence, we will proceed to generalize on the desiderata of a horse's dwelling.

As stabling the horse is primarily a deviation from nature, it follows, as an inevitable sequence, that it often paves the way to disorders unknown, or varying in character from those of the animal in its aboriginal state. This tendency can best be obviated by judgment, care, and sedulous attention.

Space is an important element in stable arrangements. "Single-headed" stables, that is, those that have but one row of stalls, should never be less than twelve feet wide; while "double-headed" ones should be twenty-four feet, with six feet six to seven feet each stall, by six feet wide. "Stable architects," says Mr. Stewart, in his clever work called "Stable Economy," "have not much to boast of. Their sole ideas are limited to shelter and confinement. If the weather be kept out, and the horse be kept in, their objects are attained. If light and air be demanded, the doorway will admit them. If the horse has room to stand, it matters little though he have none to lie; and if you can get him into the stable, what consideration is it, though his loins be strained, or his haunch bruised in getting out of it?" Narrow stalls are highly prejudicial to horses; back-sprains are often produced by them in the attempt to turn the horse in his stall: whenever this is less than six feet wide, caution the groom always to back the animal out of it. Swinging bars or bails are highly objectionable, from the temptation to horses to play with each other, and to kick under or over them, according to height. They are also objectionable, inasmuch as horses vary as much as human beings in quickness of eating, and the tardy masticator gets robbed of his food by the rapid swallower.

* Since writing this, "Old White, of Nantwich" has left his "chair" for ever. His obituary is in *Bell's Life* of Sunday, Jan. 15, 1860.

Heat and cold should be graduated by the thermometer: the feeling of a groom or owner is a very fallacious guide. In summer 65° to 68° as a maximum, if possible, and in winter never below 50°. With horses, however, that must be kept up to the bright coat, we may spring a few degrees, and say 68° as an average. As temperature is intimately mixed up with ventilation, and that with light, it is desirable to have the stables sufficiently airy without cold or draughts. It is taught in the old books that the horse, and the blood-horse especially, being originally the denizens of a torrid country, require not only warmth but heat in this northern latitude. This notion was formerly carried to a most mischievous extent. Moderate warmth is doubtless congenial to all horses; but a high temperature is only permissible in a stable to produce and maintain the artificial state to which our summer-flyers of Oriental descent are brought for their few speedy strides over the turf, on the rare occasion of their carrying the silken jacket and its light-weight wearer. Such animals have their clothes on when led or ridden to paddock, or tan-gallop, close to the door of their country seat whereat they train and exercise. Nevertheless, even in this exceptional class, the excessive heat, especially in stables where there are several horses, is by no means necessary or beneficial even to the horse of stainless blood. Many of these have we seen—the more the pity!—who, worn by age, lameness, or accident, or perchance rejected for vice, engaged in the meanest and hardest service; exposed in all weathers, working in a Hansom cab! or that heavy town cart known to Cannon Street and Cheapside travellers as "the phee-a-ton," wherein your Manchester or Bread Street warehouseman packs his pattern-boxes, his samples, and his goods. Yet do such unfortunate outcasts from aristocratic horse-palaces adapt themselves to circumstances, and live to the average period of the fashionable racer; proof positive that the respiratory and secretory organs had kept their efficiency under all the variations of temperature of our variable climate. In confined stables, where the same air is breathed over and over again, and where the heat exhales unwholesome effluvia from every excrementitious matter, to clog the lungs and prevent the due oxygenation of the blood, where, too, the very food is deteriorated by these exhalations, we have a large percentage of the diseases which go to swell the treatises and lengthen the bills of our veterinary professors. The improvements in the ventilation of the stables of our cavalry horses have, of late years, wonderfully diminished inflamed lungs with its perpetual v. s. (*venæ sectio*) in the veterinarian's diary. Grease, glanders, and farcy, too, have decreased in a like ratio. When any epizootic is raging, it is always found to be most severe and intractable in crowded stables. Thus, when on board a transport during a storm, the standings of some cavalry horses were of necessity battened down, acute glanders immediately broke out among them, and carried almost all of them off; the principal cause of the mortality arising from their own exhalations. With a full conviction, then, of the prime necessity of rendering stables moderately warm, but yet more of the importance of their thorough ventilation, especially where the standings are numerous, we pass to the general construction of a stable.

Although stables have not always choice of situation and aspect, these are often neglected where they are at command. A south-eastern aspect for doors and windows is preferable: as dampness of the walls, too, is a fruitful cause of disorder, some of the methods adopted in dwelling-houses are worth consideration. Rising damp is a great generator of miasma, and may be checked by a course of stone laid in cement, a sheeting of zinc laid on thick plank, or in coal districts by a quantity of coal ashes or dust, the least expensive of all. This is for the footing of the outer wall. We need hardly dwell on the advantages of a dry stable when the evils of a damp one are so apparent; coughs, swelled legs, a rough staring coat, that defies the wisp and the hissing of the groom, are its constant concomitants. In some cases a stove-pipe passed through, or strewing the stables with sawdust or sand, may palliate the mischief.

Nimrod recommends that there should be no more than four stalls in a hunter's stable, and that these should have three horses, being on one side only; the centre partition of two being removable, so as to make a loose box 12 feet by 7 feet; the stable itself 16 feet wide. A pair of carriage-horses, in like manner, should have three stalls: the spare one will be found as useful as a spare bed in a house, in case of emergency; one of the partitions also shifting so as to form a loose box for an invalid. Coach-horses, however, are generally in a double row, which takes a general width of 20 feet from wall to wall. Each stall 6 feet 6 inches to 7 feet, by 6 feet wide. Large cart-horses will need yet more room.

The walls should be stone or brick, the latter the best, and 9 inches thick at the least—13 inches are better. They may be plastered or boarded, the latter the best, up to 3 feet from the manger, and plastered above: although a smooth-dressed wall is as good as either for utility. The stable should be lighted from above if possible, or if it is a single-headed one, from behind the horses' standings: this avoids glare. If the hayloft is above, lighting from the roof will of course diminish its capacity, but this is of minor importance. The ceiling must be plastered, firstly, to prevent the impure nitrogen and ammoniacal gases from ascending to the hay and vitiating it; and, secondly, to prevent the hay-seed and dust from falling into the horses' eyes. White, the veterinarian, approves of an unplastered tiled roof (where there is no loft above); but Stewart, a much better authority, condemns this for any but the commonest of agricultural horses. Where there is a loft above, 8 to 9 feet are a good height for the ceiling; which when too lofty is cold, when too low requires draughts and currents to too great an extent to be safe for the horses'

lungs and skin. Where there is no loft, the height should be greater, or the stable ceiled, otherwise the tiles and slates will make the stable an oven in summer, and snow on the roof convert it into an ice-house in winter.

The importance, then, of avoiding sudden and extreme alternations of heat and cold must be one of the points studied in the construction of a healthy stable. We have seen of late years, at the new Palace of Westminster, and in our Law Courts, how our scientific men have alternately chilled and baked the persons of our peers, the "collective wisdom" at St. Stephen's, and the frequenters of our Courts of Justice. Sometimes this has been effected by hyperborean blasts through pierced floorings, or ascending currents through cocoa mattings, and the like permeable contrivances. Then, by way of *per contra* to these draughts of "cold without," up the trowser-legs of auditors and jurymen—not forgetting the inflation of the judges' robes—they have changed the tap, and turned on their "warm with," from ingeniously contrived furnace-flues, to such an extent, that it is only a few weeks since a learned judge in one of our Courts, finding that "science" had fastened up all the windows of the reeking Court during the blowing of this sirocco, ordered an attendant to resort to a primitive mode of ventilation, by smashing the window-panes. We fear the remedy was about as bad as the disease. There is a Spanish proverb—

> "When the wind blows through a hole,
> Make your will, and take care of your soul;"

and if this is sound advice to the biped, it is no less so to the keeper of the quadruped. Change from one extreme to the other must be carefully guarded against. The late head of the Veterinary College, Professor Coleman, however, inculcated this error in his teaching, on purely "scientific principles;" which had only one drawback—that such "principle" was utterly erroneous. He says:—"In the formation of stables, let the rack be in the centre; two apertures, about 3 inches by 2 inches, or 3 inches by 4 inches, should be made on each side, as close to the horse's nostrils as possible; and two similar holes at the bottom." The Professor then assigns as a reason—that "the oxygen is in largest quantity in the lowest or heaviest stratum;" therefore, there will be no draught inwards at the upper holes. We know differently. The theory reminds us of the old story of the Merry Monarch, who gravelled the savans of the Royal Society with the problem of the fish and bucket of water, which the royal mystifier suggested added not to the weight of the vessel and contents while it supported itself therein by the motion of its fins, but made so much the heavier, by its own specific gravity, when it lay at the bottom. The courtier-sages were seeking a solution for the royal problem, when one boldly said, "I deny the fact." "And so do I," said the king, laughing. The holes near the horse's nostrils are in the same category; the wind will blow where it listeth, in spite of the stratum theory of the Professor. It must, however, be admitted that the renewal of the air in a stable is indispensable to the well-being of the inmates; and the question is—how this can best be effected?

Whatever difference of purity may be attributed to the air of cities and of the country, the degree of agitation of the air has a marked influence on the extent to which the chest dilates itself. The slightest agitation of the air, when its state of dampness, dryness, and temperature are properly adjusted to the system, produces such a feeling of relief and of pleasure as to dilate the chest immediately, so as to drink in, as it were, a larger volume of the grateful and genial air.

The operation of heat upon the living animal is always stimulating; the operation of cold (or more accurately the absence of heat) is tonic or debilitating, according to its application. The animal frame, like inanimate matter, is liable to have its caloric extracted—abstracted externally—by the application of a colder medium; but its inherent powers of life quickly restore the equilibrium when the cold has been moderate and of short duration. Indeed, the evolution of heat generally exceeds the previous reduction of temperature, as is shown when the body is immersed in water. The pores in this case are strongly closed, and so are the extreme vessels on the surface of the body. The blood is impelled with increased momentum by the heart, and if the body be now emerged the reaction of the vital circulating fluid determines it to the surface, and a genial glow succeeds; but if the pores be too long closed—if nature be not thus relieved—and the cold is unduly prolonged, the effort to throw off the mischief assumes the character of general inflammation.

Pure air, then (and, as an accessory, cleanliness), being a prime necessity to the health of domesticated animals, those who desire a healthy steed will see to these most important points. As a simple mode of attaining a full supply of pure air, two sets of apertures are necessary: one set in the upper part of the stable, for the escape of the impure and heated air; another close to the floor, to admit the pure and unexhausted air. These latter openings must be so contrived that the air on entering shall not be directed in a current on any part of the horses, but diffuse itself gradually throughout the stable. The same rule must be observed in the upper ventilating apertures; and, as the air which has been expired ascends in a direction perpendicular to the horizon, these apertures should be placed upright. When this is not easy to effect, then they should be as near the ceiling and as far from the horse's nostrils as possible. They may be made oblique, which will give exit to the current of heated air, and protect the stable from rain and wind. But as, owing to the construction and confined situation of some stables, or from floors above, these openings cannot be made, then small tubes may be opened into the stable, in the ceiling, or as near its height as possible. These may be carried into a flue to the top of the building, or outwardly with perforations in the wall.

A plan adopted by Mr. Brett, V. S. of the 12th Lancers, at the barrack stables at Manchester, is described in "The Veterinarian" (vol. vii., p. 483), which may afford some hints in the case of stables unfavourably situated; we shall, therefore, transcribe it in the writer's own words:—"Suppose a stable to be blocked up by other buildings on all sides except at its two ends; in that case I propose to have a large wooden tunnel, two feet square, running the whole length of the stable under the mangers; and if it should be a double stable, one tunnel under each row of mangers. These conduits are to come through the end walls of the stable, and to be open at both ends on the outside, for the purpose of admitting a thorough draught or body of air through them. This main stream of air is to be equally dispersed about the stable by means of perpendicular wooden shoots or chimneys, six inches square, emanating out from this main tunnel, one at the head of each stall partition. They should be seven or eight feet high, so as to avoid a draught on the horse's eyes, and open at their tops like chimney-pots, and should stand out two feet from the wall. The rarefied state of the air in the stable will cause a constant flow of cool air through this main tunnel and up these chimneys; and will equalize the temperature of the stable, and entirely obviate the draught of wind that blows in at the horizontal holes in the walls of our stables, as at present ventilated. These perpendicular chimneys may have one or two other apertures in them besides the one at their tops, at different heights, that may be opened or closed at pleasure, to admit air by means of a door with a hinge and button opening on that side next the wall, whereby a direct current of air on the horse will be averted. If these air passages should not be thought sufficient, other horizontal tunnels, branching from the main one, might run from it at right angles under each stall partition, and terminate in a perpendicular wooden chimney, six feet high at each heel post.

"But supposing the stable not to be blocked up on any side by other buildings, I would then dispense with the longitudinal main horizontal tunnel altogether, and break a hole, two feet square, through the wall, under each manger, in each stall, and in a line with the stall partitions. These apertures should be fitted with square wooden tunnels, each two feet long, exclusive of the thickness of the wall, and closed at their ends which are inside the stable: out of each of these short horizontal tunnels a perpendicular shoot or chimney, in height six or seven feet, and open at the top, should ascend for the admission of fresh cool air. In the *ceiling*, directly over each horse's head, a hole is to be broken through for the exit of the contaminated air, and a passage given to it through the roof by means of perpendicular wooden chimneys sheltered at the tops by curved tiles, to prevent the descent of rain on the horses: this could be effected notwithstanding that either a loft or a soldier's room were over the stable. The whole being of wood,* the expense would be inconsiderable, and the benefit from a thoroughly and equally ventilated stable great. In a troop stable of sixteen horses the air admitted by the half-door or window is very unequally distributed: the coats of those horses next the doors are staring, while the centre horses can scarcely get a breath of fresh air to inhale. The mode of air by direct holes in the bottom of stables, though certainly better than none, is a rude contrivance. The air rushes in on the animal as he is in his stall, which the groom perceiving, nevers fails to stop them up with bedding; and thus the mischiefs to eyes, lungs, and thence to the blood, go on increasing."

One of the best methods, where not precluded by some of the circumstances above noted, is as follows:—Revolving ventilators, as a general rule, we do not approve. A centre funnel, of large dimensions, should be let into the ceiling, its larger end downwards: at top of this should be an overhanging lantern, cap, or dome, having at its sides louvre boards moving on a centre horizontally. These may be regulated by two cords—one on each side of the lantern—so acting that the two opposite sides may be opened or closed to any degree required; and, if necessary, the windward one independently of the leeward, and *vice versa*. Air may then be admitted by the upper parts of the windows, as in hospitals, &c., and will discharge itself upwards: the apertures to be regulated by season, circumstances, the health and number of the horses, &c.; extra warmth being indispensable when horses are shedding their coats, or under physic.

We cannot quit the subject of ventilation without endeavouring to impress on the reader the importance, nay, the indispensable necessity of a clear comprehension of its influence on the animal economy. The respiration must not be considered, as is too often taught in elementary handbooks, as a mere chemical process—a simple combustion in the lungs, in which the oxygen of the inspired air unites with the carbon of the blood, to form carbonic acid, and then be expelled from the system. Respiration is a function much more complex: it consists of absorption and exhalation—the attributes of all living and breathing beings; and, farther, in the assimilation of two constituents of the air, oxygen and azote. The living principle is, then, *par excellence*, the *breath*, and through that the *blood*. The vital principle, then, is more readily acted on by the lungs receiving *impure air*, instead of its natural food, *pure air*, than by any other circumstance whatever. The lungs, let it never be forgotten, are a second stomach, and the respiration but another form of digestion. When food enters the stomach its nutrient parts are separated and converted into chyle; when air enters the lungs its vital properties are separated to repair the waste and purify the blood which builds up the animal system. If the stomach receive impure and unwholesome food disease is induced; if the lungs receive effluvia from decayed animal or vegetable matter, instead of pure atmospheric air, then also the system becomes diseased.

* We should prefer the tunnels of a fire-proof material.

Glanders and farcy may be adduced as proving this fact. Both these diseases are originated by breathing aerial poisons, and the disease of the blood is the cause of the disease of the solids. When a horse is infected with the disease called the glanders, he will be found also farcied. The poison at first develops a local disease, which after a time travels through the system. In the case of direct inoculation with the virus, how is the poison conveyed to the other parts from the original sore but through the agency of the contaminated blood?

Quitting, however, a strict medical view of the evils of a want of judicious ventilation, we would ask any sensible man to enter one of these hot and pestilential stables at early morning—when the breath of its quadrupedal occupants has become an almost putrid exhalation, and the reeking atmosphere damps and saturates the walls—and ask him whether such an atmosphere must not impair vitality, deprive the blood of red colour, and thereby render it unfit to stimulate the heart and feed the other organs through which it circulates. Reflect too on the deterioration of the stimulus to the energy of the brain, and thence its evil effects on the digestion, circulation, secretions, and eventually on the wind, endurance, soundness, and temper of the animal, and you will surely see to this important element in the construction of your stable. Mr. Karkeek, whose researches on aerial poisons are worthy perusal by every one who loves and values his horse, says on this point:—"We have frequently observed a kind of balance between the respiration and the digestion; and he who is a careful observer of horses in a healthy as well as a diseased state, must have noticed that there is a certain balance between the quantity of vital air received into the lungs, and the quantity of food which can be digested in the stomach."

We have spoken of the expulsion of carbon from the system, and the results of some of the experiments of skilful investigators are too curious and instructive to be passed over.

An animal of the ordinary size, in a good state of health, gives off 27½ cubic inches of carbonic acid gas in every minute; in 24 hours 39,600 cubic inches (in round numbers 40,000). 100 cubic inches of this gas weigh 46½ grains, 40,000 then will weigh 18,532 grains. A volume of carbonic acid gas weighing 100 grains contains 28 grains of carbon; 18,532 grains will contain 5,190 grains of carbon or nearly 11 ounces, so that two-thirds of a pound weight of carbon is daily expelled from the blood and carried off by the process of healthy respiration.

Lavoisier, the eminent French chemist, gives a striking proof of the sensible deterioriation of air, where a number of animals are confined in small space. When the air out of doors contained 27 parts of oxygen and 73 of nitrogen = 100, the air in the lowest ward of the Central Hospital in Paris contained 25 parts oxygen, 71 nitrogen, and 4 of fixed air = 100. Before the play in the theatre of the Tuileries the air was 27 parts oxygen, 73 nitrogen; towards the close of the performance it was 21 parts oxygen, 76½ nitrogen, 2½ fixed air. Hence in the hospital the vital air had been diminished as 21 is to 27, or nearly one-fourth. Thus, in all badly ventilated stables the air contains three fluids instead of two, the third most deleterious to life and health. The relative gravities of these gases may be seen in any good chemical work.

"As there are a number of bodies constantly abstracting oxygen from the air, it might be imagined that its relative quantity would decrease; but no such diminution takes place, except in instances, even from some local cause, where carbonic acid gas is evolved much faster than it can be removed. The fact is, that, if oxygen be absorbed from the air by one class of bodies, it is supplied by another. Plants yield it in large quantities. Thus, by the respiration of animals, a portion of oxygen is withdrawn, and a corresponding portion of carbonic acid gas is substituted in its place. By the respiration of plants the carbonic acid is withdrawn, and an equivalent portion of oxygen substituted; so that, by the mutual action of the members of the animal and vegetable kingdoms, the balance of the constituent elements of the atmosphere is maintained.

"The blood requires pure air as its food; the first effect of the air is to remove the carbonic acid, which the venous blood takes up in the circulation, and when this is effected the properties of the blood become instantly changed. In the commencement of this process the air is the active agent, and removes the carbonic acid from the circulation; but when this is effected, the blood then becomes the acting power, and attracts a portion of the atmosphere. The pure air, or at least it ought to be so, then occupies the place of the carbonic acid, which is just removed."

We shall conclude this subject of ventilation in the words of Mr. Karkeek, from whom we have quoted the above:

"Against the influence of noxious agents the living body is endowed with a power of resistance, which affords it security as long as its vital energies continue vigorous; but when these decline, the very causes which before made no impression upon it, now prove fatal. Hence, the weaker the body, the more susceptible it is of the influence of physical agents, and the less it is capable of resisting the influence of those that are noxious.

"Air, moisture, and heat are the principal agents which a living system has to contend with, and it is found capable of resisting them in proportion to the degree of vitality which it possesses. When the vital energies fail, putrefaction ensues, and it is soon resolved into the ultimate element of which it was first formed. By this process, the stately oak and the bramble, the creeping insect and proud and imperious man, pass back to their original and primeval elements. Thus, to put an animal into 'good condition,' is to increase the preserving powers, which, as it were, preside over its economy, repel the attack of injury, and guard it from the dangers with which it is incessantly surrounded."

Light.—Immediately connected with the subject of venti-

lation is the kindred topic—light, on which we now propose to say a few words.

Did the reader ever emerge suddenly from a dark cellar, or cave, or some place whence the sun's rays being excluded, the "palpable obscure," the "darkness visible," had dilated the eye to its utmost, in the endeavour to distinguish surrounding objects? Let him recal the painful giddiness of the distressing interval when the eye was suddenly called on to contract, and to accommodate itself to the bewildering glare. Now suppose, farther, at that instant a stranger, or even an old friend, had saluted you with a hearty clap on the shoulder, and an exclamation such as "Halloo, old fellow, you seem all abroad!" Should you consider yourself highly to be reprehended, nay, more, deserving of corporal punishment, if, under such circumstances, you started with surprise, mingled with some alarm and bewilderment? Well, then, we have often seen this very thing done to an unfortunate horse. Confined for hours in a stable, with just so much light as will suffice to render the outlines of objects visible after the eye has fully adapted itself to the gloom; the principal aperture for the admission of light—the door—is suddenly opened, the groom enters, and the coach-horse or hackney is led forth to be dressed. The horse is, for a few seconds, nearly blind, and painfully so. He strikes his haunch or stifle against the bar or the door-post, and instantly is sworn at for his awkwardness; next moment he starts from nervousness, at the approach of some to-him-indistinct object, and he is pronounced a "starter," "uneasy to groom," &c., &c.; this character established, he is, upon such occasions, in the absence of the master's eye, treated to various little kicks and cuffs, and sly knocks, with a running accompaniment of objurgation. Can there be imagined a more efficient course of education to produce "starting," a threatening or vicious attitude, or any of the other abominable habits to which imperfect vision and its attendant panic fear are calculated to give rise?

Then, again, the darkness of the stable is, we need hardly say, a cover for and a promoter of uncleanliness. A good large glazed window or two, in every middle-sized stable, would show the inattention or the neatness of the attendant. Darkness also greatly encourages the fermentation of the litter, and the evolution of the pungent ammonia so injurious to the eyes of the horse; leading often to inflammation, thence to blindness.

If, on the other hand, the stable have plenty of light, then the part of the wall which is opposite to the horse's face, and which from either side throws its refracted rays on the animal's eye, should not be of a glaring colour. The reflection of a whitewashed wall, where, from its aspect, the sun shines into a stable, is as injurious to the sight as the sudden alternations of which we have just now spoken. The stimulus is most mischievous, as the unfortunate animal is so situate as to be unable to relieve itself by a glance over a verdant landscape, or have the comforting sight of a brown or drab road, rock, or common. Some time ago, "ye ladye superiour" at one of the new-fangled abodes of religious misery and cruelty where dwell "sisters of mercy," took it into her head, as a penance for "wandering thoughts," to sentence a young devotee to sit opposite a blank white-washed wall for a certain number of hours per diem. The result was not exactly what was intended; the poor girl's eyes inflamed, the white wall became blood-red to her tortured vision, and she went incurably blind. This is an extreme case; but how many horses may owe their loss of sight to a want of care in this respect by their masters and their grooms? The fading light of day will usually bring the hour of rest. When, however, the hours of the horse's labour are at night, something approaching the dimness of twilight seems most grateful and natural to the animal, and to induce feeding and repose.

The Floor.—As to the slope to be given to the floor of each stall, many of the older stables have an undue declivity to the drain; although the rapid carrying off of the urine is certainly desirable, yet too rapid a slope strains the back sinews, and is not an unfrequent cause of occasional lameness. Mr. Lawrence illustrates this by a clear example, founded on a just observation of the horse's foot as campared with the human leg. "If the reader," he says, "will stand for a few minutes with his toes higher than his heels, the pain he will feel in the calves of his legs will soon convince him of the truth of this remark. Hence, when a horse is not eating, he always endeavours to find his level, either by standing across his stall, or else as far back as his halter will permit, so that his hind-legs may meet the ascent on the other side of the channel." Blaine, too, judiciously remarks:—

"In the stables of dealers in carriage-horses, an ascent in the standings of nearly two inches in the yard is sometimes made, to give a greater appearance of height to the yet unfurnished four-year old horses, which are thus often passed upon the unwary as horses of five years old. Is no strain put upon their legs? Our experience, which has been somewhat extensive in these matters, convinces us that the inequality in the standings of horses is a fertile source of contraction of the feet. What but the pain and inconvenience which follow an uneven position occasions horses, when not feeding, to be so frequently found standing across instead of lengthways in their stalls? How frequently also will the horse boxed in a stall be found with his croup turned towards the manger? To avert these evils, and yet to prevent the retention of the urine, the smallest possible slope should be allowed, which should proceed uniformly to the bottom of the stall. A central grating with a cess-pool is an imperfect remedy for the evil; for there must still be a general inequality of surface to carry the urine to the centre. It is farther injurious by retaining the urine we wish to avoid, and moreover it promotes a draught of cold air from without, if it be so constructed as to carry the urine out of doors. It may also be remarked that a central cess-pool is utterly useless for mares. It is therefore the best plan to

furnish each stall with a grating placed over a small trapped drain, at the foot of each stall, which will carry off both the urine and the washings into one general cess-pool out of doors, and from which, being stopped by the trap, nothing offensive can pass up through the gratings."

HUNTING-STABLES AND THE LOOSE-BOX.

A short look into the hunting-stable will properly introduce the subject of the loose-box, and prevent repetition elsewhere. Of course, we do not mean here to enter upon the vexed question with which "Nimrod" so long agitated the equestrian world, as to "summering the hunter" on the "hard-meat," or on the "green-soiling" system, but to say a few words on the hunting-stable and its occupants. The humane sportsman desires and delights in the good treatment of the gallant animal that bears him in the chase, and the arrangements of the best stables in the kingdom—those of the Queen, the Billesdon Coplow, the Craven, Mr. Lyne Stephens, and the late Thomas Assheton Smith, Esq. (see "Diary of a Huntsman")—shall furnish the bases of our hints.

The Billesdon stables (See GROUND PLAN on Plate) were built by Lord Suffield to accommodate forty-one horses, and contain thirteen boxes, each nine feet by fourteen, with four feet space behind, and twelve feet high. There are twenty-four stalls, each six feet two inches wide, by eighteen feet deep, and twelve feet high. There are, besides the hunters' stalls, four stalls for hacks, a coach-house, hay and straw-rooms, a granary, a forge, a saddle-room, dressing-room, and a covered ride. The mangers are divided into two parts, one for corn, and the other for hay; that intended for corn does not reach the wall by more than half a foot—that which receives the hay, on the contrary, extends to the wall, or is bottomed with a grating, which lets the hay-seeds, dust, &c., drop through. This is valuable to the owner of grazing land in the neighbourhood, who is thus benefited by a large saving of useful seed. The general width of the stable being eighteen feet, and the depth of the boxes fourteen, a passage of four feet is left around the inner area; but the doors of the boxes are so made that, in cases of sickness, or much ventilation being required, they can be made to continue the sides of the box up to the whole eighteen feet, an advantage in many instances. The benefits of a forge on the premises in large establishments are obvious, the horses are saved from colds, so often caught while waiting in the open forge of the blacksmith; it farther prevents that ill-treatment and teasing at the smithy, which oftens ruins the temper of many a valuable horse; and, lastly, the excuse of the servants for often absenting themselves on these gossiping, and often drinking or skulking expeditions, is taken away. This last advantage is more important than at first sight it may seem.

The Loose Box.—A loose box is an immense comfort to a horse after a day's hunting, or a hard journey in saddle; he can lie in any position that he may find gives the greatest ease to his wearied limbs; and if put into one the night before he is to go hunting, it ensures him a sound night's rest undisturbed by other horses, or persons passing through the place. It is true that this luxury of stretching their legs is not required constantly or generally by horses; for, though, after a hard day's hunting, a horse may, at times, be found lying on his side, with his legs stretched out at full length, he must be very tired or very ill to have recourse to such an unusual position. The reason for this is that the roundness of a horse's ribs is such that it is a most uncomfortable and unnatural position for him to lie on his side for any length of time. A horse in good health, under ordinary circumstances, will never be found on his side; he is either ill or has had an accident, when you find him so. Harry Hieover has some very sensible remarks upon the subject of boxes, which we shall take the liberty of condensing. Having said so much on the formation and structure of boxes, and having pointed out under what circumstances they are most needed, let us see how far they are applicable and useful in general stable practice.

We need not insist upon the fact that the habit and disposition of the horse are those of a very social animal; and although being quiet and alone may at times be good for him, as it is to a sick man, yet solitude, if long continued, is a severe and irksome punishment to him. Any one who has watched the "knuckering" of a horse when his companions return to him after an absence—his silence and uneasiness when left alone, and beyond earshot of some signs or sounds of their whereabouts, is remarkable; and equally so is the general disposition of the animal when at liberty to indulge in that rough sort of amusement which has obtained the proverbial appellation of "horse-play." Of his desire for mutual amusement you may soon have a proof, by placing him in a loose box, with the upper part of the door of iron rods, so that he can watch passing objects, or be on the look out for them. You will find him, when not in the act of feeding, with his nose close to the bars, and taking as good a peep as he can get of the outside world: and if you open the top-door entirely (don't do this if you don't know your horse intimately) he will be found for half the day with his head and neck thrust out of it, surveying so much of the moving scene, and of man's doings, as his horizon will take in. That he is amused and observant, if not reflective, any one who watches his action and eye can see.

Some one may remark that racehorses live constantly in boxes, and do excellently well; but a racehorse is an exceptional animal. He is bred, trained, and treated in a way peculiar to the high caste to which he belongs, and though we have had a Derby winner in a street cab (*teste* Youatt), the racehorse, while he is a racehorse, is kept in a box. He is accustomed to such quarters from his colthood, and his instinctive social qualities are deteriorated thereby, whatever may be done for his speed. Instead of associating with his species, he has no real companions. He does not

miss his playfellows—he never had any. Instead of missing them or welcoming them, he is kept aloof from them; he is, says a clever writer, in a purposed Hibernicism, "a sort of *domesticated wild* beast, kept to run for money." Though he is not a "wild horse," he is a "solitary horse." He is brought up upon the "separate" if not the "silent" system of prison discipline; the desire for companionship is dead within him—he is a quadrupedal anchorite, and does not care for his kind. Horses, in general, do better in stalls than in boxes, unless in boxes with racks only between them and their next neighbours. Whatever rural sight or sound cheers the spirit of man, seems to cheer the horse also. Again, horses feed much better from hearing others eat; and in many instances where a horse, especially after a hard run, would not touch his corn, if in solitary confinement, he will set to grinding when he hears others masticating their provender. There are strong advocates among many of our practical men for keeping valuable horses in boxes; they certainly permit the animal to stand or lie down at pleasure. There is no danger of their getting cast or getting loose; in which case, though horses are social animals, the intrusion into the stall of another horse, by the animal who has got loose, has often produced not only confusion, but the most serious accidents. The term "boxes" is not, however, quite applicable to the places we recommend, they are rather "compartments" for horses. These should be made seven feet high at the rack and manger, and for a yard from the wall, then five feet for the rest of the side, and merely of bars, so closely placed that a horse's nose could not be put through them. These should be of iron. A space for passing should be left behind these compartments—we should say of five feet. The railing at the end should be of wood or iron, so as to give a convenient view of the horse. It may seem superfluous to say that the door should open outwards, and be made so as to fall back, close on the other railings; this will save the horses from bruises in passing in or out. There are many elegant and useful designs for these "compartments" now in the market, and to those who have cash to spare, and room, the plan here laid down may be adopted. The stable with a proportion of two boxes to four stalls will be sufficient for the comfort and health of the horses.

In connexion with the loose box and its advantages in permitting the horse to lie down and rise easily without risk of injury, and the immense luxury to the wearied animal of having his head at liberty as conducive to his speedy restoration, we shall presently note an important though apparently trivial addendum to the fittings recently introduced.

The horse may be prevented from getting cast by a simple invention, which may be easily procured, while his getting loose is prevented by the safety "head collar," which any saddler will supply; and nothing but sheer carelessness can account for a horse getting loose. Double head-collar shanks, with reins, look more stylish than single ones, but the latter answer every purpose. Some horses are fond of rubbing their heads with the hind foot; the double shank or rein is more likely to entangle these gentlemen in this feat of scratching than the single, and risks are as well avoided.

MODERN STABLE-FITTINGS.

The furniture and fittings of the stable, keeping in view the comfort of the animal, which is no small aid towards "good digestion waiting on appetite, and health on both," comes next into consideration. The neatness, cleanliness, and convenience of the various articles and appliances which modern ingenuity and constructive skill have placed at the disposal of horse-owners, are not their least recommendations.

Many varieties of these may be seen by the visitor to the Crystal Palace, in the carriage, harness, and saddlery department of that monster glass-case; at most of the agricultural gatherings; and at the establishments of their several manufacturers and patentees. The leading ones are figured on the accompanying Plate.

Although handsome, serviceable, and really good fittings are made throughout town and country of sound hard wood and hammered iron, yet there can be no disputing the superior patterns, the greater cleanliness, durability, healthiness, and convenience of the galvanized, enamelled, or componized iron mangers, water or gruel troughs, racks. &c., now advertised in all parts of the kingdom.

We need hardly repeat that the old sloped hay-rack of the farmer's stable, filled from above, and from which the horse so wastefully dragged his provender, to the damage of his eyes and nostrils, is utterly condemned, and should be cast forth wherever it yet lingers, and its place supplied by an under-feeding square or corner rack. The obvious defects of the first-named vile contrivance are that the horse acquires the habit of pulling down the greater portion of his hay, with the view of culling, with his fine and sensitive upper lip and his delicate organ of smell, the sweetest and most succulent locks. Hence, much of his provender is trampled under foot; and, though a hearty-feeding horse will afterwards pick up a great deal of what he has thrown down, a large quantity must be soiled and spoilt. We have seen a third of the whole amount thus lost by slovenly and capricious horses. These defects led to the abolition of the high rack in all well-contrived stables, and the substitution of manger-feeding, in which chaff, composed of equal quantities of clover or meadow hay, wheat, oat, or barley straw, were mingled with the corn or beans. The animal is thus compelled to masticate his food, and cannot, especially with such well-made contrivances as those under notice, waste his hay, while the sharp straw compels a more complete chewing of the oats. We shall answer our old friend Fenwick de Porquet, who so persistently asks us, under the feminine pseudonym of Mary Wedlake, "Do you bruise your oats yet?" in another place, when we come more particularly to the question of food.

We have mentioned a "fitting" intended to prevent the horse from striking himself when rising; it is represented in our plate (fig. 3), under the name of the ventilating manger-guard, and includes the rack and water-trough. We have seen stables in which, with the same object in view, the rack has been boarded in. This is highly objectionable. It tends to foul the food, and worse, to make the rack-place dark; and we need scarcely repeat that darkness is the parent of dirt. The guard, it will be seen, consists of a light wrought iron rail, fastened at top to a bar following the curve of the rack-manger and trough, and at bottom to a bar which rounds off the angle of the stall. This ventilating manger-guard fulfils every purpose, ensuring the horse's safety from a blow against the edge of the fittings, while it keeps the fodder sweet and well-aired, and the corner in full view and accessible.

We have already remarked upon the danger of a mere swing bar between horses, recommending in all instances a boarded partition. The iron ramp-rail, grooved to admit 1½ inch planking, with the stable-stall-post, is a neat and most desirable division, whether boarded or open-railed; its appearance is shown in fig. 4. The hexagonal enamelled tiles are used in several of the drawings to line the walls. Thus much of stable-fittings; we will now step into the harness-room.

THE HARNESS-ROOM.

"Everything in its place and a place for everything" is a motto which should be inscribed over every place where horses are kept, or at any rate be ever-present to the groom or horse-keeper. It is amazing how much needless expenditure of labour, oaths, or ill-temper—how much confusion, how much loss of time may be avoided by regularity, method, and a use of those convenient appliances which modern mechanical skill and ingenuity have placed at the command of every one whose means allow them to fit up a stable properly; and surely no other should pretend to keep horses of a good class than such as can supply them with those conveniences which are necessary to keep them up to the highest point in cleanliness, food, warmth, clothing, and even ornamental appointments. How much of a horse's comfort depends on a well-made well-fitting saddle, a properly adjusted rein, bit, and bridle, and the true setting of his harness horses alone can tell; and we doubt not, had they been gifted with speech, their "tailors in leather" would have heard of many a cruel misfit, whence "galls," "raws," "sitfasts," from saddles, abscesses on the tongue, and injuries of both upper and lower jaws by the barbarous tightness of the bearing-rein, aud the ill-made, ill-seated "post" of the bit.* These and many minor ailments and discomforts damaging to the health, beauty, and temper of the horse arise from harness badly made or carelessly adjusted and put on. The cleanliness of every part of a horse's clothing is only secondary to its goodness. A peep into a well-ordered harness-room is a pleasant sight; well-kept leather is always supple, soft, and pleasant to the feel, and how important is dryness and "elbow-grease" to preserving this useful material in that condition we need not say. If the harness and "fixins" of the horses are in prime order, we may almost safely trust that man with other details of management with confidence, as it shows he does not shirk labour or spare trouble. He must, however, be liberally supplied with the proper means of doing his work as it should be done. As a peep at a picture is no small aid in quickly conveying through the eye an impression of what a thing should be, we give a sketch (Plate "Stable,") of the fittings of a model harness-room for four saddle and four carriage horses: the fittings being left bare, that their form may be more readily understood (fig. 5).

Foremost of these articles we may note in the centre the stove, in conjunction with the airing and drying horse, an admirable appendage to the stable for drying and airing harness and saddles after use, and also for drying and airing horse clothing and the cloths in general use about the stable. An enlarged drawing of this apparatus is given as fig. 6, It will be observed that this stove, besides warming the harness room, will supply hot water for the use of the stable. for cleansing the horses, for equine foot-baths,* bran mashes, gruel, and other purposes. Along the side walks of the apartment, on the right hand are two saddle-brackets and two harness-holders; the form of these, and especially the former, will be readily understood by inspecting the enlarged figures 9 to 13 in the plate.

It will be seen that a saddle placed upon this sort of bracket has no tendency to go out of form, but, on the contrary, is kept in shape, and will not be torn or chafed in its padding by removal. Harness also can be placed on the hooks without disturbing the saddle, and the longer jointed ones turned up out of the way when the shorter ones are in use. The ceiling and wall hooks, figs. 7 and 8, do not require explanation; they are for the purpose of cleaning, and are made of iron covered with gutta-percha. On the left side of the room are harness, saddle, and bridle-holders; these are of iron either galvanised or japanned, and are vastly preferable to the common bracket, keeping the harness in its proper shape—an advantage too often overlooked. More mountings are damaged and broken by the want of such conveniences than would soon pay their first cost. The front flange, which prevents the article falling off, may be inscribed with the name of the horse to which the harness belongs, figs. 9, 10, 11.

Two specimens of saddle brackets are given in the plate, the one boarded over (fig. 12), and the second of wrought

* See Mr. Edward Mayhew's work, *The Illustrated Horse Doctor*, page 61, &c., for the injuries to the mouth by ill-made and severe bits.

* See article "Laminitis" in Veterinary Division, *post*.

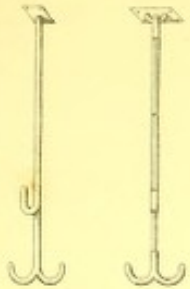

FIG. 8. CEILING HOOKS.

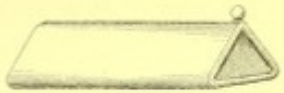

FIG. 12. WOODEN SADDLE BRACKET.



FIGS. 9, 10, 11. COLLAR & HARNESS HOLDERS.



FIG. 13. IRON SADDLE BRACKET.

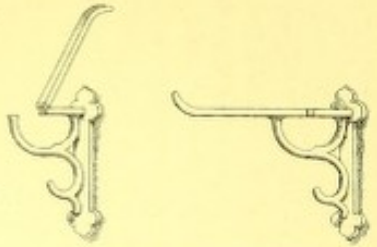

FIG. 7. WALL HOOKS.

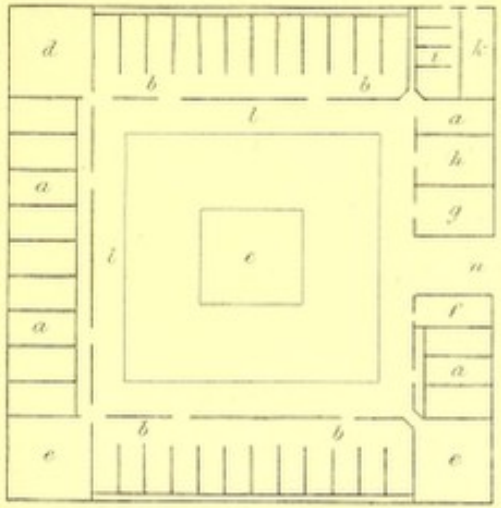

FIG. 1. BILLESDON COPLOW STABLES.

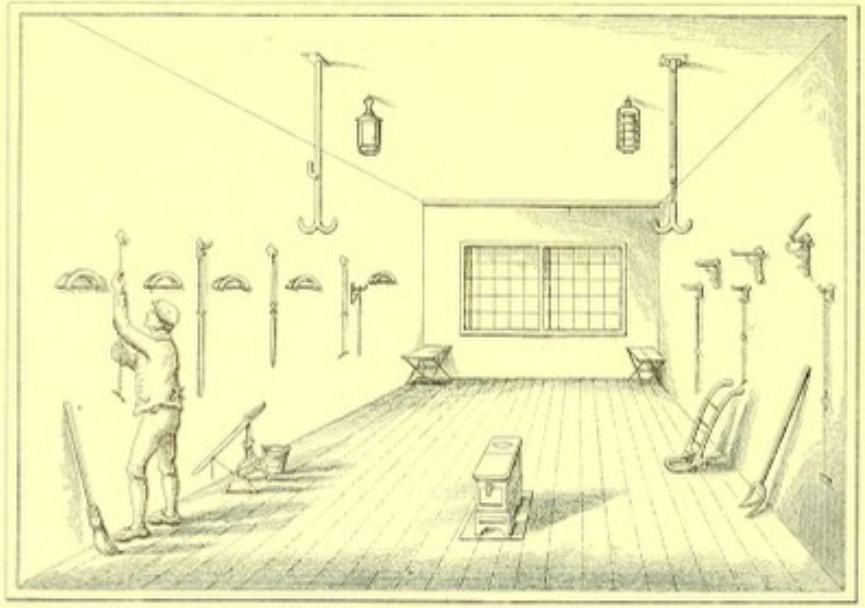

FIG. 5. THE HARNESS ROOM.

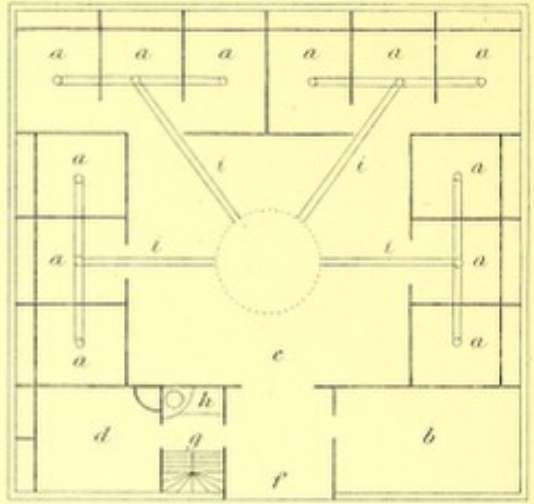

FIG. 2. STABLE FOR 12 HORSES, GROUND PLAN.

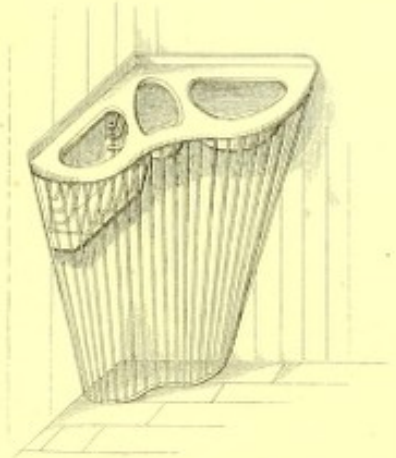

FIG. 3. MANGER GUARD with RACK, TROUGH & MANGER.

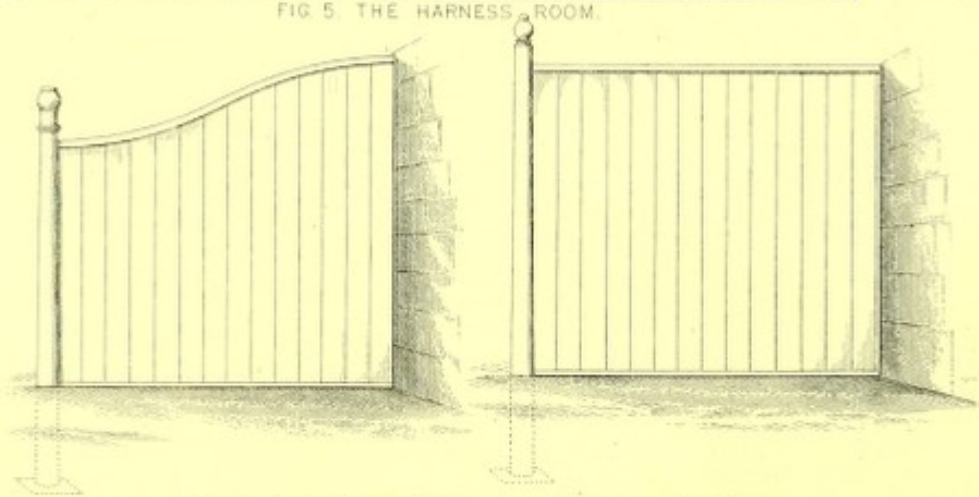

FIG. 4. THE RAMP-RAIL, POST & DIVISION.

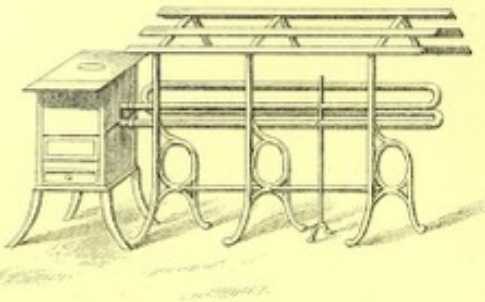

FIG. 6. STOVE & DRYING HORSE.

iron, with the great advantage of ventilating and preserving the shape of the saddle, and allowing all moisture to escape. Some of this pattern (fig. 13), covered with gutta-percha, are the neatest and best things for the purpose that can well be imagined.

The stable appendages always required, are buckets, whalebone-brooms or besoms, forks, body and dandy-brushes, curry-combs, mane-combs, bandages, leathers, rubbers, sponges, foot pickers, and scissors. If for harness horses and for cleaning carriages, there will be wanted also spoke-brushes, mops, jacks, harness-brushes, and brushes for the lining.

The lodging room for the groom or coachman is generally over, or near, the stable; and it should, at all events, be so near as to allow of any unusual noise being heard by him, for sometimes, when a horse is cast, or has the colic, he dies for want of that assistance which could be readily given if his state were known.

The carriage setter, sack-truck, or barrow, pull, jerk, &c., in our picture of the harness-room, are merely suggestive of those necessaries: they require no description. We should lay ourselves open to a charge of unduly favouring one or the other tradesman did we specially recommend from our own experience, or that of others, any of the numerous blackings, pastes, compositions, &c., used in the cleaning of harness; we shall, therefore, merely advise that the purchase of the required detergents or polishes be made of respectable oilmen, or better still of harness-makers: all are good, though some unquestionably better than others. That we may avoid a charge of puffery we specially mention none of them. The succeeding chapters will deal with the subject of Stable Management, and its ancillaries.

CHAPTER XIII.

STABLE MANAGEMENT: THE GROOM: THE STRAPPER: STABLE-BOYS: RACKING AND DRESSING: CLIPPING AND SINGEING: FEEDING: EXERCISE: CONDITIONING.

We shall not treat of the hierarchy of stable dignitaries in the crack establishments of our great public trainers, where strings of thoroughbreds go through an education to fit them for "competitive examination" for "public honours," at the post of a T. Y. C., but confine ourselves to the useful and practical treatment of the horses of the gentleman and sportsman.

The groom has several distinctive epithets indicative of the description of horse he attends, or of the class of duties expected to be fulfilled by him. The "pad groom" is employed in the hack stable and to follow his master, to whom he also in many cases officiates as valet. If his master sports blood nags, and particularly if he occasionally takes a turn with the hounds, the importance of his servant augments, and he borders on the next grade. The "hunting or stud groom" ought to be a very clever fellow; he should already know much, and be ready to learn as much more; for his is truly an important office, particularly if he have either a confiding or an idle master. It is necessary that he should have a full knowledge of training, with all its important bearings and dependences. He should be fond of the chase, and yet sufficiently manifest attachment to his horses and respect to his master, that he should be able to go to the field without making himself one of the company, or attempting, when in chase, to "ride to" hounds. We, however, to make our subject complete, must quit the field, and glance at these necessary and indeed important aids on the sod or turf. The regular "training groom" is a still more important personage than those already noticed: to him is entrusted the care and management of the racing stables; it is he that regulates the whole discipline of the racers; and he has likewise the direction of the subordinate grooms and stable-lads. The "trials" are conducted by him, and on his fidelity and judgment immense sums are dependent. The "training groom" is also a person of no mean consideration, for much of the future reputation of his employer's racing establishment depends upon him. He superintends the crossings and breedings, and on him devolves the care of rearing the young stock. Much likewise depends on his management whether they enter on their training in *high form and vigour*, or whether they are *below par*. Having said thus much, we will proceed with the duties of the groom generally, wherever good horses are kept and good grooming is required.

A good groom is as indispensable to the well-being of the inmates of a stable as a good whip is to their driving, good harness to their comfort, or good food to their health and condition. No gentleman can be well-carried, no family be well-appointed in their equipages, but by care in the selection of the groom or horsekeeper. Nimrod sensibly says:—"The principal duties of a groom may be said to consist of cleaning—strapping, as it is called,—feeding, and travelling horses. A man should have a certain degree of substance to strap a horse properly; but we do not agree with those who think an herculean monster, whose blows would almost fell an ox, a necessary article. I have seen light lathy fellows full of muscle and sinew that would kill one of these plummy, lumpy gentry There is a wide difference between what John Warde used to describe as a man fit 'to strip a horse and starve him,' and a clean made light-limbed active fellow. Beyond grooming and feeding, I do not wish for much science in a servant—your pedantic, infallible-recipe fellows are no men for my money. Good strapping, and food proportionate to work, is the grand secret."

The "helper" is an adjunct in many stables. He is generally a hardworking man, or lad of eighteen, who is able to strap a horse well, and do all the mechanical work of the stable; but is wholly incapable of taking the management, or is so uncouth in his person as to forbid his employment in livery. The last is a very common reason for some helpers always remaining understrappers; they are excellent in that capacity, but so unwieldy in their movements that they would disgrace a neat livery, and would sit beside their master with all their native clownishness. If, however, they are honest, civil, and industrious, they are often very desirable acquisitions to a large stable, and frequently do all the hard work of these establishments. These men often do four horses well, and in livery yards or omnibus establishments more than double that number; though, in this latter case, the horses are of course not so well dressed as in private establishments.

"Stable-boys" must learn as boys somewhere or other, because it is a trade which is seldom learnt after this age. Nevertheless, no master who really looks to his own affairs will encourage their employment, knowing how frequently they play tricks with or neglect his horses. Under a steady and strict coachman they may be made useful, but they

should seldom be trusted to do anything of importance out of his sight. When first put under him, he will, of course, show them everything they have to do by example; and, if naturally quick, they soon learn to carry out the ordinary stable operations in an efficient manner.

RACKING AND DRESSING.

The first morning duty of the groom is "racking and dressing." The first operation immediately follows the opening of the stable-door. The hay should be first shaken to clear it from dust, and then but a small portion given to leave the horse his full powers for the digestion of his corn; indeed, were it not from a fear that the eagerness of the early appetite might make the horse swallow his corn without sufficient mastication, we should prefer giving the oats first; and when two morning feeds are allowed, we strongly recommend to commence with the corn. When this is not the case, after racking, give the usual feed of corn, which should be first well sifted and looked over, to separate any extraneous matter. The morning allowance of water is usually reserved until after dressing, but we have known some horses who would not feed until they had drunk. We therefore advise that this time of watering be not obstinately adhered to; but that it be made to suit the appetites of the horses themselves. A careful groom will study the peculiarities of each horse, and then his own judgment will be his best guide.

You may now give his stable a slight "set fair:" that is, throw the dung off the litter, but do not disturb that just under him to raise the ammonia from his having staled thereon. We are supposing that you mean to give the horse a thorough "dressing" before he goes out. If, however, time does not serve, or there are other reasons for postponing this till his return to stable, you may "muck out" as hereafter described. We will now describe the important operation of "dressing," and would first impress upon the reader the fact, that it is not only to remove soils and make the coat glossy that we "dress" a horse, but that the process is most important, when diligently carried out, for ensuring the health of the animal, by the life-giving excitement of the whole exhalant surface of the body. Scales of scurf—dandriff—are constantly in process of generation over the whole surface of the animal's body; and the act of currying, brushing, and dressing clears off those scales, and stimulates those exhalant and inhalant pores by which excretory and noxious particles are thrown out, and air and moisture imbibed. Itching, irritation—and consequent inflammation—surfeit, and thirst, with a train of minor evils, are kept aloof from well-fed and warmly clothed horses by a diligent application of "elbow-grease;" for able physiologists have shown that the skin not only throws off impurities, but absorbs pure water and atmospheric air, at need, when kept in healthy condition. The observant horse-owner may easily satisfy himself of the fact that a well-groomed horse has more spirit, cheerfulness, and endurance than an undressed one, by a few days' experiment. With horses much in stable, too, periodical friction is *exercise without fatigue*. The curious reader may find in *The Book of the Farm* an account of the superior thriving of some pigs who were regularly curried, over those in a stye left to their own nasty ways. The writer, however, observes in defence of poor piggy, that he contracts many of those bad habits from confinement and domestication; and that the wild pig is as cleanly an animal as need be—currying himself daily by drawing himself through bushes, brambles, &c, and industriously rubbing himself against trees. On the continent, too, stall-kept cattle are in many places regularly curried night and morning, to the great advantage of their working capabilities. There are two capital books on the subject of grooming, so little known to the general public, that we shall be thanked for an extract or two. The first is "Hipponomia, or the Vineyard of Horsemanship," by Michael Baret, 1720—a curious work, of which Mr. Bracy Clark says: "It contains more learning and reasoning (on horse-subjects) than any book of its time." The other is a little treatise by one Jeremiah Weal, called "The Young Groom's Guide"—a practical book, by a practical man. The old writer, Michael Baret, shows that the approved method of "dressing" a horse has not varied, except in a few details of fashion and in improved implements, for the last two centuries. "Having tyed up your horse's head," says Baret, "take a currie-comb and currie him all over his body, to raise the dust, beginning first with his neck, holding the left cheek of his headstal in your left hand. Then currie him from the setting-on of his head to the length of his neck, where comes the setting-on of the shoulder. Thence go all over his side to his buttocks; and so down to his cambrel-hough. Then change your hands, and currie him before, on the breast; and laying your right arm over his back, place your right side against his left, and thus currie him all under his belly, near to his fore-bowels; and so all over very well, from the knees to the cambrel-houghs, upwards. After that go round to the far side, and do that in like manner. Then take a dead horse's tayl, or a dusting cloath of cotton, and strike that dust away which the currie-comb hath raised. Then take a round brush made of bristels, and dress him all over, both head, body, and legs, to his very fetlockes; always cleansing the brush from that dust it gathereth by rubbing it upon the currie-comb. Thus currying and brushing over, take a hair-cloth, with which rub him again all over very hard, to take away the loose hairs and help to lay his coat. Next wash your hands in fair water, and rub him all over with your wet hands, as well head as body, for that will fresh him, and take away any hair the hair-cloth hath left. Lastly, take one other clean cloth, and rub him all over till dry, when his coat will be smooth and clean. Lastly, take another hair-cloth (for note that you should have two, one for his body, the other for his legs), and rub his legs exceeding well, from the knees to the cambrel-houghs, downwards, to his very hoofs, picking,

and dressing them very carefully about the fetlocks from gravel or dust, which will harbour in the bendings of his joints."

From this it will be seen that our great-great-grandfathers knew and practised a thing or two in dressing a horse. There is here, however, a remarkable omission. The wisp—the great implement of the modern "strapper"—is not even mentioned. Ordinarily the wisp follows the curry-comb; but where the brush replaces the curry-comb, the wisp follows it. The best wisp is made from about two feet and a-half of a hay-band of fine twist. Loosely untwist and double it, moisten with a little water, and then slightly retwist it: the damping shapes it, and fits it for more effectually cleaning away the dust. As the time required thoroughly to dress a high-conditioned saddle-horse is about an hour, in very cold weather the horse should have a cloth on the loins while cleaning other parts. Stains from litter should be removed by the sponge, and from the tail by the water-brush. When the dust has quite settled, comes the "finishing-off," in the direction of the hair and the clothing. And here we will resort to the little book of Jeremiah Weal, above alluded to:—"Observe that whatever clothing you put on is put on in a workmanlike manner. Take the horse-cloths in both hands, with the outside of the cloths next you, and with your right hand to the off-side throw them over his back, not hang them over his tail. Place them no farther back than they will be straight and level, which you will find to be from a foot to eighteen inches from the tail. Put the roller round, and the pad-piece under it in the proper place, which is from three to eight inches from the fore-legs." So far Jeremiah. Now loosen the horse's head, and turn him about in the stall, and give his untied head a thorough rubbing and brushing in every part—ears, throat, and channel—with the dusting-cloth. Finish by manipulating his ears *à la Rarey*. This is called "pulling his ears;" however it should be nothing of the sort, but, what all horses so much enjoy, a passing through and through the hands of the animal's auricular appendages—accompanying their passage by gentle intermittent pressures, and an occasional soothing, coaxing utterance. This over, comb out his mane and foretop, and pass over them a damp sponge; place your horse-napkin at the near side of the upper part of his mane, pulling it over to the off side, and pressing the mane smooth at the root of hair from behind his ears to his withers downwards. Turn him round once again to his manger, buckle on his stall-collar, comb his tail, and wipe his dock with a wet sponge. Don't use a cloth for this purpose, as a hanging-down end may make a ticklish horse kick, as we have seen. Pick out the foot, and wash if necessary, and once more rub the legs down with cloth and with hand. At the risk of repetition, we must once more impress on the mind of the groom, and therefore of the master, the paramount importance of leg-friction. Although Michael Baret, above quoted, has told us "to rub the legs exceeding well," we cannot forbear from pressing on the minds of all who are concerned in horses, that friction to the legs is both a preventive and a cure of disease. The eminent veterinarian, Delabere Blaine, thus bears testimony on this point:—"Leg-rubbing prevents gorgings, which are the forerunners of cracks and grease, and disperses such accumulations as are already made. Few actions relieve the tired horse more than well rubbing his legs; and it is remarkable, that whatever else a horse resists, he very seldom resists this. Further, whenever a horse comes home in a dirty condition, it is prudent first to attend to his legs and feet, which should be well washed: but when the weather is frosty, it should be done in tepid water; it is essential to his health, and it also affords him much comfort and refreshment. We know how grateful it is to ourselves to put our feet into water after great fatigue; and we cannot but observe by their manner, also, that it is the same to them. The feet of horses require also daily examination; they should always be well picked out whenever they come in, to remove stones and dirt, which may have lodged between the shoe and the sole; and which, if suffered to remain but a few hours, might do irreparable injury. The state of the shoes should likewise be looked to every morning, not only as to their actual wear, but also to see that the clenches do not protrude to cut the legs, or that the shoe may not have gotten awry, or become loosened. Whenever a set of shoes has been on three weeks, particularly where the hoofs grow fast, even if such shoes be not worn out, they should be removed; for in every instance, as soon as the horn of the foot grows too high, it begins to contract; and there are more horses ruined by standing too long without paring down the hoof than by all the bad shoeing that is practised."

Watering should follow dressing, and then a second feed of corn, where four feeds per day are customary: but, if not going out to work, merely put hay in the rack. Jeremiah Weal shall again speak for us, as to "setting the stable fair," as he is in this matter certainly "the right man in the right place:"—"Shake the horse's bed three or four feet behind him, if the stable will admit of it; put some straw under the manger; lay the straw high near the sides of the stall, and rather high behind the stall-post; leave the straw somewhat hollow and thin in the middle, and behind the horse. Shake the sides well, and lay them level and smooth. The platted mat looks neat laid down in front of the beds, but it is more generally seen in dealers' stables than gentlemen's: it, however, looks neat in all."

A few words about "litter." We have already mentioned the pungent ammonia which arises so rapidly in a close and heated stable, to the detriment of the respiratory functions of the animal, and the damage of the hay in the loft above. As much of the litter as has been wetted and softened by the urine must be removed every morning, a little being left for the animal to stale on, as some animals object to and are uneasy at the splashing which takes place on the bricks or cobble-stone pavement. No heap of fermenting dung should

ever be allowed in any corner of the stable; upon this point the master should be inflexible.

Whether horses should be allowed to stand upon litter at all during the day is a subject on which opposite opinions have been entertained by practical writers. When the litter is suffered to remain, it certainly encourages the horse to lie down, which is favourable to the recovery of strained or overworked limbs, and prevents extreme pressure on tender feet, if the stable should be bricked or paved. But, *per contra*, foul-feeding horses are very apt to eat their litter, and the other mischiefs from acrid exhalations, elsewhere spoken of, are multiplied. With some horses, too, the very disorder it would seem to alleviate is produced or aggravated by it—namely, swelled legs, which have been found to return to their proper size when the stimulus of warm litter was removed. Litter, when neglected and allowed to heat, is mischievous to the horny hoof, which is contracted by the increased temperature. We would recommend a little only of the litter to be left under the fore-feet during the day, and in the summer that the bricks should be lightly watered to keep them sweet and cool. Fresh green rushes, if they can be procured, make an excellent day litter. In many stables on the continent, and some of our racing establishments, the floor is of wood, cut across the grain; this, and hard "compo," are not bad for the purpose, with tan, a coat of sawdust, or a thin layer of straw, spread upon the floor of the stall.

CLIPPING AND SINGEING.

Clipping, which for many years was the only method of relieving a horse of his winter's blanket, has now been almost entirely superseded by singeing. Dandyism, as much as utility, produced the general adoption of the former practice, and inflamed lungs, swollen legs, and a host of inflammatory diseases were the consequence. It was all very well to deprive a valuable hunter, who was never exposed to the cold air without his body clothes, except when hunting, of his coat, but it was dangerous in an extreme degree to such horses as were not so carefully attended to. Clipping has now had its reign, Singeing having dethroned it. The cutting of the hair, each of which is a hollow tube, gives the whole surface of the body an exposure to the cold air by millions of orifices. Singeing, on the contrary, seals up these as it proceeds, and is no more than a man taking off an upper coat. When clipping was the practice, it was lamentable to see carriage horses standing shivering with cold at the doors of great people, or when conveying some fashionable physician on his visiting round. Before an owner has his horse singed, let him consider what he is going to use him for, and whether he is likely to be kept standing still, exposed to the inclemency of the season; if not, let it be done. Singeing has this advantage over clipping, that to look well a horse must be clipped close. In singeing you may regulate this. The coat may be once gone over, and this will remove but a moderate portion; if more is desired a second singeing must be resorted to. After the horse is singed, he should be well washed over with soap and warm water, with an extra dose of soda in it: this will cleanse the coat and make the skin comfortable. Then, in a few days, if you want it shorter, repeat the process; and afterwards give the horse a gentle sweat, just as much as will enable you to give him a scrape. This, note well, is after the second singeing: with the coat left on after a first going over, it might be somewhat difficult to dry him, and risk giving him cold. The soap and soda, and the after-sweat and scrape, will immensely relieve the skin.

When clipping was in vogue, all the pretty bays, browns, and chestnuts, and many blacks, were made of an unsightly mouse or slate colour. Now we can singe a horse nearly as short as close-clipping without this unseemly effect. There are some capital lamps made nowadays for this special purpose. The hair being charred as the operation proceeds prevents the light hue from prevailing. Grey, dun, or roan horses look as well, however, clipped as singed. No sooner does the horse's coat begin to shoot in the autumn, than the groom will urge you to have your horses clipped or singed; and will, when he has your consent, get as much coat off them as he possibly can, for the sake of saving trouble, and, as he thinks, of improving their appearance. Let the master, then, consider what work his horses are likely to get during the winter. If he is a saddle-horse, merely to be used as a park and town hack, cantered or galloped the length of Rotten Row, or to carry his master from his country seat to his town house—or, if a harness-horse, to be kept standing at doors, while business or pleasure detains his owner within—leave his coat on, or moderately thick. If, on the other hand, he is to be used as a cover-hack, ridden possibly ten or a dozen miles to the meet, at a rattling pace, get him into hunting condition—and a short coat. In a word, the coat should be made lighter according to the fast work the animal is called upon to perform; and he will thus be in a better condition to go through his allotted task with comfort to himself and owner. If you are fastidious as to the appearance of your horses, get a man used to the business to singe them; the charge is small, and it will be more judiciously done than by a general groom.

FEEDING.

Feeding is a matter of observation, and requires study and attention. Most servants are so fond of stuffing themselves that they think horses must be equally so. Stuffing may do with a cart-horse, but will not answer with a hunter, or a horse required for quick strong work. A groom should study each horse's appetite and constitution. Some horses require far more meat than others, but this truism never enters the head of most of the fellows calling themselves grooms. Having ascertained the "maximum" quantity of corn master allows, they forthwith prepare for getting it down the horses' throats in equal proportion. A half-finished feed conveys no hint to them: they add a whole feed to it next feeding

hour: then horses get cracked heels and swelled legs, and the fellows wonder how it happens. They perhaps have recourse to their antediluvian book, or some horse-leech in the neighbourhood, who cannot even write out a bill for the medicine he professes to give. Bleeding and physicking should be included in a groom's catalogue of qualifications; but never allow either to be done without an order.

Some grooms say they cannot keep horses in high condition without high feeding; but many masters would ride much more pleasantly if their horses were not in such high condition. What is the use of having a horse capable of double the exertion the rider is equal to? We are not all Osbaldestons, to ride two hundred miles in nine hours; and whether on the road or in the field, a horse above himself is a great nuisance.

Lord Pembroke truly observes, that "it is a matter of the greatest consequence, though few attend to it, to feed horses according to their work. When the work is hard," says he, "food should be plenty; when it is otherwise, the food should be diminished immediately, the hay particularly." That sentence should be placed in every stable and saddle-room in the kingdom.

Hay.—The principal food of horses in the stable is hay and oats, and consequently it behoves every master of horses to be a good judge of their quality. The hay given to your horses should be old upland meadow hay, bright, greenish, fragrant, and not too dry and crisp: it ought indeed to be, in a trifling degree, tough, and not to crackle when twisted in the hand, thereby denoting that it has preserved its juices and nutritious qualities. Many people are in the habit of never giving any other than meadow hay to their horses, but this is not at all necessary. Provided the quantity of hay you allow your horses in the day be not too great, they will be gratified by a slight change in their diet now and then; and you may with great propriety let them have an occasional handful of sainfoin hay, or of white clover and bents (rye-grass), though most grooms will assert that by so doing you will ruin your horse's wind. Those who say so, however, have never made the experiment themselves, or have made it improperly, by allowing their groom to stuff a horse with hay until he is surfeited, or by giving it in too new a state, when it will produce acidity and flatulence. The allowance of hay for each horse is, in most stables, two trusses per week; one-half this quantity is sufficient. Eight pounds of hay per diem is as much as any horse should be allowed to eat, and those who give them more go the right way to breed listlessness, dulness, and disease. Of all animals the horse, in comparison to his size, has the smallest stomach, and consequently his food, when hard work is required of him, should contain as much nutriment as possible in the smallest compass; for remember that the origin of impaired digestion, and consequently the cause of most diseases, is distension of the stomach and bowels, by which they become debilitated, and their secretions vitiated; the natural and inevitable result of which is general weakness of the whole system. How can any horse possess vigour and sprightliness who is allowed to swallow as much hay at a time as he will eat, when a large quantity of this species of food does not contain sufficient nutriment of itself to keep a horse in condition? The food of horses, whatever it may consist of, should at all times be small in quantity, and of the very best quality; for as we require great exertions from them, so must we take the best means to provide them with the most nutritious sustenance without over-taxing their powers of digestion.

Hay that is at all mow-burnt is liable to produce gripes or flatulent colic; as likewise is that which has been recently made, and has not, as it is called, completely "sweated" in the stack. Indeed horses that are expected to perform hard work should never be allowed to eat hay less than eight months old. Some people like it better when two years old; it is then, however, little better than so much straw.

Oats.—Your oats should be at least a twelvemonth old, bright, clear, full, without smell of any kind, and weighing at least forty pounds per bushel. Many people prefer black oats to white; provided the weight of both be equal, and they be equally well kept, it matters little which of the two you use—horses will work as well when kept on the one as on the other. Nevertheless it is certainly a difficult matter to obtain black oats of as fine a quality as the white potato oat, inasmuch as they will generally be found to contain more "heads" and "tails" than the latter; and therefore those who are not simply satisfied with good oats, but will procure the very best, will be more likely to find the great desiderata of weight and plumpness in some species of the white than in the black oat. A horse of good constitution, and in regular and moderate work, should not have less than four quarterns of oats (weighing forty pounds per bushel) in the course of the day. Oats of the above weight may be thus given by measure, and they are by far better than a larger quantity of oats of less weight. It is the most absurd plan to feed a horse by measure without reference to the weight of his corn. It has frequently been found, on examination, in the stables of gentlemen who never choose their own corn, but suffer a corn-chandler to send them what he pleases, that their horses have been feeding upon oats that to all appearance were little more than the light seeds blown aside by the winnowing machine, and only fit for poultry. No horse can of course be expected to thrive and stand his work upon such diet: therefore be particular, when you purchase oats, to see them weighed; and for this purpose turn out one-third of the oats in the sack, and weigh a bushel from the middle, for here you will often find them of an inferior quality, both as regards weight and cleanliness.

If you work your horses hard they must be allowed either a larger quantity of oats than here specified, or you must mix with them a few handfuls of old and sweet beans. This is good hearty food for a horse of strong constitution; but some horses of a foul habit of body will not endure

being fed for any length of time on beans without exhibiting symptoms of heat of body somewhere—generally by greasy or cracked heels, or by scurf and surfeit. With a horse of this description you must every now and then—say three times a fortnight—adopt the plan of giving half a pailful of bran mash instead of a feed of corn, giving him at the same time half an ounce of nitre in his water; or you may add a double handful of dry bran to his oats every day, or whenever the state of his bowels requires it.

Peas.—Peas are a very good substitute for beans, and, according to the analysis which has been made of both, contain rather more nutritious matter than oats in a given quantity. They are not, however, in general use. A small quantity of barley added to oats is by many recommended as excellent food for horses; we can say nothing respecting it from personal experience.

Barley.—Barley is still a common food of the horse on the continent, and, until the introduction of the oat, seems to have constituted his ordinary stable food. It is more nutritious than oats, containing nine hundred and twenty parts of nutritive matter in every thousand. There seems, however, to be something necessary besides a great proportion of nutritive matter, in order to render any substance wholesome and strengthening. Except where horses are very hardly worked, barley does not seem in our country to agree with them so well as oats: they are more subject to inflammatory complaints, and particularly to surfeit and mange. When barley is given, the quantity should not exceed a peck daily. It should be always bruised, and the chaff should consist of equal quantities of hay and barley straw, and not cut too short. If spotted barley is given, it will probably produce serious illness among them. For horses that are recovering from illness, barley, in the form of malt, is often serviceable, as tempting the appetite and recruiting the strength. It is best given in mashes; water, considerably below the boiling heat, being poured upon it, and the vessel or pail kept covered for half an hour.

Grains.—Grains fresh from the mash-tub, either alone, or mixed with oats or chaff, or both, may be occasionally given to horses slow at work; they afford very insufficient nourishment for horses who are called on for smart exertion.

Wheat is in Great Britain rarely given to horses. It must always be bruised and given in chaff. Wheat contains a greater proportion of *gluten* than any other kind of grain; with the horse it is difficult of digestion, and apt to form obstructions in the bowels. This will often be the case if the horse is suffered to drink much soon after feeding. Wheaten flour, boiled in water to the thickness of starch, is given with good effect in over-purging, especially if combined with chalk and opium. There is no grain, however, that seems to agree so well with the constitution of the horse as the oat.

Beans add materially to the vigour of the horse. There are many horses that will not stand hard work without beans being mingled with their food, and these not horses whose tendency to purge it may be necessary to restrain by the astringency of the bean. There is no horseman who is not aware of the difference in the spirit of his horse if he allows or denies him beans on his journey. They afford not merely a temporary stimulus, but may be daily used without losing their influence, or producing exhaustion. Beans are generally given whole. This is absurd; for the young horse, whose teeth are strong, seldom requires them; while the old horse, to whom they are in a manner necessary, is scarcely able to masticate them, swallows many of them whole, and drops much corn from his mouth in the ineffectual attempt to break them. Beans should not be merely split, but crushed; they will even then give sufficient employment to the grinders of the animal.

Tares.—Of the value of tares, as forming a portion of the late spring and summer food of the stabled, and especially the slow-worked agricultural horse, there can be no doubt. They are nutritive, and they act as a mild medicine. When surfeit lumps appear on the skin, and the slow-worked horse begins to rub himself against the divisions of the stall, and the legs are turgid, a few tares cut up with the chaff, or given instead of a portion of the hay, will often afford relief. Ten or twelve pounds may be given daily, and half that weight of hay subtracted. It is an erroneous notion, that, given in moderate quantities, they either roughen the coat or lessen the capability for work.

Lucern is by some agriculturists considered preferable to tares, and sainfoin superior to lucern. Although they contain but a small quantity of nutritive matter they are easily digested and perfectly assimilated; they speedily put both muscle and fat on the horse that is worn down by labour, and are almost specific for hide-bound. Some farmers have thought so highly of lucern as to substitute it for oats. This may do for the agricultural horse of slow work, but he from whom speedier action is required, and the horse of all work, must have hard meat within him.

Carrots.—The virtues of this root are not too greatly esteemed. There is little food of which the horse is fonder.

Nutriment contained in the following vegetables—1,000 parts of wheat contain 955 parts of nutritive matter; barley, 920; oats, 743; peas, 574; beans, 570; potatoes, 230; red beet, 148; parsnips, 99; carrots, 98.

Of the grasses, 1,000 parts of the meadow cat's tail contain, at the time of seeding, 98 parts of nutritive matter narrow-leaved meadow grass in seed, and sweet-scented soft grass in flower, 95; narrow-leaved and flat-stalked meadow grass in flower, fertile meadow grass in seed, and tall fescue in flower, 93; Swedish turnips, 64; common turnips, 42; sainfoin, and broad-leaved and long-rooted clover, 39; white clover, 32; and lucern, 23.

Thus much of the articles of the horse's food; we will now return to the subject of feeding him.

When horses are worked very hard, the practice of giving what is called manger-meat alone has been adopted, and with great success, according to the statement of those who

have given this plan most trial. Manger-meat is nothing more than a mixture of corn with hay cut into chaff instead of being put into the rack. The advocates of this plan assert that a horse required to go through much work finishes his food quicker than with rack-meat before him, lies down sooner, and consequently has a longer period for rest than he would if treated in the usual way. This may be very true as regards some horses, but there are in fact very few who lie down directly after feeding; and a great proportion of horses, after having finished their manger-meat, will pick over their straw, and eat such parts of it as are not much soiled, in preference to lying down. The Americans, in addition to chopping up their horses' hay, grind their oats coarsely, and mix the whole together. For farm-horses while baiting such a plan may be a good one; but horses used for pleasure are generally allowed plenty of time for feeding, and there can therefore neither be any necessity for adopting this system. Horses again that have weak stomachs, and are shy feeders, take a long time before they will eat a sufficient quantity of food to keep them in condition: and, if a large mess of hay and corn be placed before them, will take a few mouthfuls perhaps, and blow upon the rest, until they take a disgust to it, and refuse it altogether. There is many a hunter of this description not fit probably to take the field more than once a week, but who, when out, does his work in a style that makes him invaluable to a man that can afford to keep a large stud, and is therefore worth nursing. If you cram his manger with food, the animal will, in all probability, not touch one particle of it; you visit him hour after hour, and find his corn untouched, and himself dispirited from want of nourishment. What is to be done with such a horse? You have over-taxed his powers—you have thought of nothing but keeping the lead; and when your horse has flagged under you you have roused him with bit and spur; and, despite the warning voices of heaving sides and shaking tail, of which some brother sportsman has perhaps given you notice, you have crammed along to the finish, and found that you had just killed in time, for your horse had already cried "Hold, enough!" You have your fears of "having come it rather too strong" confirmed by finding your trusty steed refuse his corn and show other evident symptoms of distress. If you are enough of a veterinarian to be able to judge of the state of his pulse, and no symptoms of congestion of the lungs betray themselves, it *may* happen that a little warm ale and ginger may be advantageous to him; but as there is risk in giving stimulants after hard work, unless you have "good store of veterinary science" to guide you, after having seen him made pretty comfortable, give him (and this drink you should accustom him to take lest he refuse it when you wish him to take it) half a quartern or more of oatmeal made into porridge or gruel with a small quantity of boiling water—stirring in the oatmeal in small quantities, and keeping the whole simmering, diluted with linseed tea. This last may be made by putting half a pint of linseed into a gallon of water, and placing it close to the fire for some hours, after which set it aside to get cold. On hunting days this should be prepared while you are out, and be ready for use on your return. The linseed tea on cooling gets very thick and glutinous, and contains as much nourishment as with the oatmeal is sufficient for a horse whose powers of digestion are for a time enfeebled. If your horse drink this mixture, you may put a lock of sweet hay in his rack, a few handfuls of oats in one corner of his manger, and as much beans in another, with perhaps a couple of chopped carrots, and it is ten to one, unless he be severely overmarked, that he will soon nibble sufficient of one or the other to sustain him until his appetite completely returns.

Water.—Soft water in all cases is better for horses than hard: home water from a brook or pond is preferable to that raised from a well by pump or bucket. Valuable horses, who are apt to be heated, should not, however, be allowed to slake their thirst at pond or brook, but have water given them but little below the temperature of their stable, say 65° to 70°, and this may be done by mixing a little hot water with the cold. Observe, extremely cold water will often produce staring of the coat, colic, and rheumatism. It is by no means an uncommon notion that if horses are to be got into condition for work, they should be allowed to drink but a very small quantity of water On what physiological basis this opinion is founded is a mystery. Nevertheless as many persons adopt this treatment, it is fitting to notice it. It is a bad plan to stint a horse in his water. Of course it is not asserted that when a horse comes in heated from exercise he should be suffered to drink, or should have a bellyful of water just prior to being ridden; but, if a horse be watered *ad lib.* in the morning, he will not require to drink again for some hours, and should never be allowed to do so then unless perfectly cool. Those horses that are only supplied with a limited quantity of water at a time, and are never permitted to slake their thirst fully, will be much more liable to be griped, if at any time they by chance should drink their fill, than those who are always suffered to take as much as Nature dictates to them; but, should a horse have been hard-worked, and come into his stable very hot, after having seen him well dried, only at first give him a small quantity, for two reasons: first, because his eagerness for water may lead him to drink more at a time than is good for him; and secondly, because a large quantity of water will probably cause him to break out into a cold sweat, in which he may remain all night if not looked to. After having taken a third, or less, of a stable pailful of water, he should be kept without any for some time, and then be allowed to take what he pleases. When, however, you intend to stint your horse in this way, do not suffer your groom to offer him a pailful of water, and to take it from him when he has drunk a small portion of it, but let just the quantity you wish him to have, and no

more, be given to him; he will then feel to a certain degree satisfied with what he gets: whereas, by taking from him what he expects to have, he becomes fretful and discontented. In the first instance he makes up his mind to slake his thirst with a short allowance of water; whereas in the second his just expectations are baulked in mid career, and his imagination cheated as it were in the height of his enjoyment: there is much more in this than may be generally supposed. Physiologists are well aware of the connexion existing between the stomach and brain; and those who have not inquired into this fact must either do so before they attempt to refute it, or take what is here stated as proven.

What is said with respect to giving a horse water while he is hot applies equally to his food. Never suffer a horse to feed until he is cool. After fatigue of body, the stomach of all other parts is perhaps the least capable of exertion; and although in some cases of severe exertion a slight degree of sustenance may be requisite to support the strength and stamina of every living animal, it should always be administered in moderation; and for this purpose there is nothing better than the gruel already recommended. It is a light species of diet when not given too abundantly, against which the stomach will seldom rebel, and it is always proper that this organ, like any other, should be in good tone before its work—that of digestion—be required of it; and as, when a horse is violently heated the blood is propelled by the heart in a much greater ratio than usual, the stomach, being consequently supplied with a greater quantity of blood within a given time than it would have received without undue excitement, is as unfitted to perform its task while under the influence of that stimulus, as the eye would be to bear a strong light after having been irritated by some heating application. Let your horse then remain quiet for some time after he has done his work, and he will not only feed the better for it, but will likewise digest what he eats.

There are not a few masters of horses, who, from a mistaken feeling of kindness, like always to see a good quantity of food before their animals, so that they may never be hungry; not stopping for a moment to consider the degree of injury they occasion by this perpetual cramming, but vainly imagining that every extra mouthful a horse swallows is so much added to his strength and condition. We cannot, of course, expect the brute creation to act as rational beings, or to be able to resist the temptation of eating more than is good for them; and therefore the first symptom of loathing food, which is the necessary consequence of perpetual repletion, is a proof that the powers of the stomach have been overtaxed, and that it requires the same rest—only for a much longer period—as does the body generally after severe exercise. Next to the quantity and quality of your horse's food, there is nothing that will tend so quickly to put him into condition as giving it at stated hours and at regular intervals. After a meal proportioned to his work—say from a quartern to a quartern and a half of oats—four hours are the very least period that should be allowed to elapse before your horse is again fed; and during this time (unless he has been worked so hard that you wish him to lie down) his head should be fastened so that he may not be able to get at his straw, which very many horses will eat, no matter how soiled it may be. A horse in regular and fair exercise should have but very little, if any, hay in the middle of the day; but a small quantity may be given in the early part of the morning, and a sufficient portion at night to make up his daily allowance of about eight pounds—not more. Although corn is certainly more nutritious than hay, yet if you increase your number of feeds of oats, and deprive your horses entirely of hay, it is surprising how quickly some of them will lose flesh.

Business of various kinds will sometimes compel you to alter your hours of feeding, but regularity should always be adhered to as strictly as possible; for, after having been for some time accustomed to be fed at a certain time, nature will crave food at the usual hour, even though the previous meal may have been more than commonly abundant. A horse that is generally taken out in the forenoon, if fed twice in the morning, should have the larger portion of his food at his first meal; and if he be required to work on most days from about nine till one or two, the better plan is to divide his corn into three feeds instead of four. This is preferable to working him on a full stomach, than which few things in time are likely to prove more injurious.

EXERCISE.

Exercise, the prime necessity of animal health, is an instinct wonderfully active in the horse, when free to indulge his own will, and at leisure from the restraint and servitude of man. The benefits of exercise, as a preventive of disease and as a promoter of the working condition of the animal frame, are equally self-evident. If it be true then that in a state of nature horses instinctively play with each other, and that to such an extent as to produce perspiration and violent breathing, may we not infer that when we stable them, subject to restraint, and then neglect to exercise them, their health must be injured? In all great cities the evil of want of exercise sadly prevails among the better class of horses. We shall quote here a clever sporting writer, the late Mr. Bingley, "Harry Hieover," who says that he verily believes as many horses are ruined for want of work as from too much of it. It is true that the better sort of horses of the better sort of owners are ordered to be exercised, but how, where, and when they do not condescend to inform themselves, or to inform their servants. Well, the men have too much to do, and gentlemen object to boys riding their valuable horses. So they rub the dirt off them; give them a brush over; make the stable clean, ventilate it by opening door and window, and are satisfied that they have done their duty. Or, perhaps the animals are ostensibly brought out and led—observe, not even ridden—up and down a covered

ride perhaps fifty or sixty yards long, littered with strong-smelling, half-saturated straw, aided by the fine ammonia of the dung-pit itself, quite "convaynient" as our Irish friends would say. Ought an owner to feel astonished at "influenza," or any other disease which assumes an epizootic form, should rage in his stable? Of course he will hear from the "Vet.," according to his enlightenment, an extensive amount of prate about "contagion, great prevalence of disease at this season," &c., while he is positively brewing his own miasma, and exposing his too-much-favoured animals to circumstances which must produce the visitation which exercise, involving change of air, would as assuredly prevent. Broken wind, incipient ophthalmia, sandcracks, grease, contracted heels, hide bound, and digestively-disturbed functions, staring coat, and general constitutional disturbance are among the mischiefs which physic and "horse-doctrine" will substitute for horse-exercise and horse-play: which is the more economical, which the more satisfactory, we leave the reader to judge. The spring and autumn shedding of the coat, too, is never properly gone through by horses who have not frequent and strong periodical exercise. So necessary is exercise to the health of the horse, that, unless prevented by sickness, lameness, hard frost, or a previous severe hard day's work, no day should be missed. The quantity, frequency, and pace, must, however, depend upon circumstances. Where horses work two or three days in the week, the resting days require no more than airing exercise; for every horse should have, at least two days in the week, such work or exercise that will give him a moderate sweating. This throws out through the pores of the skin, what might lodge in the system and create diseases; it likewise frees the horse of scurf adhering to the skin, and makes the coat fine. Those days, therefore, that the horse is not wanted for work, he must be exercised for the fresh air, which is bracing and strengthening to his limbs, refreshes the body, and creates appetite. The early part of the day is preferable for this, but in wet weather embrace the best opportunity.

Exercise enlarges the muscles, by forcing more red blood into them: thus the arms of the blacksmith, the legs of the pedestrian, the sword-arm of the fencer, greatly increase by use; which is well fabled in the account that Milo, by every day carrying his calf, became insensible to its increasing weight, and bore it also when it had grown into a bull. The athletæ of Greece and Rome braced their limbs by constant exertion, and the gymnastics of the forum were the produce of much previous exercise. The boxer also is forced to submit to close training, which is principally composed of strong exercise. Our hounds take their training gallops preparatory to hunting; our hawks their training flights; and game-cocks were brought into wind and vigour by similar means. It is well observed by Nimrod, "That the ill effects of rest, and the good effects of work, on the powers and energies of a horse, are astonishing. In long-continued rest his flesh becomes soft and flabby, and the muscles lose their elasticity, and even their substance. This is particularly exemplified in the human subject; for, let a man forego the use of one of his legs for twelve months, the muscles of that leg will fall away, though they will in some measure recover on his resuming the action of the limb. Horses lame in the fore-feet are generally seen to have the muscles of the chest fallen away, because such muscles are not called into their proper action, which a crippled horse has not the power of doing, although he may work every day." This gave rise to the vulgar, but now nearly exploded, opinion of chest-foundering in horses; whereas such a complaint does not exist; the evil lies in the feet, and the wasting of the muscles of the chest is the effect and not the cause. In strong work, when a horse is sound, every muscle, and indeed every fibre, of the body is braced, as it were, until the frame becomes a firm mass as a whole, but possessed of vast contractility in the separate portions.

Exercise greatly improves the wind, by promoting an absorption of the surrounding fat from the viscera of the chest, and thus allowing the lungs to expand uninterruptedly: it also enlarges the air cells of the lungs themselves; and hence, by the imbibing of more air, the animal can remain longer between his inspirations. The pearl-diver by practice, it is said, can remain under water between two and three minutes, while insensibility follows our own immersion after fifty seconds. And thus the colt in training is first able to take a gentle gallop, next a brushing one, and lastly he stretches over the ground at the top of his speed without distress.

The benefits of exercise as a preventive, and in many cases a curative, need not be further dwelt on, except to urge on owners that they should insist on its systematic and periodical observance.

The owner of a single horse should order his groom, as soon as the stable has been cleaned out in the morning, while the horse is eating his first feed, to brush him over, and put on his exercising saddle and bridle; in cold weather, if only intended to be walked, keep the cloth or sheet on him under the saddle; in warm weather, though a horse's coat may be something the finer by being kept warm, yet he is certainly the more liable to take cold when he is necessarily deprived of it. We need hardly say that the most open and airy places should be taken for exercise, and this is the most favourable opportunity to improve a horse's walk, two hours of which he should get, and it is a great thing to endeavour always to make him step longer in his walk, and thus exercise the horse and improve him at the same time. If convenient, while out give him his water. If a horse is inclined to flesh, the like exercise may be taken in the afternoon, where persons have time and convenience. But every one cannot allow the time to be so taken up, for it would be nearly equal to training, and may not be thought necessary; it is more than the generality of horses require, and many inferior-bred horses, who look well to the eye, cannot for a continuance stand the ordinary work that a horse has in training. If you inquire of training grooms, in charge of

some terrible high-bred colt, why he is not "brought out," they will answer, "he would not stand his training." This is mere cant. He has been over-trained and galloped too fast, not judiciously and reasonably exercised.

Should the horse's work be so moderate as not to occasion a sweat, then, about twice a week, he should have exercise strong enough to sweat him; this may be done in the pace he is mostly ridden in, that he may be practised and improved in it; if he be admired for his trot, it would be wrong to gallop him, which might unsettle him in his esteemed pace; therefore, trot him out for the space of two miles, to bring him to a comfortable sweat, and walk him back; thus will his limbs be rendered supple, his muscles developed by red blood, and his ligaments and tendons strengthened. Inactivity debilitates, and over exertion may sprain and weaken, but moderate exertion is good both for man and beast.

Sweating horses increases the labour of cleaning. Indolent grooms, and those who have several horses to look after, avoid this part of their business as much as possible: let no such grooms be trusted.

When a horse comes in from work or exercise, if perspiring, wet and dirty, he should not be left until completely dry, clean, and comfortable. Some horses, in good condition, will rub dry and clean in a short time, but others, with long coats, and some from constitution or ill condition, are a long time getting dry; hence clipping and singeing, which may be rendered unnecessary by diligent grooming. But these points will be remarked upon presently.

In some hunting establishments grooms only open the stables twice a-day instead of three times if the horses are not at work. Instead of sending the horses starving out the first dawn of the morning, they generally remain in the stables till the men have had their breakfasts, and are consequently not shut up till a little before mid-day. They then remain quiet for six hours. The late Lord Kintore's stable was conducted on this principle, and Nimrod, in describing it, said, "I must own that, although I never tried it, I see sound argument in favour of this stable management during the three dark and dreary months of winter, with horses that work hard, from a knowledge of the restorative powers of undisturbed rest both with horse and man; as also of its sedative effects in allaying excitement by whatever cause produced."

The hours of exercising might be advantageously left to the weather. Cold, damp, foggy mornings, the horses would doubtless be better in their stables; fine bright mornings should be taken advantage of, lest the day should change for the worse as it advances. There is no use in getting horses out in winter before day-break, unless indeed the men (which is not at all improbable) have fixed a particular hour for their own breakfasts. That breakfast is one strong argument for exercising at a later period, the men having no interest in hurrying and shortening their work in order to get home to their morning meal.

When horses in returning from exercise show any heat or inflammation from saddle, girth, or harness, have ready a wash of Goulard water—that is, four drachms of sugar of lead diluted with water to a wine bottle full of fluid. Bathe the part with it, and you will give comfort to the animal, and perhaps prevent further and more troublesome and painful consequences. This cold lotion should always be at hand.

CLEANING.

Removing the Mud.—There are two ways of removing the mud. One may be termed the dry, and another the wet mode. The first is performed by means of the scraper and the curry-comb, or a kind of brush made of whalebone, which answers much better than the curry-comb. In the few coaching stables now surviving, the strappers are never allowed to apply water to a horse that has come off the road. The usual practice is to strip off the mud and loose water by the sweat knife; to walk the horse for about ten minutes, if he be warm or wet, and the weather fair, otherwise he stands a little in his stall, or in an open shed; then the man begins with the driest of those that have come in together. Much of the surface mud which the scraper has left about the legs is removed by a straw wisp, or a small birch broom, or the whalebone brush; the wisp likewise helps to dry the horse, The whalebone brush is a very useful article when the coat is long. That and the curry-comb, with the aid of a wisp, are almost the only implements coaching strappers require in the winter season. It clears away the mud, and separates the hairs, but it does not polish them. A gloss, such as the coat of these horses requires, is given by the wisp. The whalebone brush is sometimes too coarse, and many horses cannot bear it at any time, while others can suffer it only in winter. After the mud has been removed with this brush, the matted hair parted by the curry-comb, and the horse dusted all over with the wisp, his feet are washed, the soles picked, the shoes examined, the legs and heels well rubbed, partly by the hand, and partly by the wisp, and the mane and tail combed. In the best stables he is well dressed with the bristle brush before he goes to work. In other stables the usual mode of removing mud is by—

Washing.—When the horse is very dirty he is usually washed outside the stable; his belly is scraped, and the remainder of the mud is washed off at once by the application of water. Some clean the body before they wash the legs, but that is only when there is not much mud about the horse. They do so that he may go into the stable quite clean. He soils his feet and legs by stamping the ground when his body has been cleaned. It matters little whether the dressing commence with the body or with the legs; but when the legs are washed the last thing, they are generally left undried. In washing, a sponge and a water brush are employed. Some use a mop, and this is called a lazy method; it is truly the trick of a careless sloven; it wets the legs, but does not clean them. The brush goes to the roots of the hair; and removes the sand and mud, without

doing which, it is worse than useless to apply water. The sponge is employed for drying the hair, for soaking up and wiping away the loose water. Afterwards, the legs, and all the parts that have been washed, are rendered completely dry by rubbing with a straw wisp, the rubber, and the hand. Among valuable horses this is always done; wherever the legs have little hair about them, and that little cannot be properly dried after washing, no washing should take place.

For ourselves we are advocates of the "dry" method; for none but the best of stablemen, and they are of course rare, conscientiously rub them free from moisture. Hence imminent danger of cold and fever. Evaporation commences; after a time a process is set up for producing heat sufficient to carry on evaporation and to maintain the temperature of the skin. Before this process can be fully established the water has all evaporated; then the heat accumulates; inflammation succeeds, and often runs so far as to produce mortification. When the inflammation is slight and transient, the skin is soon completely restored to health, and no one knows that it had ever been inflamed. When the process runs higher, there is a slight oozing from the skin, which constitutes what is termed grease, or a spot of grease, for when this disease is spread over a large surface it is the result of repeated neglect. When the inflammation has been still more severe, mortification ensues; the horse is lame, the leg swollen, and in a day or two a crack is visible across the pastern, generally at that part where the motion is greatest. This crack is sometimes a mere rupture of the tumefied skin, but very often it is produced by a dead portion of the skin having fallen out; what is called "a core" in the heel arises from the same cause; it differs from the crack only in being deeper and wider. The reason why cold produces such local injury of the skin covering the legs, and not of that covering any other part, is sufficiently plain. The legs, in proportion to their size, have a very extensive surface exposed to evaporation, and the cold becomes more intense than it can ever become on the body. To avoid these evils, the legs must either be dried after washing, or they must not be wet. With this train of evils "looming in the future," the owner must indeed be unworthy of being master of a horse if he neglects to assure himself that his animal's legs are properly rubbed dry. When you wash the legs with warm water to cool and refresh them, it will also at the same time relieve the feet, which of course must have undergone a considerable quantity of labour. The uses of the equine footbath are dwelt on in Mayhew's "Illustrated Horse Doctor," already referred to. Water is beneficial to the feet; we find the feet less injured by travelling on wet roads than on dry ones; and the hoof at grass, being continually wet with the dew and moist ground, is in a better state than when kept in the stable. The casual wet you meet with in exercise on the roads, or the moisture of the turf or grass you exercise on, contributes to preserve the foot from the injury which continually standing in a hot and dry stable occasions.

CLOTHING.

The advisability of clothing for the "general purpose" horse has been the subject of controversy in times by-past. With racers and high-bred hunters clothing is indispensable.

The "old English gentleman's" cry of "sticking to nature" is mere nonsensical obstinacy and prejudice. We have adapted the animal to an artificial life, and artificial means are needed to keep him in the required condition. In winter, clothing warms the animal and improves his coat; in summer (lighter), it keeps the skin-temperature more equable, and prevents the irritation of flies. We do not recommend, however, the complete suit of the racer to the service of the hackney.

Where stables are dry and cross-draughts avoided, a horsecloth is, to our thinking, enough. Much of the heavier clothing may be dispensed with advantageously where the "dry-rubbing" so often insisted on in these pages is conscientiously carried out. Good grooming is the surest prevention of sudden alternations from heat to cold; and we once again recommend that no stable should ever be without a registering thermometer, that its temperature may not be the subject of guess.

The clothing for private stables is composed of strong serge, made for the saddler's purpose, cut, and bound with galloon. Economy and smartness are best answered by having a suit of "best clothes," of finer and closer serge or kersey, for day wear, and a warm rug or even two for night. A roller with double straps is required to keep them in place. The best or day clothes will look much cleaner and smarter by this method. In warm dry weather a thin cloth is enough.

In the stable your horses should always have clothes enough to keep them warm, but not hot. Grooms are generally too fond of heaping rugs and blankets upon their horses, for the purpose of improving the appearance of the coat; but depend on it that too warm clothing not only renders a horse more susceptible of cold than he should be, but also diminishes the size and firmness of his muscles. Employ then the "just mean;" and however pretty may be the appearance of a smart and thick rug, covered by a gay body-cloth, and this again surmounted by a hood thrown over the quarters, with the ears neatly peeping up behind the rollers, do not sacrifice your horse's well-being to appearances, which may be all very well in the show-stables of a London dealer, but are uncalled for in those of a sportsman. If your horse be clipped or singed, he will of course require additional clothing, for a time at least.

The hunter's clothing in cold weather is a kersey-sheet and quarter-piece with roller, and usually a breast-piece also. To these, particularly where well-bred horses are employed, a hood is sometimes added; but, however proper it may be to exercise in a hood (which indeed should always be worn when walking only is allowed), we think it should not constitute a regular part of the stable dress.

Even breast-cloths have the effect of keeping a part in an undue state of heat, which, the moment the horse goes out to his regular work, is the most exposed to the wind and rain. The day clothing of the hunter is commonly exchanged for the rug and roller at night.

The clothing used for the better sort of hackneys is much the same with that worn by the hunter; even the hood and breast-piece are often employed; and, indeed, the general treatment is now much alike for both: but it must be allowed, that, however it may tend to improve the appearance of the hackney, or even increase his spirit, it must nevertheless subject him to cold on a change of stable.

The clothing in use for racers varies much, in quantity, quality, and fashion. The full set comprises the hood, sheet, quarter-piece, breast-cloth, pad-cloth, and fillet-cloth, with rollers to secure them; these form a complete suit of clothes. The suits vary in their manufacture; they are, however, usually made of kersey-check, like those of other horses, but of a lighter kind. There are likewise in racing stables heavy suits, particularly employed for the purpose of sweating. The first hood of the sweating clothing should be made without ears, that additional hoods, when necessary, may go over it, the last only being furnished with ears. The body-sweater should be large enough to envelop the whole carcass, and to wrap round the neck likewise; and the breast-sweater, or breast-cloth, should be equally capacious. When the sweat is intended to be a profuse one, other large blanket pieces are usually added. In summer, racers usually wear suits of white serge for clothing. In Darvill's work some judicious improvements in the clothing are recommended; one of which is, that instead of the stiff leather used to attach the breast-cloth strap (and which, when hard-pulling horses are galloping, often chafes the knuckles of the riding boys seriously) softer leather should be substituted, as that of which the saddle-seats are made. He further proposes to substitute "loops on each side of the centre and back part of the quarter-piece and sheet, so that a portion of binding might be attached to those loops, in the way of a crupper, with such horses as would bear it."

CONDITIONING.

The word condition is variously applied to the horse, though widely different from what is here intended: thus, when we say a horse is in "condition for sale," we simply mean "dealer's condition," *i.e.*, he is in flesh, his legs clean and fresh, his coat fine, his eye clear, and his movements lively. A horse may be all this, but not in condition for work. Another horse is said to be "in good working condition;" such might be said of a cab-horse, bare of flesh, with joints enlarged, and his legs puffed with windgalls, yet this horse may be capable of doing much work. His being worked more than was requisite to keep him in condition, has put him "out of condition."

Condition, therefore, without an expletive, implies that perfect state of body and limbs, in which the whole system is at its highest vigour, and capable of great exertion, whenever called on. This cannot be obtained or kept, without strictly adhering to three things, viz., proper food, proper grooming, and proper exercise; neither of these must be omitted, or injudiciously administered; for, like medicine properly administered, each does good, but is capable of doing much injury if misapplied. Wine, in moderation, cheers the spirits and invigorates the body of man, but taken to excess debilitates the constitution and prostrates the nervous energy.

"Nimrod," whose victorious controversy on "Summering the Hunter," led to such oceans of "inkshed" some thirty years ago, is yet the first authority on preparing horses for the hunting field; and some of his directions are so generally applicable that we may adapt them easily to ordinary stable practice. He supposes, in this case, that you take your horse from grass on the 1st of August. "If you intend," says Mr. Apperley, "to physick him in the stable, give the purgatives hereafter mentioned: but if you prepare him at grass, give mild doses of not more than five drachms of aloes, and two and a half drachms of ginger, on the 24th of July, and repeat it on the 1st day of August, and again on the 8th day of August; take him into the stable on the 10th or 11th of August, but do not bleed; give a mash once or twice a day, as it is not right to put him on dry food too suddenly, at least for a week; let him have three or four hours' walking exercise every day for the first fortnight, then bring him by degrees to take regular stretching gallops. Let old oats and meadow hay be his food till he comes to severe work, then add a few old split beans, and give about a quart of sliced carrots or Swedish turnips clean washed, once or twice in twenty-four hours. The beet-root is excellent in colds or coughs. Do not clothe him too heavy, nor keep the temperature of your stable too warm Let all corn be bruised; give a small feed every morning before watering, and do not follow the plan of galloping afterwards; four times in twenty-four hours is often enough to feed, and do what is requisite in the stable; do not disturb him oftener. A change of diet is good for all horses, particularly bad feeders. A small quantity of bruised wheat and malt with chopped clover is nourishing food, and boiled beans and some dry bran mixed with them and the water they are boiled in is an excellent mash. I have frequently given it after a hard day's work. Be careful not to give too much hay; it is a good plan to shake up some fresh oat or wheat straw with it, they must masticate more thoroughly. Giving large quantities of corn at one time is improper, many eager horses will grasp such mouthfuls that it is impossible for them to grind it; they swallow it whole and dry, which swells in the stomach, causes obstructions, and the confined air originating from indigested food produces acute pain, convulsions, and frequently sudden death. It is certainly an excellent plan to give chopped clover, saintfoin, and any seed hay with corn. When you go out in the

morning, leave orders for half a gallon of barley, well sifted clear of dust, to be put into a clean pail, to it pour two gallons of boiling water, let it be covered close over, it will be cool enough in six or eight hours, and give it altogether when your horse has been thoroughly dressed; he will eagerly take it.

"You can judge of a horse's condition by his coat, and firmness of flesh; his crest and his spirits or animation, in case of colds, being dull and feverish, use the following alterative powders:—

"Antimony, in powder, one pound; nitre, one pound; mixed together: give one ounce every night, either in their corn or made into a ball; it will greatly promote condition. It is a good plan when you buy a horse always to begin to get him into condition with the above alteratives. It is a most excellent cooling medicine for horses hard-worked in summer."

Leaving Nimrod, we will return to general treatment for conditioning.

We have already spoken of exercise, as ensuring the health of the stabled horse, or as preventing the accession of acute or chronic disorders by means of the lungs, the skin, and the hardening and strengthening of the muscles and lungs by promoting healthy excretion. We are not about to encourage quackery in grooms and horsekeepers—far from it—nor to give such advice as might interfere with the legitimate province of the veterinary surgeon. Yet, as a horse in precarious health, or whose exertions, exposure, or other causes of common occurrence may threaten to disable, must often be under the care of his stable attendant, it is as well that a few simple directions should be given in a sanitary sense. Now some grooms physic or bleed the horses entrusted to them at their own discretion. This should never be allowed by any judicious master. Proper feeding, due exercise, diligent grooming, will often preclude the necessity of physic. Sloth and neglect are the parents of disease in an animal so artificially treated as the stabled horse. Well fed, and not exercised, what can be expected but a train of evils, for which the drenching-horn, the balling-iron, and the fleam are to be the panacea! We have personally an intense aversion to unnecessary drugs and the use of the fleam or scalpel. A few plain directions, not to supersede but to obviate the dire necessity of the instrument case and the battery of the pharmacopœia, shall here be set down. We will first speak of the treatment of a horse who has been newly taken up from grass. Grass is cooling and aperient to the horse accustomed to hard meat; it will also fill him with flesh; but observe, this is not flesh of a description fit for a horse to work upon: nay, if you tried him a hunting gallop you would find him faint and weak, and the fat accumulated on his cellular tissue would work out in a white lather. This checked will probably produce inflammation of the lungs, and send, as it has sent, many a fine animal to the knacker's yard.

We will suppose your horse coming from grass or the straw yard* to the stable, with its systematic diet and corresponding work; observe if he has irritation of the skin and heat. If so send for the veterinary surgeon, who will bleed him or reduce his fever, as he is a disciple of the "venesecting" theory or the "alterative." By the way, the first thing is to get the horse shod, as he is best with his shoes off when turned out, otherwise they become loose before being taken up. While he is full of grass he will not drink much water, but if you give him dry food he will become thirsty, and you need not stint him till he has had his physic. A good method is to give him a cold bran mash or two before the medicine. We will suppose then he has had his dose: tie him up and put on the muzzle, and in the morning gentle exercise will assist its operation. On returning to stable, give him a lock of the sweetest hay and a little chilled water, then a bran mash moderately warmed. More solid food may lessen the benefit to be derived from the aperient. After the sixth or seventh day a second dose of medicine is recommended by most practitioners, when the stable treatment before and after may be similar.

With respect to removing fat by purgatives, if you are not yourself a good judge of the operation of these medicines, you should first take the opinion of some good veterinary surgeon ere you attempt to meddle with them. A round-barrelled, trussy horse of a hardy constitution will bear a dose of medicine which would be destruction to a slight and narrow-gutted one, and you should therefore be extremely cautious how you administer such quantities as you may occasionally see prescribed as "cathartic, &c., ball," or "mixture," in veterinary works, without previously ascertaining, as far as you can, the capabilities of your horse for sustaining their operation. For the purpose of taking off fat, and at the same time of improving your horse's stamina, active purgation is seldom required, and therefore you must never think of giving such doses as would be prescribed for the treatment of inflammation. Such a practice, so far from doing good, would render your horse weak and languid for several days, and prevent him only from taking any but the most moderate exercise. Generally speaking, from three

* The Straw Yard affords another mode of restoring the legs of the overworked horse, and he is turned into it during the winter, with a shed to run into, and the soft manure or litter in the middle of the yard to run upon. Hay is given, but seldom more than enough to keep the stomach in order, and barley-straw affords the chief sustenance in most cases; sometimes a little hay is given cut as chaff with straw, and in some cases also mixed with a feed or two of corn per day. When a suitable winter pasture cannot be obtained, the straw-yard is often efficacious for inflamed legs and feet; and, as its small extent precludes all galloping about, it is often even more suitable than any open pasture. Tips may be entirely dispensed with, and when the toes are pared down close, as in the "seedy toe," or when the horny foot has come off, as in inflammation or fever of the foot, the straw-yard affords the very best chance of a speedy growth, especially if the regular application of pitch, &c., can be depended on.—*Stewart's Stable Management.*

to four drachms of aloes are quite sufficient for your purpose; and they may be occasionally repeated as circumstances may require. Previous to giving physic, keep your horse for half a day at least on bran mashes, which species of food, with a little hay, must be all that is allowed him until his dung becomes tolerably firm, or, in stable language, is "set." Without this precaution you will run the risk of inducing gripes. Water with the chill taken off should also be given during the operation of a purgative, and the horse be kept tolerably warm. Walking exercise will at first be all that he will comfortably endure after his ball has left off working him, and this must be increased by degrees.

Having by this means brought your horses into such a state as to enable them to stand hard work, it should be your care, by regular exercise and careful attention to their diet, grooming, and other matters connected with their well-doing, to see that they are not suffered to fall off in strength and condition.

The training of the hunter and the race-horse is conducted on the self-same principles, for which the reader is referred to TRAINING THE RACER, pp. 509—516, and TRAINING THE HUNTER, p. 519, *post*. The grand arcana of training and condition are comprised in a knowledge of their constitutional treatment in the article of diet, and in giving them regularly as much exercise as their strength will endure with advantage to themselves. We speak not here of what their legs will bear in the way of work; for, if they are so faulty as to be an impediment to active exertion, the sooner they are put out of training the better.

We shall conclude this subject by the sound advice of one of the best and most practical of sporting writers. "Trainers in general are too fond of employing physic, of the operation of which in nine times out of ten they are grossly ignorant. To be convinced of this, you have only to listen to the jargon they will run over to you of the action of the simplest remedies—a liniment, for instance, which they frequently, nay almost invariably, use for a strain of any kind, and that immediately after it has occurred, when its application may be highly injurious. There is, however, in mankind in general a hankering after being thought skilled in medicine, and few people will be found who have not nostrums for most diseases, and of course recommend a similar mode of treatment for every case. We are quite as convinced that a horse once put into condition may be kept so by good feeding, good grooming, and good exercise, unless he fall ill, as that the less medicine a man in good health and of regular habits takes the better for him. A horse's habits and mode of life, while under the direction of man, must or ought to be more regular than those of a human being, and consequently the perpetual physickings that are prescribed in many first-class stables, cannot fail to be prejudicial.

"Let then your horse's work be proportioned to his powers of endurance; pay strict attention to his diet, to cleanliness, &c.; do not allow your groom to tamper with medicine, and to fancy himself an Esculapius, a Percival, a Blaine, or a Sewell: so shall the work you get out of your stud be proportionally increased, your veterinary surgeon's bill be diminished, and your purse the weightier by the price of some few horses, which by a different mode of treatment might have been either rendered useless, or have graced the kennel coppers."

The handling of the horse by rib and neck, to determine the state of his condition, is a very ancient practice. Xenophon and other old authors notice it; and we find one of these writers on the horse asserting, "that there are outward and inward manifestations of fat, some being outwardly fat and yet inwardly lean," which, although it seems to imply a contradiction, is yet in some cases true. Another denies the possibility of this, and a third thus discourses on the subject:—"Some horses feed outwardly, and carry a thick rib when they are inwardly thin, as may be; whereas others appear lean to the eye, when they are all grease within. In this case, the feeder of the horse has two helps to advantage his knowledge, the outward and the inward one. The first is the outward handling and feeling the horse's body all over his ribs, but particularly upon his short and hindermost ribs; and if his flesh generally handle soft and loose, and the fingers sink therein as into down, he is foul without all manner of question: but if he be hard and firm, and only soft upon the hindermost rib, he has grease and foul matter within him, which must be voided, whatever comes of it. And for the inward help, that is only sharp exercise and strong scouring; the first to dissolve, and the latter to bring it away" The same author, with much truth, gives the retraction of the testes to the body as an useful criterion of condition.

Our next chapter will treat of VICES IN THE HORSE: firstly STABLE VICES, then those of THE ROAD and HARNESS. THE TREATMENT OF A HORSE ON A JOURNEY, CARE OF THE FEET, SHOEING, A CHAPTER ON RIDING AND DRIVING,—while an outline of what a Gentleman should know of the first steps and general outlines of horse-medicine, shall conclude this division of our work. VETERINARY SCIENCE AND PRACTICE will complete the Volume.

CHAPTER XIV.

THE VICES OF HORSES AND THEIR REMEDIES.—STABLE VICES: RESTIVE WHILE CLEANING: KICKING: CRIB-BITING: WIND-SUCKING: PAWING: REARING: GETTING LOOSE: ROLLING: HANGING BACK: CASTING: RESTIVE WHILE SHOEING: EATING LITTER, &c.: VICES ON THE ROAD.

The Vices of the Horse offer a tempting subject to the essay-writer; the idiosyncrasies of this valuable quadruped presenting almost as many leading features as those of erratic human nature herself; yet of the horse's "original sin" in the respect of "temper," we are somewhat sceptical, believing that, although horses of violent and even furious temper may be found, the "vice" is far more frequently attributable to improper, harsh, or ignorant training, and to tricks taught him by the folly or mischievous propensities of his groom or keeper, than to temper.

The neglect of early kind treatment and association with mankind is the most prolific source of obduracy in the horse. Much of the disposition which characterises the animal at a mature age is established in his youth. The seeds of rebellion, obstinacy, and strife are readily sown by the hand of ignorance and indiscretion; like noxious weeds, they thrive more vigorously than those of obedience, docility, and cheerfulness. As that of the child, the education of the horse should commence at an early age, and both should be treated with kindness. Pleasure should be associated with early lessons, obedience inculcated by firmness, not by brutal severity; upon these points we refer the reader to our chapter on "Breaking and Training." Few there are who adopt the happy medium. In the horse, a dogged, sullen, spiritless submission may be enforced by the cruel brutality to which the breaker too frequently has recourse; but that prompt and eager response to the rider's will, that manifest alacrity to accord with every wish, which give to the horse so much of his value, can only be founded on habitual confidence and attachment.

Temper is a property, a virtue it may be aptly termed, when rightly directed, deserving the utmost attention, not only with reference to docility, but in a more extensive sense, in connection with the nervous energy of the system and corresponding physical power. This energy is affected by the amount of nervous excitability of the brain, in conjunction with the nervous system, influencing the muscles of locomotion. If that be in proportion with the physical power of the animal, he will be capable of manifesting great superiority, providing his physical powers are in a healthy state, and cultivated by proper work or training.

Extreme irritability or impatience of reasonable control, by overpowering the muscular system, will occasion prostration of strength, and the animal will be found incapable of endurance. On the other hand, if the muscular powers are greatly in excess of the nervous energy, the horse is of little value except for purposes in which sluggishness is unimportant.

The ordinary means adopted by sportsmen and others connected with horses, and which have been for ages more or less successfully the means of subjugating them, have been eclipsed by the performances of Mr. Rarey. Whatever scepticism may exist as to the permanency of his treatment with horses confirmed in vice, very great and important results are most unquestionably manifest in the facility with which he is enabled to reduce to quiet submission wild, unhandled, unbroken colts. Those who ride and drive for health and amusement, although their wealth may enable them to purchase horses perfectly tractable, cannot fail to enhance their pleasures by the confidence which a knowledge of this art must establish.

It is an unfortunate fact for creatures of instinct only, that their tuition is mostly entrusted to that class who have but a small share of the reasoning faculty themselves; and what they have, bad temper and worse feeling frequently prevent their exercising. There can be no doubt that the less reasoning faculty the pupil is endowed with, be it man or brute, the more enlightened should be the preceptor. If a master improperly chides or corrects a boy, the latter has reason to call to his aid, and sees the folly or injustice of the chastisement; thus, his progress in learning anything is not stopped or thrown back by the folly or ebullition of temper of the master; but the poor brute is confused by it; and no doubt that intemperate and misplaced correction often undoes far more in one quarter of an hour than can be rectified by a week's subsequent tuition. Parents would be figuratively "up in arms" if a boy was improperly or illadvisedly corrected; yet owners will look with perfect apathy or carelessness on the treatment their more-to-be-pitied animals undergo at the hands of their teachers. More to be pitied, because the boy can complain; the poor brute cannot, whatever may be his sufferings.

The horse comes next to the dog in point of acuteness of instinct, the highest-gifted of those animals we have in a domestic state, or at least from the tuition we bestow on him, his instinct is the most developed. The ox, cow, sheep, and swine are left all but in a state of nature; the cow

comes to be milked—the others to be fed; these are all the demands made on them; the labouring ox is a little more taught, but nothing more than the commonest instinct suffices to effect. The fact is, we want, in a general way, no more services of such animals than instinct enables them to perform. Even as regards the horse, highly as we prize him, but little pains are taken with his education, if the term may be used; he is mostly broke to carry or go in harness by very rude hands; but no further pains are taken with him. He will sometimes show considerable cleverness in fencing; this is only the effect of instinct and practice. The dray-horse will quietly approach the trap-door of the cellar, wait till his trace is fixed to the upcoming cask, lean sideways, as it may be called, against the collar, and on the cask reaching the pavement well knows that what was wanted of him is achieved, and if called on will willingly repeat the service. This is instinct, self-possession, and practice. Even with amphitheatrical horses "docility" is the one thing wanted. The "dancing" quadrilles, as it is called, is not by "ear," as is pretended, but by the hand and heel of the rider synchronously used with the cadences. The horse learns to obey a signal or a motion, and instinctive obedience does the rest. With these arguments for a gentle system we come to the subject of VICES, so-called.

I. STABLE VICES.

RESTIVE WHILE CLEANING.—We need hardly remark on the difference of "temper" displayed by different horses under the hand of the groom. Horses that are steady and quiet on the road and in the field cannot be dressed without hazard to the strapper or groom, as well as risk to themselves. This will often be found to be owing to a highly sensitive skin, in which case the remedy should be the adoption of other implements and a lighter method. For instance, to discard the ordinary curry comb, at least for a time, and substitute stout linen rubbers, horse hair gloves, and a flexible backed brush. Of the latter we can safely say that they are in all cases of fine-coated animals preferable to the curry-comb, and searching enough if the horse is industriously groomed. In the majority of instances, however, this vice has arisen from teasing the animal; or a heavy-handed fellow with a broken-toothed comb, or a worn and uneven-surfaced brush, literally knocking the animal about. As to teasing, we have watched many strappers who took a delight in making the animal lash out at random, or show his teeth; can we wonder then that this "vice" is confirmed? A change of groom, perhaps, takes place, and what was previously done partly in play, by the stranger is treated as a manifestation of anger—or "vice." If the recalcitrant animal should inflict injury on the unsuspicious newcomer, of course "confirmed and dangerous vice" is the verdict, although the poor unreasoning brute was merely practising his rehearsed "horseplay." Gentle handling and encouraging words, with a firm and unhesitating approach, will soon render such a horse quiet and steady.

KICKING is too often caused by the teasing, tickling, or pinching above noticed. The habit becomes confirmed, and the illtaught animal is voted incurable.

An inveterate kicker is to be very carefully approached by all parties, and sometimes requires even more than ordinary caution, in which case a chain is run through a pulley in the stall-post, and from that to his head-stall, so that by pulling it his head may be drawn round towards the post, and by the same action his heels drawn from it, so as to allow the groom to go to his head, when he is safe from the heels. Most good grooms, however, are able to take care of themselves, and by constant practice they learn to keep the proper distance, either near enough to make the kick a mere push, or far enough to be out of reach.

KICKING THE STALL-POST is injurious both to the kicker and his next neighbour, who may come in, under a bail, for the knock intended for the post. We have known horses do this for hours together in mere idle play. Hard work cures it, and if that does not, or is not available, a branch or two of furze-bush nailed against the post will generally stop it. Mares are stated to be addicted to this bad habit far more than horses. A log of wood strapped to the leg most used in mischief has been advised. We think them very dangerous, and not heavy enough to be efficacious. A broad strap fastened round the pastern and the weight, about five pounds, attached, so as to avoid bruising the coronet, will be found an improvement.

BITING.—This dangerous and unpleasant habit which is often a mere indication of playfulness, is a decided vice in many horses. Watch carefully that your stable boys and grooms do not promote or encourage it, which they often do and then exclaim against it and punish the animal for what is caused by their own provocation and folly. Various methods, some very cruel, have been proposed as cures for a biting horse, "Harry Hieover" has an amusing paper on the subject in his "Stable Talk," from which we shall here make an excerpt. The writer says:—"Supposing a horse to have that abominable vice of biting people, he gets well flogged for it: this may deter him in some measure from doing so: but if it does, it only prevents his doing it when we keep an eye on him; it does not cure his inclination to do it; nor would anything but finding he actually hurt himself by the act itself. A somewhat curious mode of curing this appeared in the public prints; namely, the giving such a horse a hot roast leg of mutton to seize. Absurd as this appears, it is really not so much so as many things that are done towards horses: in fact, if a horse was addicted to biting legs of mutton, it would be a rational and certain way of curing him of the propensity; but as legs of mutton do not often come in his way, and arms of men frequently do,—unless he was stupid enough not to be able to distinguish the one from the other, the mutton plan could not avail much. Now, if we could cover a man with a coat of mail, with invisible spikes standing from it, two or three times seizing the man would, I doubt not, radically cure the

horse—not of his disposition to bite, but of attempting to do so. But as we cannot well do this, I believe a short stick, and keeping an eye on him, in approaching or quitting him, is the only thing to be trusted to. Flogging him after he has bitten will tend to increase his propensity to do it, for this reason: it is either dislike to man or fear of man that makes him bite: he seizes us to prevent our hurting him, or in revenge for having been hurt; consequently, punishing only confirms his fear and hate; so probably, if we do this, and he finds he dare not bite, he tries the efficacy of a kick.

"A friend of mine had a favourite mare that was exceedingly troublesome to dress, and bit terribly What made it worse was, she would on no occasion bear to be rack-chained up; she would rush back and throw herself down. When she had the muzzle on, she would run at the manger, rack, and man, so that the blow was nearly as bad as the bite. It happened the groom had killed a hedgehog the day before: seeing this in the stable, it struck me I could turn him to some account; so I got him skinned, and fastened the skin to the bottom of the muzzle, of course on the inside. I put it on the mare, lengthening the head-strap so as to allow about three inches between the skin and the mare's lips, and offer her no inconvenience but of her own seeking. I begged the groom to strip and dress her. The moment he touched the roller-strap to unbuckle it, she rushed at the rack-staves as usual, but not the usual result did she find. She ran back to the end of her collar-rein, snorting; he commenced dressing her: she went at him as usual: he was quick enough to meet her muzzle with his arm, giving it a hard blow against her nose: she did not try that game again: she had a go at the manger; this was worse: after a few trials, she contented herself with squealing as usual, kicking and flying about the stall: but she kept her nose from coming in contact with the man or anything else. She found she punished herself, and had sense enough to leave off doing that which produced punishment by the *act*. The man punishing her never had, or never would have, produced the same effect. Could the groom have worn a hedgehog strapping-jacket or shirt, no doubt she would have been cured of attempting to bite him. The lesson, of course, only prevented her biting, or trying to bite, when the muzzle was *on:* when off, she would do as she always had done, for then she well knew a man's skin was not a hedgehog's. This we will call 'practical education,' and is in accordance with the system of education I advocate."

The following is confirmatory of the views taken by the writer just quoted:—An instance of a mare viciously addicted to biting being cured of the habit by an accident, occurred to us a short time since. Her former owner had foolishly taught her to do this by teazing her, and she had contracted the habit to such an extent, that whenever any person went into her box, unless her head was tied up, she would assuredly run at him. Knowing that beating her, or adopting any harsh measures, would have only a prejudicial effect, it was forbidden, and by putting the muzzle on when she was being dressed, any serious consequences were avoided. The way she cured herself was singular. She had been out to exercise, and the boy was washing her legs and feet, her head being racked up, and the muzzle taken off to allow her to eat a little hay. She turned her head suddenly, with the intention of seizing the boy, by which act she caught the stirrup-iron in her mouth, and, being racked-up, she was fixed as firmly as if she had been in the stocks. She plunged violently, and in doing so her hind-quarters slipped and she fell sideways, her head still held fast by the rack-chain. By loosing the girths she was released from her perilous position, as she was almost strangled; but she never attempted to bite afterwards.

Crib-biting is one of the vilest habits a horse can acquire, and one of the most intractable. The horse seizes the manger with his teeth while he stretches his neck forward, and, after some spasmodic action of the throat, a slight grunting sound is uttered, which appears to be accompanied by a drawing in of air. The cause of this trick is not well understood; and whether it proceeds from a bad habit, or a defect in the formation of the soft palate and back part of the mouth, remains a question.

One serious effect of this trick is the wearing down of the teeth; and instances have occurred where they have been broken. It has likewise been found that crib-biters are more liable to colic than those without this vice. Whether this proceeds from the loss of saliva occasioned by the wearing down of the teeth is also an unsettled point.

It has been found that crib-biting is acquired by horses being in the stable with one which has the trick. Among the expedients which have been resorted to for the cure of crib-biting, the edge of the manger has been lined with iron; also with sheep-skin besmeared with aloes, tar, and other disagreeable substances, but all with little effect. The ordinary preventive is the use of a strap buckled round the neck, which has the effect of slightly compressing the windpipe, and rendering it impossible to resort to it; but no sooner is the strap removed, than the horse recommences his old habit, so that it must be constantly worn to be of use. Unfortunately the continual use of it is apt to produce irritation in the trachea, and this will terminate in the affection termed roaring. A five or six months' run in a field has also been tried without proving a remedy. Crib-biters are generally in low condition.

A muzzle barred across the bottom will prevent crib-biting. This must be made only of sufficient width to allow full action to the lips, so that the animal may pull his hay from the rack and eat his corn, but so close as not to admit of him grasping the edge of the manger. Crib-biting is legally considered "unsoundness."

Wind-sucking has such a strong family likeness to crib-biting that it may properly be considered a modification of it; as it is accompanied by a want of condition, and the same bending of the neck, with the head drawn inward, is

exhibited, and the horse alternately opens and closes his lips, and a sound is produced similar to sucking air. The horse presses his muzzle against the manger, quietly sucking in the air, without the noisy gulping which accompanies crib-biting. The remedies attempted have been, tying up the head of the horse, except when feeding; and the application of a muzzle with sharp spikes bending towards the neck, which will prick him when drawing in his head.

Pawing is a continual working away of the litter by the fore feet. A simple remedy is at hand in a pair of padded shackles with a connecting chain, 12 inches in length. These are placed round the smaller pastern bone, and must be taken off at night, or the horse will be afraid to lie down.

Weaving is a restless habit of swaying the head from side to side, somewhat after the fashion of a polar bear in confinement. It is unsightly, and evinces a restless disposition. "Weavers" are generally poor feeders, and low in flesh. The remedy indicates itself; a short head-rein, and a little relaxation of the restraint while feeding.

Getting Loose is a very troublesome vice, and many horses are so cunning as almost to defy the efforts of the groom and saddler. If, however, a head-stall is made with a strong throat-lash, and this tightly buckled, no horse can get it off, because the circumference of the head at the jaw is always greater than that of the neck from the back of the ears to the throat. If the horse bites his halter, a chain must be substituted; but as this makes a constant noise, it should be avoided if possible, as other horses are readily kept awake by it.

Hanging Back is an attempt to get free, by bursting the throat-lash or collar-rein, and in some cases great force is applied in this way, so much so that many horses have broken their hips from the sudden giving way of the halter letting them back, so that they fall over and irremediably injure themselves. The only cure is a strong chain, and a head-stall that no force will break; after trying to burst which a few times the horse will almost always desist. If the manger is not very firmly placed, another ring should be fixed in the wall, by piercing it, and screwing a nut on at the back. The groom should watch for the trick, and give him a smart lash from behind the moment he tries it on.

Rolling.—Horses that roll in the stable are apt to be injured from want of sufficient room, and also to get entangled in the halter; and, strange as it may appear, although he may get severely hurt, and be nearly choked by the halter, he will repeat it night after night. The only thing which will prevent him from rolling, is to give him just enough of collar to enable him to lie down; but so short that his head will not touch the ground, because it is impossible he can roll over without resting his head upon the ground. If a horse is in a field, rolling is a harmless and even healthful amusement.

Not lying down.—Horses are sometimes prone to standing constantly; and some only lie down once in a fortnight, or even a longer period. When this is the case, they are generally liable to swellings in the limbs, and seldom able to go through much work. Such horses should, if possible, be put into a stable by themselves and left at liberty, and a well-made bed will sometimes tempt them to lie down. No means can be adopted to force the animal to take rest by lying down. When it is not possible to place him in a stable alone, an empty box should be constructed so that he may be left for the night unhaltered in it. We had a remarkably fine harness-horse that never was known to lie down, and yet he kept in good condition, and was not troubled with swelling in the limbs: but this is a rare occurrence. He sometimes fell down on his knees while asleep, but the groom always found him on his legs before he could reach the stable, although his house was next door.

Casting.—This is the result of a sportive inclination in the horse to roll completely over in his stall, as though at liberty in the field. It is a trick fraught with danger, as the unwieldy animal in so confined a space gets completely over on his back against the wall or ramp, and there, unable to roll back again, struggles to his death by rupturing the colon, "ricking" his spine, or some other mortal injury. The prevention is difficult; but, if the horse is within hearing of the groom, a prompt attendance will usually prevent unpleasant consequences. We have known horses lie all night in such distressing positions that it was a miracle they lived till morning. By throwing a halter over both legs, or three or four straps buckled together, the cast horse may be readily drawn over on to his side, when he will gladly get on his feet, unless seriously injured. Halter-casting is occasioned by the animal getting one of his fore-legs over the halter and throwing himself. Whether with rope or chain the animal is in danger of badly wounding himself. Horses addicted to pawing are most liable to accident, though we have seen it arise from a habit of scratching at the head with the hinder-foot—the drop weight of the halter or collar rein not acting so as to prevent it getting loose. A couple of collar reins should be used to prevent the pawing accident; for that with the hinder leg, a ring in the head wall, about seven feet from the ground, with a rack chain about three feet long, may prevent the calamity.

Lying under the Manger is obviated by the manger and rack-guard we have figured (3) in our Plate of Stable Fittings; it is described *ante*, p. 132.

Restive while Shoeing will be included in our general remarks on this vice. Where a horse, otherwise docile, exhibits a peculiar aversion to the smithy, and we have seen such, make an investigation as to his treatment there. It is only a month since we attended at a police investigation, where a shoeing-smith had struck wantonly a valuable saddle-horse on the stifle with his hammer, by way of preliminary to taking up the foot. The poor animal was irrecoverably injured; had he been less so, he might have been set down as "vicious to shoe." With a young horse great caution is necessary, and the gag or twitch should be

only resorted to in extreme cases. It is the biped, not the quadruped, that is generally the aggressor in these instances. Mr. Youatt, whose humanity shines in all his writings, says on this point—"It should be a rule in every forge that no smith should be permitted to strike a horse, much less to twitch or to gag him, without the master-farrier's order; and that a young horse should never be twitched or struck. There are few horses that may not be gradually rendered manageable for this purpose by mildness and firmness in the operator. They will soon understand that no harm is meant, and they will not depart from their usual habit of obedience; but if the remembrance of corporal punishment is connected with shoeing, they will always be fidgety, if not dangerous.

"This is a very serious vice, for it not only exposes the animal to occasional severe injury from his own struggles, but also from the correction of the irritated smith, whose limbs and even whose life being in jeopardy, may be forgiven if he is sometimes a little too hard-handed. Such a horse is very liable, and without any fault of the smith, to be pricked and lamed in shoeing; and if the habit should be confirmed, and should increase, and it at length becomes necessary to cast him, or to put him in the travis, the owner may be assured that many years will not pass ere some formidable and even fatal accident will take place. If, therefore, mild treatment will not correct the vice, the horse cannot be too soon got rid of." We have seen recently a very simple method tried to make a horse still while shoeing. It is merely fastening down one ear. The reader will find more on this point at page 219, *ante*.

Eating Litter.—The rack-rein and muzzle at once indicate the mechanical means of preventing this pernicious habit. For this purpose, we would recommend a rack-rein and muzzle, to be alternately used; when the one is taken off, the other to be put on. For instance, you put on the muzzle when you wish or expect the horse to lie down; consequently you put it on at leaving the stable at night. Some horses will eat the litter even when it is very foul: and when fresh litter is given, others will prefer it to hay; and though clean straw is not injurious to horses that are not required to gallop much, yet hunters and racers must not be permitted to eat it. The rack-rein is an iron chain fixed at the head of the stall, which passes through a ring sewed in front of the nose-band of the stall-collar; it is fastened in the same manner as a dog's chain to the ring in the collar, and, when dressing the horse, you can, after passing it through the collar, fasten him as short as you think proper; but, at other times, the chain must be long enough to permit the horse to feed out of his rack or manger, though not to let his head reach down to his litter.

Some horsekeepers place a piece of rock salt in the manger to wean the horse from his foul feeding, and satisfy his morbid appetite. It is worth a trial.

II. VICES ON THE ROAD.

Restive to mount.—In connection with this subject we beg to refer the reader to pages 66—76, on Breaking, Training, &c., where the methods of "gentling" the animal are fully set forth; in this place our remarks shall be general. The term "restiveness" may be said to include plunging, rearing, kicking, bolting, and general impatience while being mounted. As we have already said, the *suaviter in modo* is indispensable here. Even if one resolute or strong person has brought the animal into subjugation, he is always dangerous to the next man who mounts him. When the difficulty of mounting arises, not from eagerness to start, but from unwillingness to be ridden, the sooner such a horse is disposed of the better, unless the owner is determined to try his hand at horsebreaking. When the restiveness, on the other hand, merely amounts to eagerness to start (very unpleasant, indeed, at any time, for many a rider has been thrown from his seat before he was fairly fixed in it), it may be remedied by an active and good horseman. "We have known many instances," says Youatt, "in which, while the elderly and inactive and fearful man has been making more than one ineffectual attempt to vault into the saddle, the horse has been dancing about to his annoyance and danger; but the animal had no sooner been transferred to the management of a younger and more agile rider, than he became perfectly subdued." Severity will here, more decidedly than in any other case, do harm. The rider should be fearless; he should carelessly and confidently approach the horse, mount at the first effort, and then restrain him for a while, patting him, and not suffering him to proceed until he becomes perfectly quiet. These horses should not be too highly fed, and should daily have sufficient exercise.

Shying.—Whether this arises from fear, vice, or playfulness, it is equally important to check its earliest displays. Shying is one of the worst of habits, and more accidents have resulted from it than all other vices or defects. One cause of shying is defective vision, timidity stands next, and it often proceeds from a frolicsome disposition. Shying is less common among high-blooded horses than half-bred ones, although it is occasionally found among our first-class racers.

When shying proceeds from playfulness, it is difficult to judge what mode of cure is best to be adopted; because, if corrected for it, he will associate with any object that diverts his attention the infliction of punishment, which will tempt him to run away, under the dread of a flogging; and if caressed for the fault, it is liable to induce him to repeat it. But, of two evils, gentle correction must be adopted, and rather to pass by the object than to take him up to it. He should also be spoken to sharply.

If shying proceeds from fear of new objects, the way to correct him of this, is not to force him up to them, but to pat him and soothe him; avoid beating, and take care to

pass the objects of his fear again and again, always going nearer to them every time you pass. This will familiarise him to them. Seeing that these are harmless, he will soon learn to pass by unnoticed any novel object which he may meet with upon a road.

When an animal is given to shying from defective sight, the only method to effect a cure is to take him up to it, and in the act of doing so he must be coaxed to approach it, and on no account must he be beaten; and although it sometimes happens that the horse will manifest great reluctance to do so, he should be persevered with, and not allowed to proceed until he has seen closely and smelt at the object of his fear. After he has been a few times thus treated, he will soon learn to pass with indifference any object which he may meet. Many of Rarey's remarks, already referred to, may be remembered and applied with advantage. We will take here an illustration, from Blaine's book, of the principles laid down.

"We once purchased," says that experienced veterinarian, "a horse with an excellent character for steadiness, except that he was always much alarmed at a passing carriage, whether it was coming towards or overtaking him. A tilted waggon or a stage-coach on the approach were such objects of dread as no power could get him to face. We knew it would be in vain to oppose human physical force to brute fears, and that it was only by introducing favourable recollections derived from those very objects, greater in degree than the fears hitherto entertained of them, that we could conquer this dangerous propensity. We began by leading the horse, previously exercised and fasted, towards a cart filled with clover hay: the smell of the hay was irresistible, and soon dissipated all dread of the stationary cart; but when it was purposely moved gently onwards, he became rather discomposed: a little coaxing, however, induced him to follow it, and we had the pleasure, at this his first lesson, of seeing him proceed confidently with the cart round a farmyard, and finally into the road. To vary the effect, after he had steadily walked by the side of the carriage a certain time, we restrained him, so that it got ahead of him; when he again reached it, slight indications of fear appeared as he had to make his way up to the side of the cart, for we had a coverlet purposely drawn over the back, that he might not reach the hay from behind. We next passed the cart altogether, but it was a few paces only, and then turned him round to the other side of it; but his whole mind was so intent on the clover, that, with the most trifling symptoms only of alarm, he fell to again on the hay, which finished lesson the first. Our next attempt was made with a sieve full of corn, presented to him on an empty stomach, which he could only reach from the tail-board of a tilted wagon—an awful object! After a few snortings and sniffings, here also hunger overcame his fears, and he munched the oats with great relish; but when the waggon was put into motion, his dread for a little time got the better of his appetite, and the flapping of the covering of the tilt appeared to him most portentous: his fears even in this case, however, soon gave place to confidence, by the tact displayed by a groom to whom he was much attached. This man mounted the waggon, and, resting on the tail-board, offered the oats to the horse, at the same time calling and encouraging him. This worked wonders; nor shall we readily forget the knucker of acknowledgment with which the confiding brute followed the groom's call as the wagon moved on, occasionally dipping his nose into the sieve. After a few more lessons of a similar kind, one or two of which were varied by giving him hay from the window of a stage-coach, he lost all fear of carriages, and his former owner would willingly have taken him back at a very considerable increase of price. We introduce this merely as an instance of the truth of an opinion entertained by most observant sportsmen, but often acted against by grooms, that the punishment of blows will very seldom cure vicious habits originating in fear. All startings and fears of every description are only increased by them, for the horse in these cases associates the dread of two evils instead of one, that of the object itself, and that of the punishment which is to follow; the consequence of which is, that his resistance is doubled. How common is it with thoughtless persons, when a horse shies at an object, to force him up to it by blows; by which means we are confident that no horse was ever cured of shying, but, on the contrary, he has always been rendered doubly timid. It is, however, not amiss, when a horse shies principally at any one fixed object, as a tree, milestone, &c., to coax him towards it by every mark of encouragement. If he will not readily approach it, use no force, but dismount, caress, and incline his head from the cause of his alarm, gradually drawing him nearer and nearer to the object itself, which having approached, he will invariably closely examine himself by smelling it. If this be practised with gentleness, it is more than probable that such horse will shortly be cured of shying at that particular object or its like."

That amusing instructor, "Harry Hieover," has a "wrinkle" of stuffing a horse's ears with cotton which may find a place here. He tells us, what we all know, that "horses in any way nervous or high-tempered are much affected by sounds and noises, particularly when arising from any object or circumstance they cannot see. I have had two remarkable in this particular, the one a mare. Whether in harness or out, a horse or carriage behind her drove her almost mad; let either come alongside of her, she was quiet directly. When in harness, if she but heard a horse behind her, up went her head and tail, and she would bound something as we have seen a fallow deer do in passing us; and, though at other times possessing a fine mouth, on such occasions it was difficult to hold her. The other horse was a hunter, as placid and steady as horse could be when alongside hounds in chase; but, while they were finding, or, what was worse, running in cover, the cry of the pack would cause him to tremble with anxiety or some such feeling, and he would burst into a sweat ten times more profuse than any run

would call forth. Being both good horses and pleasant, except in these particulars, I was determined to try and palliate them. I had a pair of thick earcaps made for each of them. This I found produced a wonderful alteration for the better; but it struck me these earcaps must heat the horse. Why not try cotton? I did; stuffed their ears well with it when using them; and found no inconvenience from sounds afterwards."

A thousand pages of advice could not add to these practical experiences.

Backing or Jibbing.—It is by no means unfrequent for harness horses to back instead of drawing when first started, and others combine with this curious obstinacy the practice of other vices. When the backing is mere skittishness, which we have known it, an encouraging word and a smart smack of the whip have cured the inconvenience. Where the determination is more manifest take the thing coolly. Satisfy yourself by examination that the harness and its "fixins" are all right. Sometimes the withers are wrung, and the shoulders galled; and the pain, which may be moderate on level ground and with a fair draught, becomes insupportable when going up a steep acclivity. These things should be seen into, and, if possible, rectified; for, under such circumstances, severe punishment produces obstinacy and vice.

A horse, whose shoulders are raw, or have frequently been so, will not start with a cold collar. When the collar has acquired the warmth of the parts on which it presses, the animal will go without reluctance. Some determined jibbers have been reformed by constantly wearing a false collar, or strip of cloth round the shoulders, so that the coldness of the collar should never be felt; and others have been cured by keeping on the collar night and day, although the animal is not able to lie down so completely at his ease as without it, which a tired horse ought always to be able to do. When a horse jibs at his work, it has been sometimes useful to line his collar with cloth instead of leather; the perspiration is more readily absorbed, the substance which presses on the shoulder is softer, and it is more readily eased off at a tender place.

With horses which have this habit at starting, one method to break them of it is to place a large heavy stone behind the wheel; and the horse, feeling he is unable to back, will generally proceed forward, finding it more easy to do so; and by carefully continuing this practice, the horse will gradually be broken of the bad habit. Another plan, nearly as good, is to start the horse, if it can possibly be managed, with the back of the machine placed towards a rising ground; and as it is more difficult at all times to force it backward than forward, besides the hill being against him, he will prefer going forward to backward. Sometimes it will be necessary to lead the horse for a short distance, and when the groom has quitted the reins, a gentle touch with the whip will make him proceed. If, however, he is determinedly obstinate, there will be little chance of succeeding by forcible means; and if the driver is resolved to use compulsion, we would recommend that it should not be attempted unless there is a wide space, where by tight reining the driver may back him in the particular direction which he wishes, and it would be very desirable to do so uphill if the ground inclines in the neighbourhood. But still there is danger in the attempt.

Rarey is of opinion that the horse often jibs, or, as he calls it, "balks" at starting from hearing, or fancying they hear, something coming up behind them. He is speaking of such an occurrence in an American pair-horse trotting "waggon," but his remarks are as applicable to any pair of horses or to a single horse in harness. He says:—

"Almost any team, when first 'balked,' will start kindly if you let them stand five or ten minutes as though there was nothing wrong, and then speak to them with a steady voice, and turn them a little to the right or left, so as to get them both in motion before they feel the pinch of the load. But if you want to start a team that you are not driving yourself, that has been 'balked,' fooled and whipped for some time, go to them and hang the lines on their hames, or fasten them to the waggon, so that they will be perfectly loose; make the driver and spectators (if there are any) stand off some distance to one side, so as not to attract the attention of the horses; unloose their check-reins, so that they can get their heads down if they choose; let them stand a few minutes in this condition until you can see that they are a little composed. While they are standing you should be about their heads, gentling them; it will make them a little more kind, and the spectators will think that you are doing something that they do not understand, and will not learn the secret. When you have them ready to start, stand before them, and as you seldom have but one balky horse in a team, get as near in front of him as you can, and if he is too fast for the other horse, let his nose come against your breast: this will keep him steady, for he will go slow rather than run on you; turn them gently to the right, without letting them pull on the traces as far as the tongue will let them go; stop them with a kind word, gentle them a little, and then turn them back to the left, by the same process. You will have them under your control by this time, and as you turn them again to the right, steady them in the collar, and you can take them where you please.

"There is a quicker process that will generally start a balky horse, but not so sure. Stand him a little ahead, so that his shoulders will be against the collar, and then take up one of his forefeet in your hand, and let the driver start them, and when the weight comes against his shoulders, he will try to step; then let him have his foot, and he will go right along. If you want to break a horse from balking that has long been in that habit, you ought to set apart a half-day for that purpose. Put him by the side of some steady horse; have check-lines on them; tie up all the traces and straps, so that there will be nothing to excite

them; do not rein them up, but let them have their heads loose. Walk them about together for some time as slowly and lazily as possible; stop often, and go up to your balky horse and gentle him. Do not take any whip about him, or do anything to excite him, but keep him just as quiet as you can. He will soon learn to start off at the word, and stop whenever you tell him. All 'balked' horses can be started true and steady in a few minutes' time; they are all willing to pull as soon as they know how, and I never yet found a balked horse that I could not teach to start his load in fifteen, and often less than three, minutes' time."

Despite this last dictum of Mr. Rarey, we believe many horses are such determined jibbers that they can never be cured. When this is the case they should be sold to the owners of a vehicle in which four-in-hand or unicorn are driven, and if placed as near wheeler they will be forced to do their work. Some have also been worked in a team by farmers; but nobody would think of keeping an animal which can only occasionally be rendered serviceable.

In connexion with this subject the reader is referred to pages 213—216, *ante;* where breaking and familiarising a colt with usual sights and sounds are treated of.

Kicking.—At page 293 we noted this as a Stable Vice; under saddle or in harness, however, it is far more dangerous to rider, driver, and the public. In saddle, get well hold of his head, lift it firmly and determinedly, then bring the whip smartly down the shoulder. Mind his head is well up when you deliver the blow, or he may get his nose down and lash out again. When the animal proves an inveterate kicker, a gag snaffle will serve to keep his head up. The gag-snaffle is not, unless the horse wilfully hangs on it, more severe than a common snaffle, while, if he will have it so, it acts through the pulley-like attachment of the rein with augmented power, drawing the angle of the mouth above the usual seat of the bit. It is valuable, too, with "pullers" who "bore" in the hunting-field.

In harness, as we have said, a kicker may be yet more dangerous and mischievous. Horses that are fidgetty in the stable are most apt to do this on the road.

The slightest touch on such animals' quarters, even by the reins touching, will set them kicking; and in many instances the front of the carriage will be driven in, or a gig may be battered to pieces, the horse frequently coming off with a broken limb, or the driver may sustain serious injury. With kicking horses, the greatest care should be taken not to allow the harness to pass under the tail, as the moment they feel it the tail is pressed suddenly and tightly down, so much so, that it is difficult to extricate the reins, and the more the driver pulls the more the animal kicks and plunges. When the driver finds that the reins are so entangled, he should on no account attempt to extricate them by pulling, but quietly get down, and release them by lifting the tail gently.

Where persons cannot afford to part with such horses, as they must be sold at a great loss, a strong kicking-strap may be used, which circumscribes the use of the hind limbs, and prevents the horse from raising them for an effective kick. Still, rely not too much on this; for, if the horse should once break the strap he is worse than ever, indeed incorrigible.

The uninitiated are not aware of the very slight things which will cause a horse to kick on being first put into harness. The mere putting the crupper on, if done suddenly, in putting on the harness, will sometimes cause him to kick. Probably, with the harness loose on his back, his kicking on first feeling the crupper sends it off him, or partly so. The horse gets seriously alarmed at this; a scene ensues; and then there is (to use the desgination of a farce) "the devil to pay."

Backing a horse into the shafts (which should never be done) is very likely to set him kicking. He comes suddenly in contact with the shaft in some part, and either he rushes forward in alarm, or sends his heels at it. This might be termed lesson the first in virtually teaching the animal to kick. If in double harness, the very turning a corner incautiously will cause many a horse to kick, from feeling the pole or trace suddenly come in contact with his thigh.

Even throwing the driving rein to be buckled over the young horse's back, instead of that of the break horse, which a stupid or careless fellow might do, will probably alarm a horse new to harness. He rushes forward, is checked by the traces, then backs himself suddenly, is then checked by the pole-piece and collar, feels himself hampered in every way, gets alarmed or angry. Here, probably, is "the devil to pay" again.

Mr. Bingley gives us, among others, the following incident of his horse-experience:—"An instance of an inveterate kicker in harness occurred under my notice. An elderly relative, with whom I at that time resided, made a purchase of a remarkably good-looking horse, for the twofold purposes of working on the farm and running in harness. On the following morning he was attached to a plough on the gee-ho principle, and when required to 'move on' responded by kicking most violently. I was summoned to the scene of action, but for some time he would allow no person to approach him, and struck at those who attempted to go near his head with his fore feet, as viciously as he did with his hind ones; at length, by strapping up his near fore-leg they succeeded in getting him released from the plough. His gearing was taken off, and replaced by some strong harness, when he was placed between the shafts of a substantial roller, such as is commonly used for rolling the land. When properly secured at all points, a powerful and steady horse was put before him, and he was kept moving in a fallow field till night. He kicked the roller furiously and repeatedly, but in doing so he hurt his own legs, and, finding he got the worst of it, he left off. The next morning his hind legs were very sore, and he was again attached to the roller, but he did not evince much inclination to commence hostilities, and in the course of that day he was

put to a gig. I drove him constantly, and he never repeated his vice. It was afterwards discovered that he had been in the possession of a post-master, and that he had kicked the boot of a gentleman's carriage to pieces, for which he was sold as incorrigibly vicious."

It will be found that brute force or brutal violence rarely succeeds or produces the desired effect with horses, or, indeed, with any animal. Brute force subdued Van Amburg's lions, but it did not tame them. They were too much subdued to attack him while his eye was on them, he knew; but if he had turned his back or shown he had fear of them they would have pulled him down and torn him to pieces. Brute force may compel a horse to do a particular act at the time—it may even make him fear to commit one at variance with our safety; but, and let opportunity occur, we shall soon find that fear alone will never eradicate a bad propensity.

Plunging is akin to kicking, though very differently performed. The animal makes a bound or spring with his back bowed upward, with the apparent intent of unseating his rider. Sometimes he "tucks," *i.e.*, springs with all four feet off the ground suddenly, an experiment very likely to answer his unpleasant intention. When a horse has this habit, hold his head closely, as for kicking, with which it is often complicated or alternated. A modern writer recommends that a horse-cloth rolled up, strapped to the front of the saddle like a soldier's cloak, will greatly add to the safety of the rider. The general treatment must be, as so often said before, the "soothing system," with firm but very moderate punishment.

Rearing is a common trick with young horses, and is oftener playfulness and mere animal spirits than anything like "temper." It is, however, alarming, and may be very dangerous to the timid or unskilful rider, when it is a decided rise, involving also the unintentional danger to the animal itself of a roll over. Generally, however, it is in colthood a series of wanton gambolling skips, which sometimes go off like the freaks of a kitten; but lest they become a habit, and partake of an attempt to get rid of the rider, severity and hurry must be avoided. Use for a time, it may not be permanently needed, a martingale, with a running rein commencing at the breast strap of the martingale, and then, running through the ring of the snaffle, bring it back to the hand. This will give you a full power over the horse's head when its exercise is called for, and will not distress him while he behaves himself. When the horse rises, lean well forward and hold by the calf and inner thigh, loosening the bridle a little when he is in the air, and then bringing his head in as he descends. A rough remedy for rearing has been tried by some horse-breakers—we do not recommend it: the process is to provide yourself with a bottle of water, and when the horse rises break it between his ears by a smartish tap.

Shouldering.—Some obstinate ponies and ill-taught horses have acquired this ugly trick. It consists in trying to squeeze the rider's leg against a post, paling, or wall, and to scrape him off the saddle. We once had a little Welshman who had a genius for this when he had a youngster on his back; we cured him by mounting him ourselves, and when he tried this lateral movement (which is easily overcome by putting out the foot as he sidles towards the object), we found a sharp pull of the near rein (it seems almost universally tried on the off-side), coupled with a most unmistakeable simultaneous slash over the off ear, brought him clear away. Three or four of these lessons, in an orchard well studded with old trees, made him pass as clear of them as could be desired.

Hugging the Pole.—"Harry Hieover" thus proposes to deal with an animal exhibiting this not uncommon propensity. "A horse having this vile habit I should strongly recommend others to sell, unless they were disposed to try a plan that I found effectually cure one of my own. I drove him at wheel on the off-side; but, whichever side he was put, he 'hugged the pole' the same. I had a piece of board, about ten inches in width, screwed to the off-side of the pole. On the off-side of this surface I nailed some strong green furze, clipping it till it did not project more than three inches on the side the horse went. I took care to give him a hole in the pole-piece, the same with the near side trace, and lengthened his coupling rein; so he had not occasion to approach the pole thus armed. This being merely a lesson to the horse, I took care to manage the drive so as only to have occasion to turn the carriage to the off-side during the lesson: as usual, he began or attempted hugging the pole, but he started from it as if a tarantula had stung him. I suppose in a few minutes the smarting went off, when he tried the same game with the same result. I conclude the second application of the furze, acting on the first, produced increased effect, for it was a longer period before he transgressed again, and before my drive was finished he took especial care not to approach the pole. Though this bid fair as to curing him of a bad habit, I in no way expected a lesson or two would cure him; but ten days' driving effectually did, and afterwards it was somewhat laughable to see, if he forgot himself, or attempted pole-hugging, with what alacrity he jumped back into his proper place."

Seizing the Cheek of the Bit.—When horses are so cunning as to get the cheek of the bit into the mouth, they have immense opportunity for displaying any impatience of control they may be inclined to: any moderately skilful saddler and harness-maker will show you how to prevent this being done a second time.

Running away—*vulgo*, "Bolting."—This, in its commonest form, is merely a sign of a hard mouth, and self-will in maintaining the gallop. Its other phase is a most dangerous vice. When it is consequent on nervous excitement or fear, the usual expedients for "gentling" or calming irritability already recommended are to be adopted. All sorts of severe bits have been devised to prevent horses running away. Some excellent authorities recommend the "Bucephalus noseband," a contrivance which keeps the mouth of the

horse closed, so that the "port" of the mouth-piece acts against the upper part of the mouth, in a manner it cannot do when the animal has the power of opening it to ease the pressure. This noseband will be found useful with hard pullers, and "borers" in the hunting-field.

This dangerous propensity generally shows itself in nervous young horses, who, at the least noise behind or beside them, become alarmed, break from a trot to a gallop, and, terrified by the impotent struggles of their riders to stop them, or the still pursuing sound of wheels behind them, become maddened and dash on in their perilous career. When a horse finds or thinks he has succeeded in these efforts to escape danger, on a recurrence of the noise or cause of fright he will pursue the same course, to the peril not only of rider or driver, but of himself, and whatever he may meet with in his impetuous flight. The vice becomes confirmed, and it is only by the utmost nerve, coolness, and command of temper, dashed with kindness, and the "rational" treatment of the mania (for panic-fear in horses is madness), that we can hope to check the disease. When a horse is known to have a tendency to running away, be *extra particular* that all portions of his "furniture" be sound and strong, particularly bridles, reins, and bits: get a firm, steady hold of him at starting, and speak to him soothingly and encouragingly. At the very first symptom of a bolt check him sharply and speak to him in a firm voice; never allow him to increase his pace of his own accord, or fear will augment it and he will break into a gallop. Keep the reins in driving evenly in hand, but do not by a constant pull deaden the mouth. Be ready to catch him well by the head quickly, and you may get him under command without frightening him.

In the saddle, on a determined brute, it is a good manœuvre to select a hill, and, giving him his head, urge him an up-hill burster; this has "taken it out" of many a "bolter," by making him go his hardest for your pleasure, just as he was thinking of doing it of his own wilfulness and vice. In this the horse resembles not a few of our reasoning race, who will work hard for pleasure, but will do nothing in the shape of work, either for utility or to serve another. These customers we have found, when fresh, will try it on again; but a good rider, and none other should mount or drive them, will make them tired of their little game; and then such animals generally prove first-raters. As we have said, a dead pull is no use with such bolters; it is better to let them go when there is plenty of room, and then to try what a sharp and severe pull will do · not keeping it up too long if ineffectual, but loosing the mouth again for a time, and then trying again. Sometimes, however, there is no room for this, and then the only plan is to try and bring the head round, either with a view of galloping in a circle, or to run the head against a fence or even a wall or strong gate. Sometimes anything is better than a straight course—as, for instance, in a crowded thoroughfare, where there would be an almost positive certainty of mischief: in such a case it is better to do anything than to persevere in the course which the runaway is taking.

A driver of good nerve may in this extremity pull or drive the horse straight for anything that is insurmountable and that must stop him—say a thick hedge, or even a wall, at all risks of damaging the animal. With judgment and coolness this is the best chance for rider or driver; indeed, a few bruises or loss of life may be the alternative. We will give an illustration. A friend of the writer's, a civic magnate, well known in connexion with the removal of the horse and cattle market from ancient Smithfield to its present site, was driving a high-couraged horse, a new purchase, in a dennet, down Parliament Street. He had a life-long experience in horseflesh as well as fat cattle, and was a match for any coper that ever chaunted a "screw" in the departed market for "blind 'uns and bolters" which for more than seven centuries was held "in the Smethfelde on the outer syde of Newgate." Our driver then, who had with him his wife, was no cockney with the ribbons, albeit his calling was exercised within the sound of Bow bells. At the corner of Charing Cross his horse took fright, and bolted along the somewhat crowded thoroughfare. Desiring his better half to hold fast in her seat until he should bid her jump, he got the animal well by the head, and guiding his frantic speed direct for one of the strong iron gas columns near the Horse Guards, the animal came flush with its forehead against it, fell instantly, as if shot, and rose no more. And how fared the worthy deputy and his better half? The one jumped out, at the word "Jump!" and got off with a graze and possibly a bruise; while the wealthy carcase butcher, as he told us cheerfully, was none the worse—except the repairing of the chaise, which was his own; and the dealer, who lent him the horse on trial, he added, "I have since learnt, knew he was a bolter, so he'll never get a farthing—though I don't think he'll have the face to ask me." With this example of how to deal with a bolter in the last extremity we pass on to Riding and Driving, and Treatment of a Horse on a Journey.

CHAPTER XV

RIDING.—GENERAL OBSERVATIONS: PROPER POSITION OF SADDLE, BRIDLE, &C.: MOUNTING AND DISMOUNTING: MANAGEMENT OF THE REINS, AND SEAT ON HORSEBACK: RIDING TO HOUNDS: LADIES' HORSEMANSHIP. DRIVING.—GENERAL OBSERVATIONS: HARNESS: FOUR-IN-HAND: A PAIR: SINGLE HARNESS.

In former chapters of this work the reader will have found numerous things necessary to be known and remembered as aiding the formation of an accomplished rider. A reference to these will enable the reader to refresh his memory upon these essentials. Historical and antiquarian lore, relating to the saddle, bridle, stirrup, &c., will be found at pp. 64—66. Hints upon riding will be found scattered through the chapter on BREAKING, pp. 69—76. But more especially, when treating of the PACES OF THE HORSE, will be found how to handle the animal in the Walk (p. 78); the Trot (79—81), civilian and military; the Canter (82), and the Gallop (84). The mode of keeping the seat, and of lifting the horse in leaping, will be found as follows:—The Standing Jump (84), the Flying Leap (85), the Buck Jump (86); while Timber Jumping, and Taking Gates and Stiles, will be found at pp. 86, 87. Lastly, not a few "wrinkles" for the horseman are contained in the chapter preceding this, which treats of VICES, their correction and cure. With these references, by which repetition may be avoided, we proceed to the—

POSITION OF THE SADDLE, BRIDLE, AND STIRRUPS.

The Saddle, which ought to be wide and roomy, should be placed in the middle of the horse's back, a hand's breadth (four or five inches) from the point of the withers, but so as to give free play to the action of the muscles of the shoulders. Lay the *girths* evenly one over the other; draw them only so tight as to admit comfortably the fore-finger to be placed between the girth and the horse's belly. Fit the *surcingle* neatly over the girths, and do not buckle it tighter than they are drawn. The large ring of the breast plate or martingale, when worn, should be placed two inches above the breast-bone, and should allow of the hand being laid flat between it and the horse's shoulders.

The malposition of the saddle, particularly in horses with upright shoulders, is the cause of many horses falling, from its pressing too much on the shoulders, and by that means confining the action of the muscles, which thus become benumbed, and lose their elasticity. A partial deadening of the limbs having taken place, the horse, from want of vitality in the legs, stumbles, and is unable, through the torpidity of the muscles, to recover himself, and falls to the ground; in many cases he has been known to fall as if shot.

THE STIRRUPS.

The length of the *stirrups* should be so adjusted that the bottom edge of the bar hangs about three inches above the heel of the boot. This length will be found most convenient for the horse and his master in hack-riding The method of determining the best length for the stirrup is thus given by Mr. Waite in his little book called "Graceful Riding:" "Take up the stirrup-iron with the right hand, at the same time placing the bottom of the stirrup-iron under the left arm-pit; then extend the left arm until the fingers of that hand easily touch the stirrup buckles; this is a sure criterion with most people."

The Bridle is put on with the curb bit so placed that the mouthpiece in horses is no more than an inch above the tush of the lower jaw; in mares two inches above the corner teeth is the distance. The *bridoon* should just touch the angles of the mouth, so as to sit easy, with drawing them up. The *headstall* should be parallel to the projection of the cheek-bone, and not lie over or upon it. The *noseband* is better placed low, and should not be buckled tight. The curb, when properly fitted, should lie flat and smooth in the hollow of the lips, so as to allow the finger to be easily introduced between.

MOUNTING AND DISMOUNTING.

Directions for mounting must always be taken with an allowance for the different relative heights of the horseman and the animal he is to ride. We shall therefore merely give such general instructions as apply to the medium size in both biped and quadruped, and the average activity and weight of gentlemen of the present day. When a horse is intended to be mounted he should always be approached quietly on the near (or left) side, and the reins gathered up in the hand steadily. The snaffle rein (or bridoon) first; then pass this rein along the palm of the left hand, between the forefinger and thumb. The curb rein must now be drawn over the little finger, and both reins being held of an

equal length, and having an even pressure on the horse's mouth, must be laid over each other, and held firmly in the hand; the thumb pressing upon them to prevent them slipping through the fingers. Be particular that the reins are not taken up too short, lest it should cause the horse to rear or run back; they must be held neither too tight nor too slack, but having an equal feeling of the horse's mouth. Next take up a handful of the mane with the right hand, bring it through the palm of the left hand, and twist it round the thumb. Take hold of the stirrup with the right hand, the thumb in front. Place the left foot in the stirrup as far as the ball of it, placing the right hand on the cantle (or back part of the saddle), and, by a spring of the right foot from the instep, the rider should raise himself up in the stirrup, then move the hand from the cantle to the pommel, to support the body while the right leg passes clearly over the horse's quarters; the rider's right knee closes on the saddle, and the body drops gently into it. The left hand now quits the mane, and the second stirrup must be taken without the help of eye or hand.

The left hand (the bridle hand) must be placed with the wrist rounded outwards, opposite the centre of the body, and about three inches from it, letting the right arm drop unconstrained by the side of the thigh.

Mounting without stirrups while the horse is standing still is effected as follows:—The rider stands opposite the saddle and takes hold of both the pommel and the cantle, keeping the reins in the left hand at the same time, and in the same manner as in ordinary mounting. Now spring strongly from the ground, and by means of the spring, aided by the arms, raise the body above the saddle; then twist the leg over, whilst the right hand is shifted to the right side of the pommel, and by means of both the hands the body is steadied into the saddle. Mounting without stirrups may, by very active men, be effected while the horse is going on, much in the same way as is seen constantly in the circus. The rider runs by the side of the horse, laying hold of the pommel of the saddle with both hands strongly, and allowing him to drag him along for two or three very long steps, he suddenly springs from the ground and is drawn into the saddle. This feat is seldom achieved by the ordinary equestrian; but it is easier than it looks, and in riding to hounds is sometimes of great service with a fidgety horse.

Dismounting is effected by first bringing the horse to a standstill; then shorten the left hand on the reins till it lies on the withers, with a steady feel of the mouth, twist a lock of the mane on the finger, and hold it with the reins; bearing also on the pommel with the heel of the hand. Next, throw the right foot out of the stirrup, and lift the body, steadied by the left hand, and borne by the left foot, until it is raised out of the saddle; throw gently the right leg over the cantle, and as it passes it grasp this part with the right hand; then lower the body gently to the ground by the aid of the two hands and the left foot; or if it is a very short person and a tall horse, by raising the body out of the stirrup on the hands, and dropping to the ground by their aid alone.

Dismounting without stirrups requires the horse to be brought to a standstill, then holding the reins in the left hand both are placed upon the pommel, and by their aid alone the body is raised out of the saddle; the right leg is now thrown over the cantle, and in doing so the right hand seizes it and with the left lowers the body to the ground.

MANAGEMENT OF THE REINS, AND SEAT ON HORSEBACK.

Our horseman at ease in his seat, and looking forward between the ears of his animal, adjusts the reins, which we will suppose to be bridoon, or snaffle and curb. The reins should hang untwisted from the bits. Mr. Waite gives the following minute practical directions, which we transcribe, for holding the reins with one or both hands.

"*Holding the reins in one hand.*—The rider must take up the bridoon reins with his right hand, and pass the second and third fingers of the bridle or left hand between them, draw up the reins with the right hand, until the horse's mouth can be felt, and then pass them between the forefinger and thumb. Next take up the curb reins (again with the right hand), and pass the little finger of the bridle hand between them, draw them up, as before directed, with the right hand, until the rider perceives there is an equal length and feeling with the bridoon reins; the latter having rather the strongest pressure on the animal's mouth. This done, lay them also over between the forefinger and thumb, and press down the thumb firmly upon them to keep them from slipping; the hand to be held with the wrist rounded outwards, opposite the centre of the body, and about four inches from it. The right arm should hang without restraint, and slightly bent, by the thigh; the whip being held about twelve inches from its head, with the point turned upwards.

"*Riding on one rein.*—Take up that particular rein with the right hand, and pass the second and third fingers of the bridle hand between them, then draw up the reins, but be careful, in doing so, not to hold the horse too tight in hand; the other rein should hang down, having the little finger passed between them, and the thumb also over them, so that they may be caught hold of, and drawn up quickly on any sudden emergency; the loose reins are to hang between those in use.

"*Using both hands.*—Take the bridoon reins between the second and third, and the curb reins between the third and fourth, fingers of each hand, each rein having an equal bearing on the horse's mouth; the hands are to be held about six inches apart, with the wrists rounded outwards, and the thumbs pressing firmly upon the reins, the elbows well down, and held near to the sides, the whip held as directed above.

"A tight rein should always be avoided, because, if he carries his head low, it tends to deaden his mouth, and teaches him the bad habit of depending upon the bridle for support; in which case, he always goes heavily in hand, and

on his shoulders. The horse should at all times be taught to go on his haunches.

"If the horse naturally carries his head well, it is better to ride him with a light hand, only just feeling his mouth.

"*Turning.*—In the turn either to the right or left, the reins must be held quite evenly, so that the horse may be immediately made to feel the aid of the rider's hands; he (the rider) must then have a double feeling on the inward rein, also retaining a steady feeling on the outward; the horse being kept up to the hand by a pressure of both legs, the outward leg being the stronger.

"*Reining Back.*—The rider should frequently practise reining back, which is of the utmost service both to himself and his horse: by it, the rider's hand is rendered firm and materially strengthened; and the pliancy of wrist so essential to the complete management of the horse is achieved, likewise causing the body of the rider to be well thrown back and his chest expanded, thus forcing, and preserving, an erect position in the saddle. Also, the carriage of the horse becomes greatly improved; his head is maintained in its correct position, and he is compelled to work correctly on his haunches.

"In 'reining back,' the horseman requires a light and steady feeling of both reins, a pressure of both legs, so as to raise his horse's forehand and keep his haunches well under him, at the same time easing the reins, and feeling them again after every step.

"*Stopping.*—None are thoroughly taught until quite *au fait* in the stop. It is of far greater importance than may be usually imagined. In the first place, it shows the horse to be well under command, especially when the rider is able to do so instantaneously: it saves, in the second place, many serious and inevitable accidents from carriages, horsemen, &c., such as crossing before, suddenly pulling up, turning quickly round a corner, or coming unawares upon the rider.

"Care must be taken to make the stop steadily; not by a sudden jerk upon the bit; by doing so the horse, if "tender mouthed," will be made to rear and plunge. To make the horse stop properly, the bridle-hand must be kept low, and the knuckles turned down. The rider's body must be well thrown back; he must have a steady feeling of both reins, and, closing both legs for a moment, so keep his horse well up to hand. The rider's hands always must be eased as soon as halted."

As to *Seat on Horseback*, there have been small volumes written on it in sporting magazines, works on the *manège*, and books on "The Noble Science" of Foxhunting. With the *haute école*, as our neighbours call the teaching of horses to astonish the beholders by capricoles, demivoltes, lifting their feet in a manner to render them useless and unserviceable, and other tricks of the circus, we have nought here to do, confining ourselves to the modern English school of riding.

It is easy to discover the riders who have been taught in a good school, by their firm, graceful, and uniform position in the saddle, and by their ready and skilful application of the bridle, hands, and legs; such being indispensable to the skilful guidance and control of the horse.

It will not be necessary here to describe the marked characteristics exhibited by the jockey, the huntsman, the whipper-in, the groom, the postboy, the soldier, the dealer's lad, and the butcher. These have all different seats on horseback, each best adapted to their several occupations; for the man who all his life is accustomed to one particular style of riding and to one particular kind of horse, will adopt a natural style, which marks the whole class of those adopting it.

In acquiring a good seat, there are four things necessary to be attended to—first, the position of the weight, so as to be sufficiently forward in the saddle; secondly, the fixing of the knees on the padded part of the flap; thirdly, the proper length and position of the stirrups; and fourthly, the carriage of the body.

The weight of the body should be well forwards, because the centre of motion is close to the middle of the saddle; and as the weight is chiefly thrown upon the breech, if the seat is far back it is not in that part, but near the cantle that it is placed. But by sitting well forwards the weight is distributed between the breech, thighs, and feet; and the horse is able to rise and fall in his gallop without disturbing his rider.

The knees must be well forward to effect this seat, and also well in front of the stirrup-leathers; for if they are placed behind them the body is thrown too far back, and the hold is insecure. The object of all young riders should be to get as far forward as possible, so that the knee is not off the saddle; and they can scarcely overdo this part of the lesson by any effort in their power. Riding well upon the fork, with the knees upon the padded part of the flap, will ensure a good position if the stirrups are not too short. These should be about the length which will touch the projecting ankle-bone, when the legs are placed as above directed, but out of the stirrups; and when they are placed in them, the heel should be about one inch and a half below the ball of the foot. This latter part receives the pressure of the stirrup in road-riding, but in hunting or any other kind of field-riding the foot is thrust "home" and the stirrup touches the instep, whilst the pressure is taken by the under part of the arch of the foot. The reason of this is, that in leaping the pressure on the stirrup is almost lost; and if the toe only is placed within it the foot is constantly coming out. Besides this, in the gallop the attitude is of that nature that the spring of the instep is not wanted, the weight being too much thrown upon the foot, if standing in the stirrups; and if sitting down in the saddle the feet should scarcely press upon the stirrups at all, and therefore the best place for them is where they will be most secure. The body should be carried easily, balancing backward and forward or sideways, as required, but not forcibly. Instinct is here the best guide, and the rider should follow

its precepts rather than attempt to follow any preconceived rule. If the horse rears, he will feel called upon by nature to lean forward, and may even grasp the neck if needful, or anything but the bridle, which will only bring the horse back upon him. The body should not be held stiffly upright, but, short of this, it can scarcely be too still, the loins being slightly arched forwards. The legs also should be as motionless as possible, and nearly perpendicular from the knee downwards; but, if anything, a little forward, the heel being well depressed and the toes very slightly turned outwards. The shoulders should always be square—that is, at right angles to the road taken; and whether trotting or galloping neither of them should be advanced before the other.

If a man contemplates becoming a perfect horseman, he should consider in what way his riding will be chiefly required, and make himself master of that. If he only contemplates road riding, if he acquire a neat, easy, and firm seat, with good hands, he will do well enough; and having gained these, he may be satisfied. If he means to be a hunting man, he will find it will require a still firmer seat, stronger arms, and far stronger nerves, without which he will never become a "workman" across country; and, as to race riding, no man need hope to arrive at any perfection as a jockey, unless from a boy he has been more or less in the habit of riding race-horses.

There are two things all but indispensable to the man who wishes to become perfect as a horseman—good nerve and good temper: without the first, he will want confidence; and without the second, he will neither have patience to be taught himself or to teach his horse.

So far as seat is concerned, a great deal depends on the formation of the man. With very few exceptions, short chubby-made men never make neat horsemen; and without any exception, such persons can hardly possess an easy and graceful seat. Such men are usually very round in the thigh; a formation much against a firm seat, without which no man can be a good horseman.

Huntsmen usually sit more down in their seat than gentlemen do. This arises from their keeping a constant eye on their hounds, which they can have with that seat more than they could standing in their stirrups as a jockey does. Huntsmen are apt to sit a little oblique on their horse. This is caused by their riding much with the rein in one hand, which hand is usually held rather more forward than other men hold it, so as to enable them to have more command over the horse; which is quite necessary for a man to have who has to get through thick covers at the risk of having his own and his horse's eyes cut or knocked out by brambles, thorns, or hanging boughs. The way in which both learn to avoid these is extraordinary: the more so when the man's whole attention is devoted to every turn his hounds make, and to every hound he hears throw a tongue. We will suppose a huntsman in the middle of a thick cover of perhaps a hundred acres; he hears a view halloo on which he can depend, and also hears his hounds making to the point from whence the halloo comes. Get to them he must; and that over newly-cut stubs like harrows reversed, or through underwood where half his time he is forced keep his arm before his face to save it. All he can do is to trust to his horse; and the way in which those accustomed to it do gallop through and over such obstacles, no man but a huntsman, and no horse but a huntsman's can imitate. He gets to the cover's skirt; no matter how awkward the fence to get out, he has no time to pick a safer place. "Come up," and with a haul at his horse's mouth, and a whack with his whip on the shoulders, over they come somehow. He has then to rattle along over any ground, not merely at a chasing but a catching pace. He comes up with the crowd in a narrow lane, with half a hundred gentlemen trotting up the centre; these he cannot command to get out of his way, though every good sportsman would voluntarily do so. "By your leave, gentlemen," is the utmost he dare say; and with a "hark forward, hark!" or "hoick together, hoick!" and the occasional use of "by your leave," he rattles by them with a wagon-rut for his horse's path. He gets to the hounds, and with a half-blown horse has to face a country that others begin with one quite fresh. It is not to be wondered at, therefore, that half-tired man and horse get on, in such a case, just as they can, but most huntsmen now-a-days are provided with a second horse, otherwise they could not get through their work.

Connected with the seat, is what is called in horse language "hands." When a man inquires what kind of bit he should use, he generally means what sort would suit his horse's mouth; it is of more importance to inquire what will suit his own "hands." This is to say that a man with "good hands" can ride with any bit; while it is most important, where the rider has "no hands at all," that the animal should not be punished and confined by a cruel piece of ironwork. The bridle with which, in the first case, he would go pleasantly and gracefully, would, in the latter, become neither more nor less than an instrument of torture, under the effects of which he could go neither pleasantly, gracefully, or even safely to himself or rider.

One would naturally suppose that any man in the habit of riding would be anxious to acquire so necessary a part of horsemanship as good hands. Daily observation, however, shows that it is not so; and this inattention or indifference arises from various causes. The first is, the man knows nothing about "hands," consequently does not know that he has bad ones; again, if he does know this, as he merely rides an animal for health and exercise, and having found one who has no more "mouth" than his master has "hands," the latter has probably found himself safely enough carried, and wants no more.

Bad "hands" are much more frequent causes of bad riding than even defects of seat. Indeed, the things act and re-act, and an unsteady seat will produce bad "hands." Should a friend, then, ask you candidly about bits and bridles, and so forth, be equally candid with him. Ask

him, "Has your horse a good mouth?" that is, tender, and 'Does he often throw up his head?"

Is his mouth, temper, and disposition such that a curb-bit can be dispensed with? If it is, ride your horse, by all means, in a plain snaffle and martingale (not a nose one). If he requires a curb, use an easy one, and only make use of it occasionally. We would recommend all men with bad hands to use martingales; not exactly to keep the horse's head down, but to counteract the effect of their hands getting up, which is nearly always the practice with bad riders. Martingales, too, are advisable, because with one it matters less *where* the hands are; they do not affect the horse's mouth as respects the elevating or lowering of the head. All they can do is to use such force in pulling the reins that the horse cannot advance. Probably the rider will take the hint, and moderate his pull at the reins.

"Hands" may be considered the refinement of horsemanship, without which no man has any pretensions to the character of a horseman; he may ride boldly, and sit fast. This does not make him a horseman. "The difference between riders," says "Harry Hieover," is—"the one sits on the back of a horse, crossing a country in such form and style as the animal likes; the other causes the horse to do the same thing, but in a proper manner."

Good "hands" are to a man of fortune worth a diadem; in virtue of them, he is carried as no man wanting them can be. It may be said his money could purchase horses that want no hands to make them do their business handsomely. He might; but if they wanted no hands to make them go in such manner, still less do they want bad ones to thwart them when they do.

They are invaluable to the poorer man. They enable him to purchase horses hitherto thought little of from a bad style of carriage, and raise the price of the same horse, while in his possession, from, perhaps, eighty to a hundred and fifty.

Finally, "hands" are of the utmost importance to the horse himself,-particularly in hunting; wanting them, beats many a good horse before his time. Permitting a horse, in technical phrase, to "make a spread eagle of himself," and go sprawling along over a deep fallow, "sows him up" at once. It is quite a fallacious idea to suppose that a horse knows the easiest way of going to himself. He, perhaps, would do so in a state of nature; but nature is not crossing a hundred-acre holding pasture, with twelve (or more) stone weight on his back.

RIDING TO HOUNDS.

We have, in various subsidiary branches of the subject of Riding, forestalled so many points of the present subject, that we can almost deal with it by way of reference to the opening part of this Chapter.

To keep on terms with a modern pack when running hard, neither man or horse, whatever other faults they may have, must be troubled with "the slows." As an old-world enthusiast in the art of driving once told us, "the great secret of coaching, is to keep your time;" so in riding to hounds, the chief and indispensable accomplishment is to know how to gallop. This is not, as might at first sight be supposed, a mere matter of "horse;" on the contrary, it has a good deal to do with the biped who bestrides him. One man will get across a field in half the time it takes his friend, though mounted on a faster animal, to accomplish the same distance; and this facility is a sort of knack, which it is impossible to teach and almost hopeless to explain. It is an accomplishment compounded of hand, eye, and seat, with a considerable allowance of nerve; for, strange as it may appear, men are far less shy of fences than they are of galloping; and many a bruising, daring rider, with good hands, undying pluck, and a first-rate eye to hounds, finds that, although in a hunting run he can generally go first and foremost, yet for want of this gift of galloping he is always beaten, he cannot tell how, in the first three fields of a really quick thing. The man cannot of course "carry the horse," though young gentlemen often think they can "lift" him. We do not mean to say that the best hunter in England, if slow, will bear his owner satisfactorily through a burst, but that the quick man on the slow horse will go in a good place (supposing he wishes to show in the front rank) till his steed stops; whereas the slow man on the fast horse will be nowhere throughout, though doubtless of the two he will have the pleasanter ride home.

We will suppose, however, that man and horse are both of the "going sort"—the one devotedly fond of hounds and determined to be with them, the other sharing his master's attachment to the chase, and trained to that state of wind and condition which enables him to undergo the severest exertion, not only without inconvenience, but with positive enjoyment. This is but the foundation of the science: how much skill and judgment is required in its superstructure! The knowledge of hunting, necessary to place every turn of the hounds to account; the choice of ground, which makes all the difference between gliding smoothly down a furrow, or labouring uneasily athwart a ridge; the quickness of eye, which, on landing in a field, spies instantaneously the weak place at which to get out, and makes directly for that spot without deviation or delay; the accuracy of ear, that, when hounds are necessarily unseen, can be guided by their notes; the experience, which tells as it were intuitively the direction they are likely to take; and lastly, the dauntless nerve, that, among rasping fences, is determined to be forward, and prepared to run its chance of what there is beyond the obstacle.

"Eternal misery on this side, my Lord, and certain death on the other," said one of the best of our steeple-chase riders to a nobleman who was almost his rival; and in another instant he was in the air. To put in practice the intellectual qualities essential to clever hunting, it is essential to possess likewise the physical advantage of fine horsemanship, of which more is required in crossing a country than the uninitiated are apt to suppose. Horace

says, "the horse's ear is in his mouth;" and you need only deprive him of his bridle, to render the finest rider in England utterly helpless on his steed. "Harry Hieover" tells an anecdote illustrative of this quality, which we must preserve. "A gentleman in Northamptonshire was run away with some few years ago. His horse having got his feet through his reins in a scramble at a fence, and tore them completely from his head, away went the pair—the animal frightened out of its wits, as is the custom of the species when anything extraordinary happens; the biped cool and unmoved, as if he sat in an arm-chair. Fond, however, as he was of going fast, it was necessary on this occasion to stop; so, being a long-armed man, he leant well forward, and placing his hands over its eyes, completely blinded his horse, and brought him to a standstill, if we may be allowed the expression, in a twinkling. We are not all, however, gifted with such long limbs as this imperturbable equestrian, and must make up, if we can, for deficiency of arm by increased fineness of hand; and here we lay it down as an established rule, that no horse can go properly with hounds if he pulls. Let him lean upon his bit to that extent which enables us to draw him into a collected form; let him get his head up, or down, or sideways, or into any other position he pleases, with a proper feeling of resentment at undue interference with his mouth, and we freely forgive him; but for a boring, dead, stiffnecked puller, we confess to an insuperable aversion." Common riding, as Colonel Greenwood's book truly points out, is but common sense, and the whole object of bitting and bridling is, after all, to get the horse's hind legs into their proper place under his quarters, through the medium of his head. The animal is so formed, that when he bends his neck and tucks his nose in, he brings his hocks and hind feet well under his body, and *vice versâ;* hence it is that horses with well-made, powerful quarters, have for the most part light mouths. Should that sensitive organ, however, have been hardened by a bad education or bad usage, it must be our study to apply such an instrument as, by giving us additional power, or, in other words, inflicting a severer pressure, shall make up for this want of sensitiveness without giving pain, and thereby causing irritation at the time, and increased callousness afterwards. This is the whole art of bitting, and on this depends the skilful touch we term "hand." That such power is obtained over the horse by an almost innumerable diversity of bridles, we have only to look into any saddler's window to observe; and it is impossible to establish any of these as the best, inasmuch as the grey horse will only go pleasantly in one that would drive the chesnut mad, while that which brings the brown instantaneously on his haunches is a mere halter in the mouth of the bay. Different men, too, would ride the same animal in different bridles, so various are the methods in which people deem it safe and expedient to handle their horses. The large plain double-bridle, with a thick bridoon, a low port, and a very long cheek, more particularly should the bit be made to slide up and down for an inch or so on the cheek aforesaid, will be found admirably adapted to three horses out of four; but then it may render the fourth totally unridable: so, as we have already said, it is impossible to lay down any rule on the subject. But that it is absolutely necessary to find out the bridle in which he goes most pleasantly, to get a horse quickly along over a country, it needs but little argument to demonstrate.

For mere galloping, we should be able to turn and twist him anywhere. The very fact of pulling up short to open a gate, and consequently keeping up the steam till within a few yards of that friendly egress, will give one man an immense advantage over another, who, although riding a second Eclipse, cannot quite command him, and, should he mean to stop at all, must begin hauling long ere he is half-way across a forty-acre field.

What, too, can be more provoking, when jammed into a lane amongst a hundred dear friends, than to spy a weak place in the fence, through which, if you could but hustle, you might be alone with the hounds; and to find that, pressed as you are by the galloping crowd around you, it is impossible to pull up or turn, till several hundred yards past the only practicable gap for miles? Though the hounds are running at right angles to you, it would take more time to turn round than to keep forward, and you are carried on by the tide till you find yourself in a turnpike road, from which, as we all know, there is no escape. All this is rectified by having horses what is called "handy;" and to make them so, should be the first object of any man who wishes to ride well to hounds, more particularly in the grass countries, where the crowd of his fellow-sportsmen is one of the greatest difficulties he has to encounter. A fast slug, if he has courage enough to face large fences, will generally slip away quicker than any other description of hunter; and it is extraordinary how many horses that have been ridden by good men become so quiet and temperate that we might almost call them slugs. When thus mounted, and in a good place with hounds, a really fine rider seems to glide over a country, almost like a bird upon the wing. It is beautiful to ride behind such, and watch his performance. How quietly he sits down in his saddle, giving and taking with every motion of his horse; how judiciously he selects the soundest ground, and at what a rattling pace he makes play when its inclination is at all in his favour. With what patience he waits at a slow canter, or pulls completely to a trot in the ploughs; what skill he shows in angling the ridge and furrow, or avoiding it altogether by making at once for the headland; how he seems to anticipate every turn of the hounds, and thereby gains a timely pull almost whenever he stands in need of a moment's breathing-space; and above all, with what determination he crosses the severe fences, which in every good run we may be pretty sure it will be his lot to encounter.

LADIES' HORSEMANSHIP.

Albeit we do not expect lady-readers to con the pages of "The Book of Field Sports," yet do we esteem it a serious omission that the art of riding, as practised by lady-proficients, should be passed over without mention in such works; for surely a brother, father, friend, or, better still, a lover, may desire the knowledge which would enable them to speak, or, if need be, to instruct in these matters, "as one having understanding." We are not going to advocate the "first-flight" as an accomplishment; or torn veils and rent skirts, got in charging a "bullfinch," or rising, mermaid-like, bedraggled from the depths of a soft-banked brook, as a triumph becoming our British fair. We rate too highly their precious limbs and beauteous faces, to desire to see them exposed to the risk of injury. Yet who can assert that painter or poet can have a more beautiful subject for pencil or pen than a fair Englishwoman on a handsome horse, as she passes in the power of her charms, her eyes brightened, her colour heightened by the health and spirit-giving exercise, her hair floating, and her lithe figure swaying and bending in graceful pliancy to every movement of the glossy steed she manages with a woman's tact and a woman's pride? All this may be delightfully enjoyable in "the ride" in Hyde Park, or on the greensward of the avenue of the "old house at home;" or the ten or twelve miles an hour may be enjoyed on the road, through bridle-lanes, an occasional hand-gate and grass-field, as, with spirits gay, they repair to "the meet" they so radiantly adorn. But here, as we have said before, we pause, though perhaps some of our youth—for human nature is ever the same—may yield to the modern Sauromatæ, of whom Herodotus tells the story so quaintly. This Scythian tribe of female warriors, says the old Greek, were called "manslayers;" but this was in a more literal sense than we would apply in the present day. How the Greeks fought with them in the field, intermarried with them, and were conquered at home, the reader may seek in the ancient historian referred to.*

There is, in our opinion, ample scope for what Tom Hood punningly called *she*-questrianship, without following the hounds.

Within the last quarter of a century, the maids, matrons, and widows of England have taken to the saddle in numbers unprecedented in former days, and far be it from us to wish it otherwise. A fine woman on a fine horse is a most graceful combination of beauty and power. Horse exercise is conducive to the health and spirits; and how it enhances the charms of the lovely Amazons, many a captivated youth can avouch with a loving sigh. It is, then, that he may understand the principles of graceful riding by the fairer sex, as well as for the lovely horsewomen themselves, that we pen a few practical lines on the subject.

Dress.—And here, upon the very threshold, we feel the danger and delicacy of our task. We have to advise the ladies on that subject most eminently within their province—dress. We shall not trespass on matters of fashion and taste, but hope they will agree with us that a habit cannot be too plain, if well made, well fitting, and well put on. Observe, we stipulate for light "ladies' cloth," strictly so called, which will tear easily. The skirt, too, should be as short as is at all consistent with appearance. It need hardly be pointed out, what danger there is in the preposterously long skirt: we have seen it become entangled with the stirrup, a passing a rail, hedge, or even the horse's legs, and then the helplessness of the fair rider when unseated; for should the horse himself fall, the rider is involved with him in a peril from which she cannot be easily extricated without injury. A dangerous fashion, now happily on the wane, is that of wearing "habit-brooches," as the tradesmen who deal in these dangerous devices call them. This mode of confining the skirt of the habit is utterly superfluous to a graceful horsewoman. The position of a lady on horseback is much more constrained than that of a man. The "habit-brooch" deprives her of the chance of escape when an accident happens. A very slight fall may prove serious or fatal, where, with full liberty of the skirt, it would have been harmless or trivial. The arrangement of the skirt, without this *impedimentum*, is thus directed by Mr Waite. He strongly advises a lady never, under any circumstances, to tuck her skirt tight over the crutch of

* These antetypes of the "pretty horse-breakers" and heart-breakers of the 19th century, argued with their husbands in a style and with an effect that 4,000 years have not cast into oblivion. The husbands proposed a settling down to the calm duties of domestic life; to which the Amazons replied, "We never could live with the women of your country, because we have not the same customs with them. We shoot with the bow, throw the javelin, ride on horseback, and have never learnt the employments of women. But your women do none of the things we have mentioned, but are engaged in women's employments, remaining in their wagons, and do not go out to hunt, or anywhere else. If, then, you desire to have us for your wives, and to prove yourselves honest men, go to your parents, claim your share of their property, then return, and let us live by ourselves."

Need the result be wondered at? The story is repeated daily to this hour. A determined, though soft-spoken Amazon pleads, a young, or a fond old sportsman listens, and the cause is won. But the ancient Sauromatæ went further: they proposed elopement to their husbands; and thus these wily syrens went about it.

"Alarm and fear come upon us," said they, "when we consider that we must live in this country. In the first place, because we have deprived you of your parents, and, in the next, have committed great depredations in your territory. Since, therefore, you think us worthy to be your wives, do thus with us: come let us leave this country; and, having crossed the river Tanais, let us settle there!"

"So," observes Herodotus, "the youths consented to do this also; and, having reached the country in which they are now settled, they took up their abode there. From that time, the wives of the Sauromatæ retain their ancient mode of living, both going out on horseback to hunt with their husbands *and without their husbands*, and joining in war, and wearing the same dress as the men." The records of Sir Cresswell Cresswell's court show that the Sauromatæ have their descendants among modern wives.

her saddle, but take pains to have them so easy as to be enabled on the instant to disengage both skirt and knee. A facility in this can only be acquired by constant practice; and it is of far greater importance to the lady equestrian to attain than may appear at the first glance. Had this apparently slight attainment been a matter of moderate consideration, many a parent need not have to deplore the more or less disfigurement or maiming of a beloved child.

When a lady has her habit drawn over the crutch of her saddle, and tucked tightly in under her leg (for the purpose of keeping the skirt in its proper position), she denies herself the full liberty of her knee, and, in case of accident, to be quickly off the horse. On the slightest warning, though unforeseen, whatever the danger, the tightness of the lady's dress will not allow her to get her leg out of its place in time to make any effectual effort to save herself; it is also probable that the habit may get entangled in the pommel, and she, frightened of course, will become unable to disengage her foot from the stirrup or shoe, in which case she inevitably experiences the most appalling of all accidents—falling, and being dragged powerless by a terrified horse.

Mounting.—Preparatory to a lady mounting her horse, let her steadily and without bustle approach his near shoulder. The quietest animal will occasionally start or even kick when suddenly approached from behind. It is also to the advantage of the animal, to see his rider as much as possible; though some would seem to think otherwise, by their *coup de main* mode of "getting hold" of the animal. On this point the reader may refer to our chapter on BREAKING and TRAINING, *ante*.

In assisting a lady to mount, two persons are necessary. The groom to keep the horse quiet, which he should do by standing in front of him, with one rein in each hand, holding the bridle-rein close to the bit. The other attendant—a proud privilege for the favoured cavalier, or a loving duty for the brother or friend—has to assist the fair one to mount. This he does by placing himself near to and almost in front of her. Having joined his hands by interlacing his fingers with each other, he stoops, and putting them near the ground receives the lady's left foot, which she should place lightly but firmly in them, taking care that no part of her skirt is under it. The left knee should be kept firmly straight, to give a safe purchase while she is being lifted perpendicularly and springily into her seat. Before this lift, however, the lady having regulated her habit, must stand perfectly erect, and taking the bridoon-rein loosely over the thumb of her right hand (holding the whip between the thumb and forefinger), she lays gently hold of the upright horn of the saddle. Her right side being now close to it, the lift is easy of accomplishment; a spring from the instep, simultaneously placing her left hand on the assistant's right shoulder, will land the lady safe in her seat.

Being now in the saddle, the lady should lay hold of her habit with her right hand close to the knee, lifting it so as to allow the right knee to rise and fall well home into the crutch, and holding it there firmly. This will be much assisted by drawing the heel backwards, by which the muscles of the calf and the *tendo Achillis* come to the aid of the position. The left leg should hang easily, not resting the weight of the body on the stirrup; if this is done, the foot naturally turns outward, inclines the body to an insecure balance, and gives a wavering and ungainly appearance to the rider. To avoid this, keep the left knee pressed against the saddle, depress the heel, and turn the toes slightly inwards.

The position of the stirrup has much to do with the seat of the female equestrian. The stirrup must be correctly adapted to the length of the lady's foot when seated in a square and exact position in the saddle. The *modus operandi* is as follows:—Let the stirrup-foot hang down freely from the hip-joint, the knee slightly flexed, the toes raised and turned towards the horse's side. Then, while the foot is immovable in the stirrup, let the strap-holes be taken up and permanently kept at the approved length. The pressure of the foot in the stirrup should come alone from the toes to the arch of the foot, which will give the desired elasticity of movement in the quicker paces of the horse. Should the lady be impelled to the endeavour to retain her foot in the stirrup, her weight must preponderate on the left side. On the contrary, if the stirrup be too short, it necessarily gives a rolling motion to her body, destructive alike to grace, elegance, and security of seat, and will prevent her seating herself sufficiently back in her saddle. Thus much of seat and stirrups. The arms should be held freely and unconstrainedly, but *near the sides*. The motion of the bridle hand must be, like that of skilled pianoforte players, confined to the wrist. From that alone must its action be derived; and here Mr. Waite's little "Manual" shall again instruct us. "The motion of the lady's hand should be confined to the wrist, the action coming from it alone. By the management of the reins, in concert with the yielding or retraction of the wrists, the horse is guided in his paces. By this mode the sensibility and goodness of his mouth is preserved; the beauty of his action is developed; steadiness is combined with security in his paces; and the safety of his rider is secured. The degree of command which the animal can be placed under, entirely depends on the degree of proficiency acquired in this branch."

There are four motions requisite in guiding a horse.

"*To go forward.*—Lengthen the reins, and give the animal his liberty. For this purpose the lady's hand must be guided by the action of her wrist, and, at the same time, she must apply gently her whip. Here, it is proper to remark, the lady's bridle, or left, hand must never be left inactive, but, by practice, she must endeavour to understand the art of feeling the horse's mouth; should the bridle hand not be kept in constant use, this will never come easy to the rider, the hand will be unsteady, and the horse will become the same.

"*To go backward.*—The reins must be shortened a little, the back of the hand turned down, the little finger next the body; the weight of the rider should be thrown back, with the little finger slightly pulled in towards the waist, then the horse will readily step back.

"*To turn to the right.*—The hand must be turned upwards, which will direct the little finger to the right. Throw the balance of the body into the turn, by inclining the bust to the right and applying the whip, which will cause the horse to move forward as he turns, obey the hand, and cross his legs one over the other correctly.

"*To turn to the left.*—Let the hand be turned down, so that the little finger may be directed to the left; the bust must also be turned to the left, and the hand up, with the left heel applied to his side, and the whip to his right shoulder."

Dismounting.—The remarks on mounting should be remembered here. Should hired servants only be at hand, there is some skill required to avoid the *désagrémens* or inelegance of a lady being lifted from the saddle in the arms of a groom.

Previous to dismounting, the attendant must stand by the horse's head, holding the reins close to the bit, to keep him as steady as possible.

The lady, having removed her foot from the stirrup, and passed her hand down to free her skirt, &c., from the chance of catching to the saddle or stirrup, should remove her knee from the saddle-crutch; at the same time taking the precaution to disengage the habit from that side. Then holding the crutch with her right hand (the rein hanging loosely on the thumb), and placing her left hand on her attendant's right arm, near the wrist; his arm being extended for the purpose, she must spring lightly and clear from the saddle, slightly inclining the bust towards the horse's shoulder.

By this method the lady will cleverly disengage herself, and descend gently to the ground.

The following are Mr. Waite's "Maxims:"—"Be particular to avoid nervousness and hurry, either in mounting or dismounting.

"Take time, and have everything correctly arranged before starting; serious accidents have occurred from haste in starting off.

"Arrange the habit and length of stirrup, and have the saddle-bands and buckles properly examined before the journey is begun, to prevent having to stop on the road.

"Be careful to keep the hand active, and watch the movements of the horse; by this means the rider will never be thrown off her guard, and will be prepared for every emergency.

"Keep the horse's mouth always in play, so as to keep up its fine feeling, indispensable to his correct guidance.

"Never allow the reins to hang loosely on the horse's neck, crutch, or pommel of the saddle. This oversight frequently causes serious and fatal accidents.

"Always use double reins. Should one become useless, there is still another to rely upon."

Mr. Waite winds up by justly observing that an elegant and accomplished equestrian becomes an equally graceful pedestrian, from the improved carriage acquired from proficiency in the former accomplishment.

To become an elegant pedestrian is no mean task, nor easy to accomplish. Yet it is of the utmost importance to a lady to achieve it. How often, in our experience through life, have we met with a lovely face and perfect figure,—everything that could constitute the perfection of female beauty, *while at rest:* but once in motion, the illusion is dispelled by a bad carriage and shuffling gait, and the perfect form becomes common-place. These two detractions to beauty can be entirely eradicated by attention to the following directions, which apply equally to walking and riding.

Keep the bust and head erect; the shoulders well thrown back. The motive power to proceed from the hips alone.

Perseverance in these directions will soon give all that is required for a graceful and healthy carriage.

Finally.—At all times trust to your reins for security in cases of danger. Never grasp the pommel of the saddle; and never use a "habit-brooch."

Choosing a Lady's Horse.—The general ideas in BUYING A HORSE are found under that heading; the special merits of a lady's horse are worth considering. It should be remembered, and oftener than it is, that a "weed" should never be selected to carry our "fairest flower,"—that however sylph-like and fairy-formed our Venuses may appear, they are mostly ten stone, "horseman's weight," despite their affectation of slimness; and this, with habit, hat, gauntlets, whip, a spacious side-saddle and crutch, extra girths, shoe stirrup, &c., adding twenty pounds at the least, asks something more than a Queen Mab's grasshopper steed. We are not going to dilate on a horse for the hunting Amazon we have already spoken of, or we should say a four-year-old hunter, with good mouth, great action, steady at fences, and up to thirteen stone, was wanted; just such a horse as is *not* to be had for the catching. Lord Maynard, a great man across country in the last generation, used to say, when he heard a horse mentioned as excellent to carry a lady, "I'll buy it: if he will carry a woman *well*, he'll carry me better."

As elegance must be studied in a park hack, a lady's horse should have a considerable show of blood, and should seldom exceed fifteen hands in height; the paces should not be rough; and an easy slow trot, the pace of health, is a valuable qualification. The canter is, however, of the chiefest consequence, and that it be formed naturally and handsomely, the neck gracefully curved, and the mouth having pleasant and good feeling. There are natural canterers, they will last at it, taking to it, and on the proper signal dropping into the trot or walk, without roughness, boggling, or changing of legs. But the first and grand consideration is going safely; for a horse deficient in that respect is, perhaps, always most liable to fall in his canter. The most graceful canterers may be observed to lead gene-

rally with the off leg; but no doubt there is such an error as a horse, both in his canter and gallop, going with the wrong leg first, to the considerable uneasiness of the rider; this is most felt upon worn and battered horses, which change their legs to procure a momentary ease.

A naturally timid, nervous colt, however we may lessen the infirmity by proper treatment, will never be a perfect lady's horse. He should be naturally bold and fearless, and from being properly educated, should not know fright; for as ladies are naturally more easily alarmed than men, so in proportion should their horses be bolder, for if both get alarmed, the danger is imminent. Many ladies would fear to be put on a high-couraged horse. Fair ones, your fears are misapplied. High courage, in man or horse, is your best safeguard, and will induce both to bend with cheerfulness to your slightest will; while the timid, actuated by fear, seeks his own safety, nor heeds the danger of his fair mistress.

Some masters teach their lady-scholars to ride on either side of the horse, and recommend to have the pommel of the saddle made very low, that the knee may not be thrown too high; and also that the pommel be made with a screw, to be taken off in case of a lady wishing to change sides on any particular account. Ladies' riding-shoes should be always straight soled, as, in case of accident, there is the risk of the foot hanging in the stirrup, when the sole, according to the old fashion, is hollow next the heel. A lady's horse should be particularly accustomed to walk off quietly; and with respect to his improvement in that pace, it is accomplished by touching him gently with the whip.

"Harry Hieover" has some pertinent though diffuse remarks in his "Hints on Educating Horses," from which we select some relating to the training of a lady's horse.

Although by no means advocating a riding-school education for a hunting man or a hunting horse, yet it is the only place where a lady's horse can be properly made. There is a peculiar style of going that is only to be acquired "here"—a handiness that cannot be taught on the road; turning safely and easily cannot be learned elsewhere. Changing voluntarily the leading leg, so indispensable for this horse, must be practised by the figure of eight, to perfect him in it; and till he is perfect in this, he cannot carry a lady safely. She will find it necessary, if riding in crowds, to turn her horse often suddenly, to avoid coming in contact with different objects. Suppose a horse going a quick canter, leading with the right leg, something coming suddenly up may oblige his rider to turn quickly to the left. If the horse does not change his leg, it is an even chance whether he does or does not let his legs interfere, and come on his head. Here he may be taught that quite necessary qualification in a lady's horse, to moderate his pace, stop by degrees, or stop short, in accordance with the voice that directs him; a lady's horse should be perfect in this with the reins resting on his neck. Why this is learned so much more readily in a school than elsewhere is, that the animal's attention is solely occupied by his rider's voice and movement, whereas out of doors it is more than divided by other objects. Independently of this, there is a confinement felt by a horse when encircled by four walls, that he of course does not feel in any open space, that makes him obedient.

In a school there are found guns, flags, drums, trumpets, umbrellas, and every other monstrosity to which a lady's horse should be subjected: it therefore follows that in such a school a horse would be placed in a situation to see more strange sights in six weeks than in ordinary situations he would see in six years. For instance, a lady might ride her horse about Bath and not see the colour of a regiment once in seven years; in London it might happen she never rode at an hour when regiments were moving; consequently years might elapse, and the first time her horse saw such a sight he would start at it; and so on with any unusual thing that came across him; but in the school a day makes him conversant with everything of the sort. Let a man walk fifty yards distance from him round the school with a banner, he hardly notices it; get nearer to the man by degrees, and in an hour or two the horse will walk with the banner fluttering before his face (so with anything we wish to accustom him to see) without alarm. The great mistake people make, is in thinking that by doing too much at a time they accelerate what they wish, when, in fact, they retard it by such means.

If, for instance, we wish to teach a horse to stand fire—if we let off a gun, we should alarm him to such an extent that it would perhaps take a month to reassure him, if we even did it then. A more judicious man might let off a small pistol with a little powder in it. This is ten times too much. A flash in the pan is too much, except at a great distance. First burn a few grains of gunpowder so as to show no flash, while he is eating his corn in the stable; let him smell that; even this will arouse his attention, but, while it accustoms him to the smell, will not alarm him. Begin by clicking a pistol twenty yards from him; then put powder enough in not to make more ignition than the light of a rushlight; go on by imperceptible degrees, and in two days he will hear a musket go off without the least fear. Alarm him by the report of a gun at first, it will take years perhaps to reconcile him to it, if it is ever done; but by never creating alarm, he may in a week be brought to stand by a cannon without wincing. Absolutely hurting or absolutely alarming, produce nearly similar results in brutes as in the human race. A person that has been pursued by an infuriated ox has the same dread of an ox as another who has been tossed on his horns—perhaps more, if the latter was not much hurt, the anticipations of the former being probably much more terrific than the tossing of the latter; as, in the ordinary circumstances of life, the dread of an event is often more horrible than the realization itself. Many a man, who has worked himself into a fever and high state of nervous irritability during the night from the apprehension of an operation in the morning, has borne that operation firmly, and allowed that his fears had greatly exceeded the

reality. Fear is a most powerful agent, and, where it is once awakened, a most difficult one to tranquillise. With horses, a minute awakens fear that years will not eradicate. We cannot reason with them, or explain away the cause of their alarm; so, if any irrational animal is once hurt by anything he sees or hears, or is seriously alarmed by it, hearing or seeing the same thing without sustaining any injury from it a hundred times afterwards barely suffices to reassure his fears of it. Frighten a boy by the appearance of a ghost, and let that ghost strike at him, he is alarmed; throw off the sheet, and let him see it was his sister dressed up, his alarm is gone; nay, he would probably think less of ghosts in future. We cannot do this with animals; so, in educating them, nothing but length of time can overcome terror; and till terror is assuaged, they have not even the instinct nature gave them.

Ladies may fancy that if a horse has a tender mouth, there can be no fear of his going off with them. He would not on any ordinary occasion or under any ordinary excitement; if, however, he gets frightened, mouth will avail nothing; he becomes totally insensible to pain. The more timid, therefore, he is, the more dangerous he is; and, *vice versâ*, the more courageous, the more safe. Why are veterans more to be depended on than raw troops? Mainly because the former, from habit, are more collected in moments of danger than the latter

Thus far of schooling. Any green field that is not too hard, forms an excellent practice-ground; and should it be varied by what is termed in the Midland counties "ridge and furrow," it will additionally improve the general activity of the pupil, his action, and the use he makes of his shoulders. Cantering him continually in small circles, and, as he is meant for a lady, chiefly to the right, will teach him to lead with his off leg, and will bring his head into the right place, and his weight upon his haunches better than any other discipline we can adopt. Observe that no horse can have a good mouth unless he has powerful and well-shaped quarters; also, that his lightness in hand is in most cases pretty exactly proportioned to his strength behind the saddle. The hardest puller of all is the brute that pulls from weakness; if you could stop him, he cannot stop himself; and having given you half his weight to carry in your arms all day, it is lucky if he does not finish by putting the whole of it on your neck and shoulders in one of those complicated somersaults that a bad one is so expert in making

DRIVING.

GENERAL OBSERVATIONS.—HARNESS HORSES:—PUTTING TO.—PAIR HORSE.—SINGLE HARNESS.

Akin to the subject of Driving, and as a preface thereto, we would advise the perusal of pages 66—76 *ante*, and THE CARRIAGE HORSE, pp. 60, 61. The palmy days of charioteering passed away with Sir Henry Peyton, Sir John Ludd, Sir St. Vincent Cotton, Lord Molyneux, the youth of Lord Chesterfield, the declension of the Four-in-hand Club, and the extinction of our fast four-horse coaches. Spasmodic efforts for its revival have merely led to a pleasant procession to a pic-nic, or a suburban "spread" on the banks of Father Thames, above or below the great city. We shall not, therefore, dwell on the glory of departed days, but address ourselves to the practice of the present. In our picture of pair-horse and single harness these will be found, and below such a description as will render them intelligible.

The harness horses here to be noticed are the gig, or single harness horse, usually adopted for light or two-wheel work in dennet, tilbury, or dog-cart; the carriage, brougham, or cab-horse, for a heavier and slower vehicle; and ponies, whose uses are as various as their form and stature. The general gig-horse is too often merely the cast-off of the hunting stable, or even of the racing stud; the clumsy, unsteady, or slow being put into harness. A well-bred horse for the lancewood shafts is, however, too valuable an animal to be thus slightingly considered. Others are merely undersized carriage horses with the Cleveland or Clydesdale blood in them, and these, if got by well-bred or throughbred sires, are useful and handsome animals. Of the cab, brougham, or carriage horse there are several varieties. In olden times, before the idea of elegance was attached to lightness, we had a horse which truly deserved the name of the *coach* horse, rather than the more modern one of the *carriage* horse; for as we have already said, when treating of this variety, the old coach horse was merely the modern lighter cart horse, as we see him in the wheel-plough or in the unicorn railway wagons of London streets. A transition period brought another animal, which some writers of that middle age styled "the barouche horse," upon the scene; this was in the "Onslow Phaeton" age, which dovetailed with the "mail" age and the Oxford and Cambridge tandem. The drivers of the white "upper benjamin" became fast, and gentle and noble coachmanship at the zenith of its glory, drove very "leggy" animals, which the "short-legged machiners" "tied up" when the stage was ten miles. An agreeable writer thus chronicles the change. "When anything, say the philosophers, arrives at the summit of perfection, by the law of nature it retrogrades. Perhaps the perfection of the teams of 1820 worked their downfall. Such horses were then put into them, that, to outdo, or at all events vie with each other, men began putting their hunters into harness, and many that had breasted a bulfinch in Leicestershire, in spring breasted a collar in Hyde Park. Sadly *infra dig.* all this; but so it was.

"'Fashion in everything bears sovereign sway,
And' nags 'and periwigs have both their day.'"

This was perhaps the first innovation on the different *metiers* of the horse; this the first blow at the root of the exclusiveness of the hunter and his master. Whether the hunter going in harness, or the master riding the harness-horse with hounds, was the greater degradation, we do not say. There is something aristocratic in the sound of the

hunter's stable and the coach-horse stable; but to see a collar in a box is something, in my idea, about as anomalous as it would be to see a maid of all work drawing a cork of champagne. The wine might be good, and the Hebe pretty, and each might be worthy attention from the most fastidious, but it is to the disadvantage of both to introduce them together.

Some one may ask what has become of the sort of horse specially bred for the fast coach. Like other articles for which a remunerative demand has died out, they are not now produced on a grand scale. The nearest horse to the stamp, is that used in our horse artillery, and a very good sort it is. These horses, bought when young, though they are thick and strengthy, learn such habits of activity, that no one who has watched their evolutions at Woolwich, Portsmouth, Chatham, or elsewhere, can help admitting that great strength and great activity are contained in them. But where there is want of "blood," sustained speed must not be looked for. Doubtless, where mere activity for short distances is wanted, the less highly bred horse may seem not to suffer from the comparison, but a speed kept up is not his forte. Heavy as a loaded omnibus looks, if you wanted it bowled along at great speed for a long distance, four thoroughbreds would beat four of these artillery horses; but for work on London stones or in a bad road, where stopping and starting would fret the high-bred cattle, specific gravity, strength, and short legs, carry the day. The wind and game of the thoroughbred carry him through his task better than any other horse, but it is only where these are called upon that he shines so pre-eminently.

There is, however, another perfection that the highly-bred horse has: he does any work with more willingness and cheerfulness than the coarse horse; and this is why, for any purpose to which his strength is adequate, he will be found, on an average, so much pleasanter than the coarser animal. It is true, the inferior-bred horse is quite as free, and perhaps even more inclined to frisk about while quite fresh, than the thorough or higher-bred one; but this only lasts while work is play to him. At real labour, his energy leaves him; and once tired, the game is up. This has long since been found out; so, as our expectations as to distance and pace have more than gone hand in hand with the increased goodness of roads and improvement in vehicles, we have found improvement in breed absolutely indispensable—hence the change in the carriage-horse.

Our other harness horse is now the brougham or cab-horse. For a perfect cab-horse, he must now be kept to that vocation only. To be perfect, he requires many qualifications not easily met with; indeed, some of them are rare to get combined. In double-harness a horse may be a little awkward or lazy, inclined to bolt, or even to run away; may be somewhat restive, or a little unsafe in his action; still, with a good partner, a man anything of a coachman can make him do his business at least tolerably. Even in a gig-horse there are many little imperfections that may be compensated for by other qualifications, for he is wanted to be fast and lasting. We may put up with many serious objections in such horses, for the sake of pace and style of going. Impatience would, to many persons, be a very serious fault in a horse for single harness. A clever driver of gig or dog-cart will not mind a hasty-tempered one for this purpose; but this would be intolerable in the cab-horse.

He must be, or should be, singularly handsome, of commanding size; must be fast, or at least, extremely quick in all his movements; be able and willing at one moment to go fourteen miles an hour, the next be as willing to walk, if wanted, at the rate of three. He must stand motionless while his aristocratic owner enjoys his colloquy at the coroneted carriage-window; must not want the application of the toy-whip, or pull so as to stretch or twist the fingers of the white, lemon, or pink kids. To want holding at a door would render him useless, for who is to hold him? he must know by instinct that minute piece of humanity, yclept "the tiger," is before him, for seeing him is out of the question to a horse in harness. In going, the slightest indication on his mouth must suffice. He ought never, if a well-taught cab-horse, to voluntarily stop or attempt to stop at doors because he has often stopped at them before. This is the habit of butchers', bakers', and such plebeian horses; for though our scion of nobility or aristocracy may also at times stop at the same doors, it might be extremely inconvenient that his horse should indicate that his master did so.

Having stated some actions that the cab-horse must not perpetrate, we must look to the action he must have. This is precisely that which, some fifty years since, would have caused him to be rejected by any good judge as a "clamberer"—a style of going then considered as of the very worst sort; and so, in fact, it is for use, for such goers must tire. But the cab-horse is wanted for show; so the more parade he makes about what he does, the better he is thought of. One animal of this sort, not long since, was actually bought at seven hundred guineas, solely from his lofty action.

The learned and facetious author of "Adventures of a Gentleman in Search of a Horse," whose sportive pages contain more law, wit, and practical advice, than scores of more pretentious volumes, observes, "It is marvellous how few people keep fixedly in mind the nature of the work which they will require the horse to perform. Not one horse in fifty that is good under saddle is equally so in harness, and *vice versâ*. I once had a galloway that rarely stumbled in harness, though he could not have carried the best rider, of feather weight, half a dozen miles without a sorry fall. Yet he was perfectly sound, and continued sound for the five years he remained in my possession.* Many horses do

* Sir George Stephen.

well in harness that are totally unsafe to carry weight: in fact, few of the most 'showy' and 'splendid' harness horses of the dealers' stables are so broken until they have proved their inability under saddle. For myself, I make it a rule not to put a horse in my stanhope that I have not taken a short trial of in saddle. When on his back, I am his master; when at his tail, he is mine; and I like to know something of his temper before I put myself in his power."

Harness-work is, of course, at the same pace, much less severe than weight-carrying, with a modern-built trap or carriage, and good roads. It follows, therefore, that many defects, unpardonable for saddle, are comparatively immaterial. Harness-work, too, is done usually on the trot; hence it is of less consequence that he should walk or gallop well. Still there is no doubt that in proportion as the animal is sound, and good in all his paces, his value is greater for whichever service he is designed.

Few people are very particular about driving a horse in a boot, or with a blemished knee, while the blinkers will hide any obvious defect in the eyes. Thus other serious obstacles that occur in the purchase of a saddle-horse are removed.

Subject to these preliminary observations, we would suggest that the form of a horse for single harness should be carefully considered; a full shoulder and a well filled-up loin, are of consequence; the action should be free, and rather high than otherwise; the body should be compact and close, the legs short, and rotundity the character of the whole.

Steadiness is a great virtue in a gig-horse; for his duty is in the streets, where every provocation is given to the contrary, and where the least swerving from the direct line may cause infinite mischief. It is quite impossible to decide whether a horse deserves this character till he has been tried; but a single drive down Oxford Street and Holborn Hill, will put him sufficiently to the proof. A man who buys a harness-horse, without first driving it himself, is a fit subject for a commission of lunacy It is not enough to put him in the break; he should be harnessed at once to the gig or dog-cart; and it is prudent to observe closely how he bears the ceremony of being harnessed, and what kind of a start he makes. Much may be predicted of his qualifications for draught, or at all events of his familiarity with the collar, by the degree of quiet with which he allows himself to be put to. If the ostler runs alongside of him at setting off, as is often the case, you may be sure that the horse is distrusted: if you distrust him yourself, have nothing to do with him.

Sir George Stephen, in his little manual, already referred to, gives the following illustrative anecdotes.

"One of the best horses which I ever had in my life, as a gig-horse, was a little animal scarcely fourteen hands and an inch high, which I bought of a dealer named Thompson, an excellent judge of a horse for harness. His case was in some respects peculiar, and worth mentioning. I bought him for a relative, of very light weight, but a timid rider. He was about half-bred, and inclining in form to a cob. My relative rode him for about two or three months, during which time either he or the horse so contrived it as to fall every ten days; the last fall was a very serious one, and the knees were much blemished. He would not have produced ten pounds, though I had given nearly forty. I obtained permission to break him into harness, which I did myself, without any trouble or difficulty. His owner would not take him back again, but gave him to me. A year or two afterwards I refused sixty for him. It is a singular fact, that, for the first two years that I had him (he remained with me nearly five), he would allow nobody to drive him but myself. If other hands held the reins, he would swerve and shy, and at last perhaps fairly bolt; but in mine he never committed a fault. I used to drive him with a sharp curb, and very little whip; but my command of him was so complete, that I have urged him to his full speed, thrown the reins on his back, and stopped him in an instant by my voice! The inference which I would draw is, that a purchaser should always try a new harness-horse for himself, and not trust to the steadiness evinced while the reins are in his owner's hands.

"I cannot dismiss my little horse without mentioning another incident connected with him, to me particularly interesting. Like most Cantabs, I acquired at college an unlucky taste for tandem driving. I have driven my tandem for many thousand miles in safety, and used at times to exhibit at once my folly and my skill, by threading the narrowest or most crowded streets in London. It is scarcely necessary to add, that eventually I broke my head; though, in justice to my skill, I must declare that the fault was not mine, but my coachmaker's. The splinter-bar had been morticed into the shaft at the very point where the latter was rendered unsound by a knot in the wood. One day, after a long journey into the country, and within a hundred yards of my own door, the shaft broke, and I was precipitated over the shaft-horse, under the heels of my old favourite. There I lay, insensible. The awkward hands who came to render assistance, wanted (as I was afterwards informed by my servant) to move the horse away from me, at the risk of putting his heels upon my face; but move he would not; nor would he allow a foot to be raised, till at last I was fairly lifted up from under him, and then, though not till then, he readily changed his position, and moved wherever they pleased to lead him. I have no inference to draw from this, except a caution even to the most experienced whips against tandems! I mention it as a tribute of gratitude to my poor horse, who showed at least as much sense as his master. Young gentlemen, however, who disregard my caution, as doubtless nineteen out of twenty will, may thank me for a hint of which I have experienced the advantage. Tandems are rarely seen now; but those who still drive a leader, generally attach his traces to an eye in the traces of the shaft-horse: this looks better, but is not so safe as the old-fashioned way of hooking them to the end of the shaft. By the first plan, the

stumbling of the shaft-horse is aggravated into a decided fall, for the animal is actually pulled down by the continued motion of the leader; by the old plan, the shaft-horse is allowed time to recover a casual trip, and is even assisted; the weight of the carriage being relieved by the shafts being retained by the leader's traces in a horizontal position. The greatest danger in tandem-driving arises from the stumbling of the shaft-horse; it therefore follows that if either of the team is distrusted in his feet or legs, he should be driven leader."

No man, if he can help it, should ever buy a mare for harness: no dependance whatever can be placed upon them: they may be temperate and steady for months, or even years, and yet when the season arrives, will kick your chaise to pieces. "I drove a little mare for nearly a year with the galloway that I have just been mentioning; the following spring she kicked herself out of harness three times in the course of as many weeks. Purchasers are often tempted by their inferior price—a mare, *cæteris paribus*, being generally five or ten pounds less valuable than a gelding; but they forget that it is this very capriciousness of character that reduces their value, because it unfits them for the collar."

It can scarcely be necessary to remind a purchaser that any scar on the shoulders, or even under the tail, should lead to a suspicion of tenderness in those parts, not very consistent with length of service in harness; and in the same way that a blemished hock should excite a doubt whether the splinter bar is not equally damaged. If it can be managed, it would be prudent to see a horse driven in his master's trap, were it only to take the opportunity of observing whether the dashing iron or the floor retains marks of the shoe, or has been recently repaired in order to efface them.

Here is one more of the experiences of the author, of "Caveat emptor." "I once was trying a harness horse, in company with his owner, but not in his owner's chaise: I had no suspicions, for I was to receive a warranty of 'sound and safe in harness,' but he appeared to me to show a great deal of work: and therefore, I wished to see the stanhope that he had been accustomed to draw. 'It was at the coachmaker's.' I offered to go there, and proposed that we should drive to the shop. 'It was a long way off, on the other side of the water.' I replied that my time was of no consequence; for whenever I perceive hesitation, I always feel distrust. 'It was taken to pieces to be fresh painted.' In short, I found that the chaise was not to be seen; and therefore, see it I would. When we returned to the stables, I took an opportunity of saying privately to the ostler, that I thought the horse had been over weighted, and I wished to compare his owner's stanhope with mine,—'When would it be at home again?' He could not tell, but at once referred me to the coachmaker's: this was all I wanted. I proceeded there without delay, and anticipated his customer by only ten minutes: this was enough, however, to apprise myself by ocular inspection, that the dashing iron had been kicked away, only the week before, by the horse warranted 'safe in harness!' About a month after, not having yet found what I wanted, I read an advertisement in the paper of 'a horse, stanhope, and harness, to be sold together; the stanhope almost new, and very recently from the coachmaker's shop; the horse possessing the grandest action imaginable, and making, altogether, the most elegant turn-out in London; *bonâ fide* the property of a *gentleman* that might be referred to.' I went to the place, and at once recognised my old acquaintance, whose action, *à posteriori* at least, had been as 'grand' as could reasonably be desired; and as for the stanhope, the most practised eye in Long Acre could scarcely have discovered the true cause of its having so recently quitted the coachmaker's loft! Another striking specimen of *gentility* in horse-dealing transactions!"

So much for the horses, now for the harness. Fig. 1 of our Plate presents us a single suit of the most modern pattern, of which the several pieces bear the following names:—

PARTS OF HARNESS (SEE PLATE).

Fig. 1.—Single Harness.

A. BRIDLE.

a, Head-piece.
b, Front, or Brow-piece.
c, Winker and Cheek of Bridle.
d, Nose-band.
e, Throat-band.
ff, Bradoon bearing Rein.
g, Curb Bit and Chain.
h, Bradoon Bit.
i i, Driving Reins.
k, Nose-band Martingale.

B. COLLAR.

l, Ring or Fore Wale.
m, Housing.
n, Cap.
o, Hame.
p, Tug.
q, Pipe.
r, Tug Buckle.

C. SADDLE.

t, Bearing Hook.
u, Territ.
v, Surcingle.
**w*, Skirt.
**x*, Back-band.
**y*, Shaft Tug.
z, False Belly-band.

D. CRUPPER.

1, Dock.
2, Hip Straps.

E. BREECHING.

3, Seat.
4, Tugs.
*5, Shaft Strap.
*6, Breeching Ring.

F. TRACE.

**J.* Martingale Ring.

Fig. 2.—Pair-horse Harness.

Difference for Pair-horse Harness.

**G.* PAIR-HORSE PAD.

**z*, Short Tug.
*7, Point or Tug-strap.
*8, Trace-bearer.

**H.* POLE-PIECE.

*9, Pole-ring.

**I.* COUPLING OF REIN.

The whole of the parts mentioned are used in each class of harness, except those marked with a *; these take their respective places according to the nature of the harness, as arranged in the above scheme.

The harnessing and putting to come now to be considered. The horse is dressed, and turned round in his stall; when ready, the first thing to be put on is the collar. This is to be turned the large end upwards, an inversion rendered necessary by the fact that the top part of the head

is the widest part, and hence requires the larger end of the collar; before the collar is seated in its place the hames are put on and buckled. This being done before the collar is reversed, their own weight prevents them separating, and helps the drawing of the hame-strap. They are now reversed together and the pad placed in its proper place before buckling the belly-band, the crupper being slipped over the tail by grasping up all the hair in the left hand, while the crupper is adjusted by the right. See that no hairs are left engaged in it, for this is oft-times a cause of kicking. Next draw the pad forward a little and take up the belly-band moderately tight; then put on the headstall and bridle, adjust the curb, slip the reins through the terrets, and buckle them on the outside only for double harness, on both sides for single.

The horse is "put to" for going in shafts in an entirely different manner than if to be driven with a pole. If single harness, the shafts are tilted up and held there by one man, while another backs the horse until he is under them, when they are dropped down, and the tugs slipped under or over the ends of the shafts, according to the formation of the tugs, some being hooks, and others leather loops. Care must be taken that they do not slip beyond the pins on the shafts. The traces are now attached to the drawing-bar, the breeching or kicking-strap buckled, and the false belly-band buckled up pretty tightly, so as to keep the shafts steady. In four-wheeled carriages it should be left tolerably loose when a breeching is used, to allow it to have free play. The reins are untwisted from the terret, and the horse is put to. For double harness, the first thing is to bring the horse round by the side of the pole, and put the pole-piece through the sliding ring of the hames, the groom holding it, or else buckling it at the longest hole while the traces are being put to; as soon as this is done the pole-piece is buckled up to its proper length, each coupling-rein buckled to the opposite horse's bit, the driving-reins untwisted from the terret, and the two buckled together, and the horses are ready. The leaders of a tandem or four-in-hand are easily attached, and their reins are passed through the rings on the heads of the wheelers, and through the upper half of the pad terret.

Unharnessing is simply the reverse of the above, everything being undone in the same order in which it was done. The chief errors in either are—in double harness, in not attaching the pole-piece at once in putting-to, or in unbuckling it altogether too soon, by which the horse is at liberty to get back upon the bars, and often does considerable damage by kicking.

Driving a Pair has one grand leading principle, without which the others are all but *nil*. It is the "putting" the horses so well together that they may draw equally, and step in time with each other. This latter, however, can only be effectively done when the animals match in action and temper, and in height of step. We note temper as an important ingredient, because if one is a fast-goer and the other a slug, the amount of whipcord necessary for the slug will urge the free-goer to take all the work upon himself. A partial remedy for this is giving more length to the coupling-rein of the slow one. In "Vices on the Road," pp. 300, 301, *ante*, will be found some remarks on pole-hugging, which may throw light on a remedy. In watching the working of the two horses, the pole-pieces should always be the guide; and if both are slack, with the end of the pole steady, and neither horse shouldering it, the driver may rest contented that his horses are each doing their share. If, however, the pole is shouldered by either, that horse is a rogue, and is making the other to do more than his share, keeping the pole straight by the pressure of his shoulder, instead of pulling at the traces. On the other hand, if either horse is pulling away from the pole, and straining at the pole-piece, he is doing more than his share, and his coupling-rein must be taken in accordingly. Sometimes both shoulder the pole, or spread from it, which are equally unsightly habits, and may generally be cured by an alteration of the coupling-reins of both horses, letting them out when they "shoulder," and taking them up for straggling.

In Driving a Single Horse, the near rein is passed over the forefinger of the left hand, and the off rein between the middle and fore fingers. The thumb presses the near rein fast against the forefinger; and if both reins, instead of being allowed to fall over, are passed between the little finger and the third or "ring-finger," it will much improve the grip, especially when the muscles are tired with long driving, and the attention is slack. We protest against the bearing-rein as a general piece of harness; it is merely a cover for careless driving. It can only be allowed where an old horse has been so accustomed to hang upon it, that he is unsafe and uncomfortable without his habitual tormentor. The cab-horses are as hard-worked as ever, yet they are now scarcely half as often down as when the bearing-rein was the rule and not the exception. With three legs and a swinger, while their head is free, they seldom make a mistake. Why, then, put on this useless restraint to a vigorous and spirited animal? Do not, however, fall into the error of holding too tight a rein yourself. It will gag your horse and lead him to unsure footing, while a loose rein is bad at the opposite extreme. "Feel the horse's mouth" so as to guide him on either hand, and assist him in a difficulty should he make a fault in going down-hill.

CHAPTER XVI.

TREATMENT OF A HORSE ON A JOURNEY.—CUTTING.—CARE OF THE LEGS AND FEET.—GENERAL MEDICAL HINTS.—CONCLUDING OBSERVATIONS.

Railroads have not only consigned the "last four inside" to the lumber room of the past, but with them entombed the fast trotter of the natty bagman, and the stout sure-footed roadster of the gentleman, the sportsman, and the gentleman farmer. Yet is a good hack called upon by those who love the saddle for a long ride home or out; and the wisdom and experience of our fathers is still worth treasuring in a matter so eminently practical as the treatment of a horse on a journey.

The maximum which a good hack (such a horse we have already described, *ante*, pp. 60, 61, and 78, 79), should perform, is fifty to sixty miles in the day or night; but if this is to be continued, thirty to forty is fair work, and should not be exceeded. But let no man ride his saddle-horse a long distance, unless sure that he is in full condition from the "hard-meat" system we have advised under Conditioning, *ante*, pp. 145—147. Should, however, any Mr. Verdant Green try a journey on a horse fresh from green fodder, with a burthen of grass flesh upon him, let him ride moderately, and see that he has good corn, or a month will not be too much to get him into condition.

Many persons ride long stages, we have heard of thirty or forty miles, without baiting; but it is inconsiderate, and is injurious to the horse. Moderate feeds at the different stages, and an ample one at the last, are most beneficial; a quartern of oats, with a handful or two of beans, are sufficient quantities during the day; at night, half a peck of oats and a few handfuls of beans; so that a hack upon a journey of considerable length, may be allowed from a peck and a quarter to a peck and a half of oats. Hasty travellers will find an advantage in starting at a very moderate pace, and in finishing the last three miles of a stage, especially in hot weather, as leisurely as their haste will admit; since by such means they will save time, as their horses, on reaching the inn, will be the sooner dry and ready to feed. On the road, the horse may be indulged, every eight or ten miles, if he require it, with a few go-downs of water; and in hot weather, over hard roads, and with fast travelling, when the shoes acquire a burning heat, it is most refreshing to the horse, to ride him over his pasterns, momentarily, through any water that may be accessible. But a caution of much moment must have place here: be the weather hot or cold, a horse in a state of perspiration should never be kept standing any length of time in water.

In fast travelling, every horseman of common sense, will ease his hack up the hills; in going down also, if he values his own neck and his horse's knees, he will do the same.

When a hack of willing disposition and quiet temper does not start readily, or stops on the road, the rider may safely conclude that he is suffering from some bodily affection, or something galling, or misplaced in his furniture. Let him dismount instanter and examine him carefully. It may be colic, it may be strangury, and if so, urging him onward is as barbarous as it is useless. Should his nostrils become dilated, his ears sweat at the roots, and his flanks stare, with an attitude as though attempting to stale, the case is clear. Lead him about gently, and the strangury will probably cease, and urination will follow.

At the risk of a few repetitions, we will append the "treatment of a horse on a journey" as given by the author of the clever little volume entitled "How to Buy a Horse."

"As I have promised, I will add a few words respecting the treatment of a horse on a journey. The main points for consideration are, 'What is the distance you have to go, and the time in which you are to accomplish it?' Presuming that you are one of those who will rather 'take time by the forelock,' than distress your horse by forcing him to make up by pace for the hours you have consumed in the enjoyment of creature-comforts, let him be fed full two hours before the time of starting, and that you begin your journey very leisurely, and proceed at an easy pace, well within your horse's powers, for the first ten miles; after which, as old Markham somewhat quaintly says, 'In God's name begin your journey.' If you have a strong, active, and hardy animal under you, step out moderately for another ten miles, ever taking advantage for this purpose of the level parts of the road, and easing your beast both up and down hill; for a declivity occasions almost as great a strain on the forelegs as proportionally rising ground will upon the hind. Having ridden thus far, pull bridle, and walk your horse for a couple of miles or so, that he may recover himself in some measure, and get tolerably cool. Now put him into his stable, or a box if you can get one, and trust not to the tender mercies of an ostler to rub him perfectly dry. These gentry are too much accustomed to the rough treatment of farmers' nags and post-horses to pay any extraordinary degree of attention to a valuable hack without supervision. Moreover, if your horse be of full blood, it is ten to one but he will have the common trick of lashing out behind while being cleaned, which almost all these horses have, and which to me is 'right pleasant to behold.'

I love to see their little waywardness of temper disdainfully displayed in this manner; more especially as it very rarely arises from vice, for they constantly kick with the leg that is farthest from the person cleaning them, and seems to be only done as a vent for feelings which they cannot control. Your ostler, however, who seldom handles an animal of this stamp, sees broken ribs and legs in every kick; and, unless you stand by and assure him your horse, with gentle usage, will not kick him, either bullies him and knocks him about 'to make him quiet,' or leaves him to dry as he best may. Having, then, superintended the cleaning of your horse, water him moderately if perfectly cool, and give him about a quartern and a half of corn and beans, not more on any account, for that would only distend his stomach, and do him harm: then leave him to himself for a couple of hours ere you resume your journey. I confess I am one of those who never could admire the feats that are occasionally recorded, of riding and driving horses enormous distances in the course of the day, and that, too, in a short space of time. A journey of forty or fifty miles *per diem* is as much as any humane man, fond of his horse, ought to perform. Let those who choose to go double the distance boast of their exploits in this way if they please; to my mind it is anything but creditable to them: and I can never forbear the thought that with respect to horse-flesh they are as ignorant as they are cruel.

"While a horse has any work to be done during the day, he should not be allowed any hay; and if fed four times, the extra half-quartern allowed him will make up for any deficiency in this article of diet. At night let his feet be stopped, and all the other rules which I have laid down for his comfort be attended to. It is a very bad plan so to divide your work as to complete the last stage at night. Always, if possible, let your horse be housed early, that he may have plenty of time to rest before his next day's work: and this also will give you an opportunity of looking to him oftener than you otherwise could, and of having cloths properly aired for him, if, as is frequently the case, you find the ostler prepared with a set that has been put on another horse *because he was wet*, and that are now destined for your horse because *they* are wet, and require to be dried. At almost all inn-stables a horse's back is the drying ground for damp cloths, but it will be your own fault if you suffer your hack to be used for this purpose. The main point is to endeavour to obtain for your horse as much care and as many comforts as he would experience in your own stables. If he be distressed, you may give him gruel; but no hack in good condition ever ought to be too severely pushed. It is only in the chase that this may happen occasionally; for the man who has time enough, as he may have by starting early, to go a certain distance with a horse well prepared for work,—and no other should be used,—must ride him very unfairly or very injudiciously if he require nursing instead of taking solid food."

In travelling the road, the vices and defects usually met with in saddle-horses are set forth in a preceding chapter (Vices on the Road). The *defect* of Stumbling, here finds its place. Mr. Bingley says on this subject: "There is a mode of keeping our present roads in order which is called 'darning.' It is effected by filling up a part somewhat lower than the general surface by broken pieces of granite, left to be crushed by the wheels of carriages, while the old smooth road forms the general surface. The substratum of ground is not picked up, but is left hard, and four or five-cornered pieces of stone are left to be trodden on by the first or any horse that is obliged to go over them. The hardness of the under surface prevents their sinking with any weight on them, so a horse might as well tread on an iron peg fixed and left an inch or two high. Let the rider, above all abominations as to ground, avoid a piece that has been thus 'darned;' for unless the sole of his horse's foot is as hard as the granite itself, the chances are, if he is not exceedingly on the alert and quick on his legs, that he comes on his nose, though on all other occasions as safe as a cat on a carpet. Not to wince from the pain the pressure on such a surface occasions, is impossible; and if after doing so he keeps on his legs, all the credit he gets is being accused of having made a stumble; and perhaps a blow is the reward he gets for his activity in not, as a dull horse would have done, coming down headlong.

"One of these 'darned' roads led, while I and a friend were out together, to a conversation on stumbling. On his horse making a false step, he gave him a stroke with his stick, and in a somewhat stentorian voice bid him 'hold up.' Whether my friend did this to show how resolute a horseman he had become, and his proficiency in stable terms, or thought that what he did would prevent his horse wincing when hurt, I know not; but it set him curvetting about in a way that would insure his not being struck while he continued doing so; for my friend had occasion for all the hands he had for his bridle, and would have wanted a third if he wished to strike his horse.

"Let the rider call to his reflection the causes of stumbling," says our author, "he will then judge how far correction will remedy these. The usual causes are infirmity, peculiar formation, gait, indolence, and bad roads.

"If he blunders from weakness or infirmity, a blow with the stick will not render the infirmity less. Keeping such a horse a little on his mettle will in many cases make him go safely to a certain extent,—that is, it may, by preventing him dwelling long on either weak limb, also prevent it giving way under the weight imposed on it; but hitting him when it has so given way as to cause a stumble, cannot recall the stumble, but will very probably increase its effects.

"If blundering arises from malformation, no stick or spurs, apply them when you will, can alter that; and if from malformation the horse cannot put his foot fairly on the ground, blunder he will and must; he cannot help it,—so how can correction do any good in this case?

"When arising from gait, correction with the whip or stick, when he stumbles, will not alter gait; but the hands, with the whip and spurs as aids, may, if properly used when he is not stumbling. Correcting the cause may do a great deal of good; but correcting, or rather punishing, the animal, will not prevent or remedy the effect, which is stumbling.

"Should he blunder from sheer indolence, correct the indolence as much as you please. If he will not be roused to energy, or, at all events, to quick motions by a switch, lay a tough ash plant about him; and if a touch of the spurs will not stimulate, give him a pair of good new rowels, and they will, by making so lazy a brute move more quickly, make him move more safely. We often find unsafe horses tolerably the reverse in their fast paces. Why is this? If we make a lazy horse trot three miles in twelve or fifteen minutes, he must move his legs quickly; this causes such horses going more safely in fast paces. If they would also step quickly in their slower paces, they would be safe in them. If a horse will walk cheerfully four miles and a half an hour, we generally find him as safe in a walk as a trot. The lazy horse has not energy enough to do this, nor are pains enough taken with him in his walk to make him do it; he must, when the whip and spurs force him into a fast trot. But no longer pipe, no longer dance; and as these cease so soon as he is allowed to walk, all his energy ceases also, and then he blunders again,—and so he will as long as he is a horse.

"There is yet another and very frequent cause for a horse tripping, blundering, or even falling—which is fatigue. In this case, striking him for doing what he cannot avoid, is absolute cruelty and injustice, and done, as on all other occasions, when he has tripped or blundered, is perfectly useless. No doubt the whip and spur, plied when he is not blundering, force the poor brute to increased action, and from that probably prevent his tripping as often as he might otherwise do; but to ride a willing, good horse till he requires this, is so unjustifiable, that if I knew anything that would save such a rider a severe fall, I should glory in concealing it from him.

"Tripping is a habit or fault common to multitudes of horses who are nevertheless perfectly safe. It usually arises from striking the toe against some surface; and a horse well on his haunches may do this *ad infinitum* without once being in danger of coming down. He would, naturally enough, alarm a person not used to ride him, for he would not know how far it might go; and even supposing a stranger to be riding such a horse in company with his master, though the latter might say, 'Don't pull him about,—he is quite safe,' a man must be an experienced horseman, a good judge of what is or is not unsafe, and must also have a good opinion of the owner's judgment, to feel confidence on such a horse.

"The rider may be quite sure that a horse of any spirit has as great an objection to falling as his rider has to his doing so; and the quick way in which such horses catch themselves up, if they make a mistake or unavoidable stumble, shows that such is the case. Now a trip merely occasions a horse to bring the foot that he has not tripped with sooner to the ground than he would have done had he carried the tripping foot forward to its regular length of step, be that more or less;—something has stopped it in its progress, so instead of putting it forward, say fourteen inches, it is stopped at ten. This produces a somewhat unpleasant sensation to the rider, and an unequal step in the horse. This is a trip. If the horse is light and airy, he catches himself up; and, as the more spirited he is, the more quickly and energetically will he do so, this very often leads an inexperienced horseman into the belief that he has narrowly escaped a most serious fall, when, in fact, it is only the spirit and activity of the horse that have induced him to make a considerable effort to remedy a very inconsiderable mistake, and one that a more indolent horse, not noticing himself, would scarcely have been noticed by the rider. It will therefore be clear that, with a horse who has spirit enough to do of his own accord all that we could make or wish him to do if he does make a trip, any check on his mouth would only confuse him, and could do no possible good; and if a horse happens to be at all 'a loose-necked one,'—that is, one inclined to throw up his head on any strong pull on his mouth,—we can do no good by checking such a horse, however bad a blunder he may make; but by doing so the rider would run great risk of bringing his horse's head in contact with his own.

"I have generally found (singular as the assertion may at first appear to the reader) that very light-hearted, cheerful horses are more apt to make trifling mistakes, or trips, than more steady and methodical steppers; and the reason they may do so I take to be this—such horses are constantly looking about them; the least thing attracts their attention; and if that is fixed on different objects, it is called from looking at the road, or where they are going; so they come in contact with inequalities, stones, and so forth, on the ground, that the more staid, sober, and plodding goer carefully avoids."

The "Speedy-Cut," or the horse cutting himself from faulty action, is a serious defect. It is sometimes occasioned by over-reaching the forelegs with the hinder toes, at others, by turning the toes much out, cutting the inside of the opposite foot. Indolence, or a long loose leg, produces this slovenly style of going, for which one remedy is to "get hold of his head," and make him trot briskly. We have seen this, *mirabile dictu*, alter a horse's style of "handling his legs."

It is sometimes difficult to decide with what part of the hoof or shoe the horse strikes the standing leg. A little careful observation will decide this. The method is "Harry Hieover's,"—*palmam qui meruit ferat.* The original letter was in *The Field* newspaper, from which we have condensed its contents.

Take the horse into some clean place—a hard dry

road is the best; smear his hoof and shoe with a little white paint if the legs are black, with black paint if of any other colour. Cause him to be walked for a quarter of an hour; if he has struck, or even brushed either leg, the paint will be disturbed or wiped off from the precise part he hits with, and it will further show (in cases where he does not actually cut) the spot he hits, for on it the paint rubbed off the other leg will be visible. If during his walk the paint remains undisturbed, we may fairly infer it is not in that pace he hits his legs. Trot him; if he hits, you will see where the offending leg has struck, and where the struck one is hit. As in his walk, if the paint remains as it was put on, we must infer it is in his canter or gallop that the collision takes place. Having ascertained this most indispensable fact, we must then endeavour to prevent it, or, at least, palliate its effects.

People attach a far greater degree of inevitable danger and likelihood to horses coming down from cutting than —objectionable as the failing is—is absolutely the case. When the horse cuts or hits his leg, the pain occasioned by it causes him to wince, falter, and, indeed, I have seen a horse go a step or two after the occurrence, absolutely on three legs; but the fear of falling is greater than the pain of the hit leg, and he mostly saves himself. This is when he cuts or hits his ankle only. But if he hits just below the inside of the knee, which he never does but in a quick pace, he will then sometimes come down as if shot. This is appropriately called "speedy cutting"—the worst and most dangerous failing among all cutting, and one that is incurable, for this reason: it proceeds from a particular direction of the offending leg when in action, which not once in a hundred cases can be altered. We have no resource but defending the part hit by a proper boot or legging for this express purpose, a most inconvenient and unsightly thing at best, and, moreover, all but certain to gall and chafe the leg to which it is applied. Put the horse to a description of work where the pace in which he is apt to cut is not required.

Cutting or hitting the hind legs is, of course, far less objectionable than the same failing as regards the fore ones, not alone from its not subjecting the rider to danger, but the hind parts being lighter than the fore ones, we can take greater liberties with the hind legs as regards shoeing, and can throw them by such means more out of their natural position than we can the fore ones, and still interfere but little with the horse's power, action, or safety.

Horses are decidedly more apt to cut behind than before when in harness, and *vice versâ* when under the saddle. Much may be done towards preventing cutting by judicious shoeing; but this is not always to be trusted to. We only prevent by this the sharp edge of the shoe coming in contact with the standing leg, which would otherwise be wounded by it. There are many horses that would still hit if they had no shoes on them. It is the position in which the standing leg is placed by nature, and the direction of the moving or passing leg, that produces the failing. We cannot alter nature; we can only bring art to remedy, to a certain degree, the natural defect.

Smiths are very apt, on being told or seeing that a horse cuts, to shoe him, as it is termed, "thick-heeled" on the inside, or to make his shoe altogether thicker on the inside than the out. They tell you that by this mode they turn or twist the ankle further out of the way of the passing leg. They do; but they are not aware that if they do remove the ankle of the standing leg—say an inch further out of the way—they bring by this method the passing leg three inches nearer the standing one.

Our author proceeds to tell us of the success of an exactly opposite practice. He had a horse with this failing shod with a shoe thick on the outside. This did not remove the standing leg further out of the way, but gave the passing one a direction far away from the one it formerly struck. It succeeded, and three or four other horses that cut in the same way, were shod with similar beneficial results.

We doubt if this plan would have any efficiency in the case of cutting by the hinder foot.

To the above gossipping but sound remarks of "Harry Hieover" we may add that the remedy of making a shoe with a narrower web on the inside, so as to leave a portion of the sole overhanging, is merely temporary in its effects. When the cutting or "interference" is from a defect of structure, the cure is only apparent. When on wet roads, you will quickly find that the portion unprotected by the iron will be worn and spread, and that rawness will ensue.

If you suspect inflammation in the foot, a simple plan may detect its presence. Wet the hoofs thoroughly, and watch whether the suspected foot does not dry more rapidly than the others. If there is inflammation, the affected foot will always dry first, and resume its unnatural warmth in a few minutes; the sound foot will dry cool. Should a disposition to rest the heated foot be observed, let it be carefully looked to. Never neglect stopping the feet every night. Clay and cow-dung is the readiest and most generally available substance. We have already spoken of the expediency of giving gruel or bran mash to the tired horse; but occasionally, if the animal has been too severely taxed, cordials may be administered with advantage. Should your animal exhibit signs of being "done up" by exertion, do not hesitate to give him half a bottle of good sherry; but this certainly would be wrong after any of the inflammatory symptoms of a chill have shown themselves. In that case prompt and free bleeding only can save the horse, and any cordial is decidedly injurious. The state of the pulse will usually indicate the existence of inflammatory action. It is necessary to inform the inexperienced, that the only place where the pulse can be felt to advantage, so as to discriminate the sensation with accuracy, is under the jaw, where the submaxillary artery can be pressed against the bone. As the position of this artery is only known with certainty by the anatomist, it may guide the touch to direct the finger along

the inside jaw, a little above the edge where it begins to decline downwards, gently pressing it against the jaw till the pulsation is felt. By doing this two or three times, any man will soon discover the exact spot where he should feel for the pulsation. In a healthy horse, the intervals should be about forty or fifty per minute. When it exceeds this by ten or twelve pulsations, the horse is not well; but the circulation may be momentarily accelerated even to that extent, by sudden alarm; it is, therefore, expedient to approach the horse quietly, and to caress him for a minute or two first, if he shrinks from approach. If the pulse exceeds sixty, prompt and skilled attention is required.

It often happens, however, that no veterinary aid is at hand, or only a groom who knows no more of his business than the horse itself. In such cases all that can be done is to observe some obvious principles, which, at all events, can do but little harm. If the horse betrays great pain, and especially a difficulty of breathing, copious bleeding should be resorted to without delay, and it is far better to bleed once very freely, than several times at intervals. Inflammatory action is often arrested by bleeding largely in the first instance; and when once arrested, all the distressing symptoms are speedily relieved; but so rapid is the secretion of the blood, especially in inflammatory disease, that four or five times the quantity abstracted, if taken away in several successive operations, will produce little or no effect compared with the loss of four or five quarts at one time. It may safely be assumed that wherever acute pain is indicated, inflammation obtains; and as the symptoms of pain are very unequivocal in a horse, an easy guide is thus given as to the necessity of bleeding.

If febrile symptoms appear, the same step may be taken, but not to the same extent. The symptoms of fever are not characteristic of pain, though the breathing is often affected. In a febrile affection the horse is languid, his coat loses its even, glossy appearance, and becomes what the grooms call "staring;" the legs and feet are cold, and the appetite is gone; the bowels are usually confined, and the general look of the horse is what one would describe as miserable rather than restless and uneasy. In such cases we should recommend frequent, but not copious, bleeding, and the bowels should be opened by purgative medicine; two drachms of aloes is a sufficient dose, to be repeated every ten or twelve hours, and if they fail to operate, a clyster would probably prove of service; the stable should be cool, and the horse kept warm by extra clothing. His legs should be well rubbed, and bandaged with flannel rollers.

Whenever the severe symptoms, whether of inflammation or fever, are subdued, anxious attention should be given to the horse's diet. Gruel and bran mashes will keep the bowels slightly relaxed, and should be continued till he shows signs of returning appetite; but some time should be suffered to elapse before he is indulged with his usual food.

It is no uncommon thing for the owner to abandon the case as hopeless when he sees his horse spontaneously lying down. This is a great mistake; a horse in great pain will lie down and roll himself about; but, unless to relieve himself, where the legs or feet are injured, a horse that is ill will continue standing as long as his strength will permit; it is considered a favourable sign if he lies down on the litter without being compelled by actual debility; and it follows, of course, that instead of relaxing exertion, all the remedies should be pursued more actively to save him.

In cases of recent local injury, fomentations, poultices, and local bleeding, are generally serviceable; this is particularly the case in strains of the back sinews or accidents to the foot. It is very important in such cases to watch closely the operations of the country farrier. Fomentations, and even poultices, are troublesome, and therefore not continued, even if first adopted. To a recent wound in shoeing or treading on a nail, Friar's balsam may be usefully applied; but where the wound is severe, this or any stimulant will increase the inflammation to a mischievous extent. The horn (if the wound is in the foot) should be pared away, and the place poulticed. Lameness occurring soon after shoeing should always excite a suspicion that the sensible sole has been pricked, and in such a case it is obviously impolitic to consult the smith by whom the horse was shod. In applying a poultice, it is a common practice to tie it tightly round the foot or leg with strings. This is injurious; a worsted stocking is a very convenient bag, and may easily be kept on by applying another stocking to the other foot, and passing a roller over the withers to connect the two. Any tight ligature round the leg is injudicious, if it can be avoided.

Where any place is galled or swelled by the saddle or the harness, fomentation is the best of all remedies; should any abscess be formed, it should be opened and kept open by a seton, till the matter is entirely discharged. A kick or a bruise should receive the same treatment, if the contusion is considerable; and especially in the case of broken knees In this case a horse is often more blemished by the treatment than by the accident itself. If the joint is much injured, a cure is generally hopeless; it would be more humane, as well as more prudent, to destroy the animal at once. But if the wound does not affect the joint (and on this point the farrier alone can give certain information), it should be carefully and tenderly washed out with a sponge and warm water, and then poulticed for two or three days; after this the inflammation will probably have subsided, and ointment should be applied—not gunpowder and grease—every country blockhead recommends this, to promote the growth of the hair; it has no such effect, on the contrary it often irritates and retards the cure of the wound. Lard alone, or with a little mixture of alum, will be much better; care, however, should be taken to apply the ointment in the direction of the hair, otherwise, when the cure is effected, the hair will grow in an uneven or reverted form, and will make the blemish more apparent.

In all cases of strains, local bleeding and rest are indis-

pensable. Where the back sinews are affected, rest can only be secured by a high-heeled shoe: after all inflammation has disappeared, absolute rest, even for a considerable time, is requisite to a cure. If the part is enlarged, stimulating lotions, such as hartshorn and oil in equal proportions, and even blistering, may be beneficially applied. This, of course, is incompatible with continuing work. Indeed, some strains, accompanied as they often are by a fracture of some ligament, seldom admit of a permanent cure. In the early stages, an emollient poultice of linseed and bran should be applied to strains of the leg, whatever part of it may be injured, and the horse's diet should be changed. If by this treatment the horse apparently recovers the use of the limb without pain, the high-heeled shoe may be removed, but he should not be put to work for some weeks; he should be turned into a loose box, or straw yard, and indeed this should be done in every serious case of local injury or internal disease.

Let it borne in mind, that these general hints are not intended to supersede the calling in of a qualified veterinary surgeon, but in order that, in extreme cases, an intelligent promptitude in the horseman or rider may take the place of helpless inactivity.

We will now say a few words respecting the treatment of Broken Knees, an accident which may occur at almost any moment, and which requires immediate attention. The first thing to be done is carefully to wash away with a soft sponge and warm water every particle of sand or gravel which may have insinuated itself into the wound, of which you will then be better enabled to ascertain the depth. It occasionally will happen in a very severe fall, that the capsule of the joint is lacerated, and in this case an effusion of a limpid and somewhat glutinous liquid, called "synovia" or "joint-oil," will take place. This may not be very perceptible at first, particularly if the opening into the joint be small; but so soon as your attention is directed to it, you should lose no time in sending for the best veterinary surgeon within reach, as you will scarcely be able to manage the case by yourself. Where the laceration of the capsule is extensive, the probability is that the subsequent inflammation will ultimately produce abscess, ulceration of the cartilages of the joint, and, if the horse live long enough, destruction of the bones which compose it. But should the opening into the joint be small, the object you must keep in view is to preserve it accurately closed until nature shall have had sufficient time to effect its union by granulations. For this purpose a heated iron, of proper dimensions, is usually employed, and the edges of the opening being cauterised, the eschar thus formed and the subsequent swelling contribute to close the opening for some days.

When the capsule of the joint is uninjured, and the flap of skin which covered the wounded part still remains, some veterinary surgeons have recommended that it be cut off, and the wound dressed with friar's balsam, which is a strong stimulant. This treatment can scarcely be vindicated by sound judgment. We should advise to lay the flap down as neatly as possible, and retain it in its proper position by a single point of suture at its least supported part, where the cut portion was large and but loosely attached, or by strips of adhesive plaster, together with a compress and bandage. These latter keep constantly wetted with goulard lotion.

Where the skin is entirely removed, the best application, after fomentations with hot water, is a soft and warm linseed-meal poultice, which should be removed every four hours until the inflammation subsides. You may also, in every case, give a gentle dose of physic, and no other food for the first few days than bran-mashes and hay.

When the inflammation has been subdued, and granulations appear, apply strips of adhesive plaster, neatly one over the other, so as to make some pressure on the wound, and bandage the leg very carefully with a linen bandage from above the knee to the coronet. Several stimulating applications may be requisite during different stages of the cure, among which Friars' balsam and nitrate of silver lotions, varying in strength according to the state of the parts, are perhaps as good as any.

Whether the wound have penetrated to the joint or not, and whether the skin be hanging to the wound or cut off, in every instance of broken knees, apply a splint of wood, of the whole length of the leg, to the back of the limb, and confine it by a bandage. This a precaution unattended to by many veterinary surgeons; but, as it prevents the injured part from being bent or moved, should never be omitted; for the quieter the state of the wounded limb, the less will be the consequent inflammation, and the speedier the cure. Where the injury is great, the splint should be kept on for at least six-and-thirty hours without removal.

Cold lotions and warm poultices have been mentioned as applicable to different degrees of broken knees. Poultices rather tend to hasten the process of suppuration, without a slight quantity of which, granulations will not be formed. They are therefore to be used where there is no flap of skin left. But if you wish to effect immediate union of the cut parts, which should always be attempted when practicable, suppuration is not to be promoted, and therefore cold lotions are preferable. It requires great care and nicety so to apply strips of plaster and bandages as to prevent the swelling so often consequent on a bad broken knee, and which blisters and stimulants nine times out of ten fail to reduce.

Farriers will tell you that the common adhesive plaster will not do for a horse, and would fain induce you to use slips of leather covered with pitch; but where your plaster perfectly encircles the wounded part, as the knee-joint, and is cut sufficiently long, one end overlaps the other, and consequently it adheres to itself. Where this is not the case the hair will prevent it from sticking.

Inflammation of the Eye sometimes makes its appearance suddenly, either from irritating substances, as hay, seeds, &c., making their way into it, or from blows with a brush while

cleaning the head, or a rap with a stick from a brutal groom, who is in the habit of striking a horse over the head while riding him, and perhaps accidentally hits the eye by the sudden shifting of the horse's head when he expects a blow there. We have seen a very severe injury of the eye, where it presented the appearance of a mass of blood, from this very cause.

In this case you must bleed from the vein running just below the eye, and which is usually very easily distinguished, and give physic and bran-mashes. Cold lotions of goulard water are to be constantly applied to the eye, and the stable to be darkened while the inflammation is excessive. When this is reduced, and the membrane of the eye still remains clouded, you may inject night and morning with a syringe a weak solution of nitrate of silver, beginning with four grains to an ounce of distilled water, and gradually increasing its strength as the eye appears to improve under its application. A little speck will frequently remain on the membrane which cannot be removed. Indeed it is occasioned by the abrasion at the moment of injury of this most delicate part.

Greasy Heels you will have few opportunities of treating if you follow the advice given under the head of Stable Management. They are most frequently occasioned by washing the legs with cold water while they are heated from exercise, and suffering them afterwards to dry; the consequent reaction after the application of cold being excessive, and running into inflammation. Nature then seeks to relieve the gorged vessels by a discharge of ichorous matter from the inflamed part. Bringing a horse into a hot stable in the winter, when his legs are chilled with standing some time, perhaps in the snow, will produce a similar effect. These ills are easily to be avoided with a little careful supervision: by accustoming your groom to pay particular attention to rubbing the heels dry at all times, and keeping them perfectly clean.

When the disease has appeared, all causes inducing it must be avoided; and of these we may mention draughts of air blowing upon a horse from behind; and if the pain and heat of the part be great, warm and soft poultices must be applied in the first instance.

As soon as stimulating remedies are applicable, you can use nothing better or cleaner than a solution of nitrate of silver in distilled water, beginning with eight or ten grains to the ounce. Sometimes, however, the diseased parts will require a change of stimulants, and you may then apply a solution of blue-stone in a strong decoction of oak bark. A stick of nitrate of silver or lunar caustic may be lightly passed over the cracked part occasionally with great advantage. But there is one circumstance which, although in every case neglected, you must not overlook. The motion of the diseased part must, as much as possible, be controlled. Every time the horse bends the fetlock-joint, he disturbs the process of nature in effecting a cure; and as it is necessary to prevent the crack in the heel from being disturbed, you will find that any moderately soft substance, as bees' wax or putty, placed over and close to the diseased part, will, by taking its form and accurately making pressure upon each portion of it, materially conduce to the cure. It must be applied directly after the lotions recommended, and must not only be kept on by a neatly-applied bandage, but the hollow in the back part of the fetlock-joint must also be previously filled up by a pad of tow, or some other soft substance, in order that the joint may thereby be rendered less capable of motion.

The heels being the farthest removed from the heart, the circulation of the blood in them is less active and vigorous than elsewhere, and consequently their restoration to a healthy state is achieved with more than usual difficulty. Some horses that have cracked heels are in too high condition, while others in a debilitated state are equally or perhaps more prone to the same disease. These different states of body of course require opposite constitutional treatment; the first demanding low diet with purgatives and diuretics; the second, generous food with tonics.

Of all the preventives of grease there is none—setting aside the avoidance of those causes already mentioned as conducing to the disease—so effective in its operation as bandaging the legs regularly with flannel rollers. We advocate their employment at most times in the stable, as they materially tend to fine the legs when properly applied, and also, when not put on too tightly, evidently keep up the circulation in the extremities, a point of much consequence.

Those who are not shown the proper method of applying a bandage, generally do more harm than good with them. We do not in the least exaggerate when we say that we never yet knew a groom who could put on a bandage as it should be. They fail about the pasterns and fetlocks, and leave the bandage there loose and bagging, so that, when pressure is requisite, the circulation between the pastern-joint and the foot is impeded, and the latter will be found cold, and the part between the coronet and fetlock perhaps somewhat swollen.

Bandages, to be neatly applied, should not be so wide as grooms generally make them. You will hardly be able to put them on properly if of more than four inches in width. Begin by applying your roller just under the knee, pass it round in rather a slanting direction, keeping your finger on the extremity until you find it has taken firm hold of the limb; then let each turn of the bandage cover one half of that above it, taking care so to direct it that its under edge does not bag, but lies closely on the leg. When you come to the hollow behind the pastern, the bandage must be half folded on itself, so that what was its upper border shall be undermost, and this must be repeated whenever it cannot be otherwise made to lie smoothly and closely to the leg.

By bandaging from above downwards, you in a great measure avoid leaving any marks of the roller on the hair. In the veterinary portion of the present work, will be found engravings of the various kinds of bandagings and their applications by the professional man. An eye-acquaintance

with these will enable the proprietor of an animal to judge of the manual competence of farriers or grooms who may pretend in an emergency to understand the best modes of applying them.

We here close the treatment of some of those accidents and diseases which will occasionally call for our attention; repeating, what cannot be too strongly impressed upon the reader, that the intention here is merely to notice such cases as will every now and then occur in every stable, and which call for immediate remedy. Those who would go more deeply into the subject here touched on, may proceed with advantage to the studious perusal of the Second Division of the work, and make themselves masters of the principles on which the treatment of disease is founded. This will be found the best safeguard against being imposed upon by the ignorance of a country smith, or the officiousness of a would-be-learned groom, who deems nothing easier than the cure of all diseases of the horse; taking the old saying of "as strong as a horse" as his authority for essaying upon his unfortunate carcase every kind of dose of every sort of medicine which it pleases his conceit or his ignorance to assume that he must require.

It is a difficult thing to treat the simplest form of disease on really scientific principles, as experience is constantly demonstrating the errors of our previous practice; but it is by no means an arduous task to acquire that degree of knowledge which will enable us to strip ignorance of its cloak, and confound the empiric who is incapable of assigning a good reason for his plan of treatment.

We here close the general, the historic, and the preceptive division. What follows will be more strictly of a medical, scientific, and practically surgical character.

DIVISION II.

A COMPENDIUM OF VETERINARY KNOWLEDGE.

THE STRUCTURE AND ANATOMY OF THE HORSE.

CHAPTER XVII.

THE BONY STRUCTURE.—COMPONENTS OF BONE.—GROWTH OF BONE.—THE SKELETON.—BONES OF THE HEAD.—THE SPINAL VERTEBRÆ.—THE RIBS.—THE STERNUM.—BONES OF THE FORELEGS AND FEET:—THE SCAPULA, HUMERUS, RADIUS, ULNA, CARPUS, METACARPUS, PASTERN, LOWER PASTERN, SESAMOIDS, CORONARY AND COFFIN BONES, THE NAVICULAR BONE.—BONES OF THE HINDER EXTREMITIES:—THE FEMUR, PATELLA, TIBIA, FIBULA, AND TARSUS.—PERIOSTEUM.—MEDULLA (MARROW).—SYNOVIA.—CARTILAGES.—LIGAMENTS.

Bones form the framework and support of the animal machine, give it dimension and figure, preserve the situation of the several viscera of the brain, chest, and stomach, afford fixed points for the attachment of ligaments, and act as levers in the various movements of the body and limbs. Bones are the hardest, and, in health, the most insensible substances of the body. Bone is chemically composed of phosphate of lime, fluate and carbonate of lime, soda, magnesia, and a small proportion of common salt, and in the full-grown animal contains about 33 per cent. of cartilage (gelatine and membrane), with the earths above mentioned. The bones of the horse are much harder, and proportionately much stronger, than those of man. They are covered by a skin called the *periosteum* (bone-surrounder); it is highly sensible when diseased, white after death, red in the living animal. This membrane appears to be first formed in the fœtus, and within it a gelatinous fluid, afterwards becoming cartilage, is deposited. This becomes vascular (containing vessels), and these pour out the earthy matters eliminated from the blood, until the bone is consolidated. This consolidating process is not entirely completed till full growth is attained, and those bones most indispensable to the functions of life are the earliest formed. The earthy matter of the bones is continually changing, being carried off by the absorbents, while the arteries deposit it. The stimulus of the circulatory system in the higher-bred horse thus leads to the deposit of a more solid and harder quality of bone than in the heavier and lower breeds. The cylindrical bones are hollow and contain medulla (marrow), and a sheathing membrane called the medullary membrane. These cavities lighten the bones without detracting from their strength, and are most remarkable in birds. The marrow was long thought to *nourish* the bones: this is an error; it is a mere store of superabundant fatty matter. Though furnished with bloodvessels for nutriment, and nerves, bones possess little sensibility in health; but in an inflamed state they are acutely tender. The bones are variously articulated (jointed) with each other: by cup and ball; by furrowed surfaces forming, as in the small bones, *phalanges*, which are hinged, bound firmly together by ligament and cartilage; or fixed closely into each other by notches, ridges, teeth, or spines, forming *sutures* (seams). An examination of the plates, The Skeleton (Plate I.), and The Head (Plate V.), will exhibit these jointings of bones. The following description of the bony, muscular, and internal structure of the Horse, will be found calculated to assist and elucidate the figures and page references, printed to accompany each of the Anatomical Plates of the present work.

The bony structure we shall divide into nine sections.

§ I. BONES OF THE HEAD.

The Skull (cranium), which contains and defends the brain, consists of twelve bones; four pairs (eight), and four single bones. These are, two *frontal* (forehead) bones; two pairs of *temporal* (temple) bones, distinguished as the *squamous* (scaly), and the *petrous* (hard—stony) *temporals;*

and two *parietal* (wall) bones; the single bones are the *occipital* (hind part of the head) bone; the *ethmoid* (Gr. sieve-like) bone; the *sphenoid* (Gr. wedge-like); and the *os triquetrum* (Lat. triangular bone).

The *frontal* bones (two), form the arches of the orbits of the eyes. The arch is pierced by the supra-orbital foramen, and there is a hollow below for the *lachrymal* (tear) *gland*. The frontal bone in the horse also forms half of the lateral foramen of the nose, and enters into the framing of the top of the nose. Internally, one part of the face belongs to the nose, the other to the skull. The outer and inner plates of bone separate, and thus form the *frontal sinuses*. These are strengthened by little bony pillars between the plates of the forehead.

The *orbits* in the horse are merely bony rings, one on each side, not perfect cups as in man.

The *squamous temporal* bones (a pair) are in front of the petrous temporal. The projecting pieces on their outer sides are called the *zygomatic* (Gr. *zygos*, a yoke) processes. On the under edges are the cavities for articulating with the lower jaw.

The *petrous temporal* (a pair). These are the hardest bones in the whole body. A canal in these is the *meatus auditorius*, or opening to the internal ear, and along its bottom during life is stretched a fine membrane. The *os hyoides* of the tongue has its large horn attached to the internal side of this bone.

The two *parietal* (wall) bones are placed at the sides of the skull. They are smooth and convex on the outside, and are covered well by the temporal muscles. On the inside they are concave, and furrowed for receiving the arteries of the brain.

The *occipital*, the first of the single bones, is proportionately much smaller in the horse than in man, the greater bulk of the horse's head lying forward. At the back of the occiput is the large hole (*foramen magnum*) of the skull. On each side of the *foramen magnum* is a projecting smooth bony process called the *condyles*, which form a joint with the atlas.

The *ethmoid*, a single bone, is somewhat concealed in a view of the bones; it has on its wings holes called the optic and nasal foramina. Towards the nose two fine flat pieces of bone are pierced with numerous apertures, and are called the *cribriform* (Lat., *cribrum*, a sieve) plates; these give passage to the nerves of smell.

The *sphenoid* bone has been often compared to a bird,—two wings, a body, and two legs, but the head is wanting. It has sinuses and holes for numerous nerves, the superior maxillary, the optic, the third pair, and the orbital, supra-orbital, and maxillary arteries.

The *os triquetrum*, the last of the single bones, is angular; smooth on its outer surface, but indented inside for various nerves. It joins the occipital bone and lies before it. It has a projection which is called the *tentorium*, dividing the *cerebrum*, or larger brain, from the smaller, or *cerebellum*.

The lower, or hinder part of the head consists of a single bone, the lower jaw (inferior maxillary). The head is divided by anatomists into two parts, the skull and the face.

The bones of the skull, as we have said, are joined together by indented seams, called *sutures*. This kind of junction is owing to the manner in which ossification takes place in these bones; for in the fœtus the bones of the skull are perfectly distinct from each other, and thus calculated to allow the growth of the brain they enclose. The ossification begins in the middle of each bone, and proceeds gradually to the circumference. Hence this process, and of course the increase of the head, is carried on from a great number of points at the same time, until the growing edges of the bones meet, when the projecting fibres of one bone force themselves between those of the opposite bone, and constitute that indented line which we perceive on most skulls.

The skull of a horse is much smaller than that of a man, its capacity for containing brain being not one-fourth as great; but the bones which compose it are thicker and stronger than those of the human subject, and consequently better able to resist blows and other accidents.

The Bones of the Face.—The face consists of nine pairs of bones and two single ones. These are inter-maxillary (2), supra-maxillary (2), nasal (nose) bones (2), lachrymal (2), malar (2), palatine (2), pterygoid (2), inferior turbinated (2), superior turbinated (2) = 9 pairs, or 18 bones. The single bones are the vomer and the lower jaw, already mentioned, making 20 in all. Of these bones we may remark—that the two nasal are very unlike those of the human subject, being of a wedge-like figure, sharp below and broad above. They also differ from those of the human face; they are considerably larger, for increasing the capacity of the organ of smell, which is much more acute in the horse than in man.

The *lachrymal* bones are situated at the inner sides of the orbits, which they help to compose. Each of these bones has an opening through it for the passage of the tears.

The *malar* (cheek) *bones* are each connected in the orbit to the lachrymal bone just described, and to the superior maxillary; and its zygomatic (Gr., yoke-shaped) process bends over to join that of the temporal bone, and form the bony arch of the cheek.

The *superior maxillary* bones form, along with the malar bones, the ridge which is observable on the cheek of the living subject, and are connected with most of the other bones of the face.

The *inferior maxillaries* are connected, on the upper edge, in a curious manner to the superior maxillaries and nasal bones. They help to complete the bony palate, and afford sockets for some of the teeth. They are separate in the young animal, but completely joined in the adult.

The *palatine bones* are situated uppermost of the bony palate, and are connected to the superior maxillaries, vomer, sphenoid, and ethmoid bones.

The *vomer* (Lat., ploughshare) or share-bone, differs

much from the human vomer, being much longer in the horse; it is concave anteriorly, for the insertion of the cartilage (septum) which divides the nose.

The Lower Jaw differs from the upper in this, that the former is movable, being articulated at each extremity with the temporal bone of that side.

In young animals it is divided between the fore teeth, so that the bones may be easily parted. This bone affords sockets for the lower teeth.

§ II. BONES OF THE NECK (CERVIX).

The Neck consists of the *atlas dentata* and the seven cervical vertebræ. This number, seven, is the same in animals with the longest or the shortest necks. The number of bones which form other divisions of the back are not uniform. The tail, for instance, varies from thirteen to eighteen bones.

We may here note that the spine, which here begins, consists of 7 cervical (neck), 18 dorsal (back), 6 lumbar (loin), 5 sacral (rump), and ordinarily 13 caudal (tail) vertebræ, forming, in the whole, what is termed the spine.

The neck-bones are the largest of the spinal chain, but have not the upper projections; but on each side are considerable prominences, at the base of which is seen a hole (foramen) for the passage of the vertebral arteries and veins. The bones of the neck are strongly united by capsular ligaments, articular cartilages, and all the usual appendages of a joint. Each vertebra has a round head and a corresponding cavity below, to receive the next, so that dislocation of the horse's neck cannot easily take place; when it does, the animal dies from compression of the spinal marrow, and is said to have "broken his neck."

§ III. THE BONES OF THE CHEST (THORAX).

These include the *sternum* (breastbone); *costæ* (true ribs), and the five first *vertebræ* of the back.

The *breastbone* is composed of several pieces of bone, embedded in cartilage. To it are attached the lowermost ends of the ribs. It is called the cariniform bone, from its resemblance to the keel of a ship. Its hinder part is spread out like the tail of a fish.

The *ribs* (costæ) are narrow half-rounded pieces of bone jointed above to the backbone, below to the breastbone They are not, however, bone throughout, the lower portions are formed of cartilage. The eight first ribs are called "true ribs," and are joined to the breastbone. The "false ribs" are merely connected with the breastbone by being joined to each other. The ribs are fastened to the breastbone by ligament only, except the first rib, which has a joint, to allow it more motion. All the ribs, however, are jointed into the spine with a regular synovial (joint-oiled) articulation, and have a backward and forward motion. The true ribs move forward, and the false ones outward at each respiration.

Of the five *vertebræ* included in this section, we may observe the fifth has the longest spine of the back-bone. They slope downwards, from the sixth to the thirteenth vertebræ, which last is usually the most upright.

§ IV. THE BONES OF THE LOINS.

The Loins (the lumbar region). The six spines of the loins are thicker than the others, they slope decidedly forward, and, the ribs having ceased, they have projecting transverse processes.

§ V. BONES OF THE SACRUM* (RUMP).

The five spines of the *Sacrum*, which lean considerably backward, leaving a large open space between the top of the last lumbar (loin) spines and the first of the sacral (rump) spines, forming the great hinge of the rump and loins. The sacrum consists of five pieces, but is viewed as one bone.

§ VI. CAUDAL (TAIL) BONES.

The nine bones called the coccygeal bones; they are so named from the Greek *coccyx*, a *cuckoo;* in man, the pointed bone which ends the spinal column is supposed to represent the beak of the cuckoo.

The *tail-bones* resemble vertebræ, but diminish down to short round pieces of bone with a little hollow. They have a remarkable formation; instead of the cup and ball of the neck-bones they have each a rounded projection, giving the utmost play possible. Two small rounded surfaces moving on each other, so that, up and down, or in any conceivable direction, the tail can be switched by its flexors without chance of dislocation.

§ VII. THE PELVIS.

The pelvis (from the Latin, *pelvis*, a basin). This consists of the three ossa innominata (nameless bones) on each side. The ilium†; the pubis; the ischium (loin-bone, *ischion*, Gr., the loin); these three bones form one cup to receive the head of the thigh-bone.

The pelvis is almost circular, open before and behind and at the top, where the sacrum fits on. Its forward part forms the projecting hip of the horse. A little lower, behind the joint of the spine, is the cup for the reception of the head of the femur (thigh-bone), called the "round-bone" by farriers. There are some important vital organs contained in the pelvis, second only to those in the skull:—the rectum; the urethra of the male and vagina of the female; the bladder; and, in the mare, the womb.

§ VIII. THE BONES OF THE HINDER LEG.

These are the thigh (the *femur*), the *patella* (Latin for *a little dish*), or stifle-bone, the *tibia* (pipe-bone), and *fibula*

* From *sacer*, Lat. *holy*. This part being specially offered in animal sacrifices by the ancients.

† From the Greek, *eilco*, to turn about: a name given to the intestines from their convolutions.

(clasp or brooch-bone); the bones of the hock-joint—the *astragalus* (the ring or ankle-bone), the *os calcis* (Latin, *calcar*, a spear), or heel-bone, forming in the horse the joint of the *metatarsals* (*meta*, beyond, *tarsus*, the hock): the cannon-bones, or shank-bones; the splint-bones. The bones of the pasterns—*the sesamoids* (*sesamum*, millet-seed, *oidos*, like), the large pastern bone, the smaller pastern bone, the *pedal* (foot), or coffin bones.

The *femur* (thigh-bone) is the largest and strongest bone in the skeleton. Yet it is shorter in the horse than in most other animals. It has projections and cavities for the insertion of most powerful muscles. Its upper part is called "the neck," and its rounded top "the head." In this there is a cavity, in which is a strong flat ligament holding it in the cavity at the end of the pelvis, and lower down is the capsular ligament. The lower end of the thigh-bone has two large round surfaces, called condyles (Gr. *condylos*, a knot). The stifle-bone (*patella*) slides over the front of two projections, called trochlea (Gr. *trochlea*, a pulley). This bone is very loose in structure, and full of fibres; its outer surface is roughened for the insertion of several tendons and ligaments, which hold it on all sides.

The *tibia* (leg-bone) is a long triangular bone, connected on its outer side with the *fibula*, which, in the horse, is merely rudimentary. The top of the tibia has two hollows, divided by a ridge, upon which the two rounded cartilages of the stifle are supported. Its lower end has three prominences, between which two projecting parts of one of the hock bones neatly fits. (See Plate X., fig. 4.)

The *tarsus*, or hock, is a most important joint. The *astragalus*, or knuckle-bone, is seen well in the enlarged figure just referred to. When we come to the Muscles, and to Veterinary Treatment of Injuries, &c., we shall have more to say of the hock-joint and of the foot. The bones of the last-named we defer to the next section.

§ IX. THE BONES OF THE FORELEG.

These are the *scapula* (blade), or shoulder-bone, with its shallow cup to receive the head of the *humerus* (or arm-bone); the *radius* (spoke-bone), and *ulna* (the cubit), or large bone of the fore-arm; the *carpus* (knee-joint), consisting of the *trapezium* (Gr., *a little table*), the table-bone which gives security to the great flexors of the leg; the cannon, or shank-bone; the splint-bones; the sesamoid, large pastern, small pastern, and pedal, or coffin-bones.

The bones of the fore extremities of the horse present but little resemblance to those of the human arm, especially in respect of the limb ending in a single solid hoof or toe.

The *shoulder-blade* is a broad triangular bone applied to the outside of the ribs, so that its point reaches downward between the first and second ribs, and its lower part as far back as the seventh; standing obliquely with its broadest part above and its narrow below. It is slightly hollowed and smooth on its inner side, and outwardly divided by a projecting ridge or keel. Its lower part ends in a neck, and a bulging-out head containing a shallow cup to receive the head of the arm-bone. Its upper surface is covered with strong ligamentous fibres, and its mode of attachment is beautifully contrived to give power without receiving concussion.

The *humerus* (or arm-bone) is strong and short; it forms an angle with the scapula from the joint of the shoulder and the elbow. It has a round head, with an indentation to receive a capsular ligament, like the thigh-bone. It terminates in two of the rounded bodies called *condyles*, which joint with cavities in the upper end of the radius.

The *radius* (spoke-bone) is the front bone of the arm, the hinder one the *ulna*. These are known in general as "the arm" and "the elbow." The *radius* is long and cylindrical, and flat at the upper end, with depressions to receive the projections of the arm-bone (humerus). It has some tuberosities in front for the attachment of tendons, and behind a place for the ulna. At its lower end it has eminences covered with cartilage, which are connected with the upper bones of the knee.

The *knee-bones*, called *carpal* bones—the fore knee of the horse corresponding to the wrist (*carpus*) in man. These bones are seven in number in the prepared skeletons; but an eighth bone, of diminutive size, of the shape of a pea, is always found just behind the trapezoid, to which it is attached. The names of the bones are the same as those in the human wrist. The carpal bones articulate with each other, and have but one investing capsular ligament; hence the smallest wound of the knee which penetrates this ligament opens the whole joint; hence, also, the excessive escape of synovia (joint oil), and the unpleasant consequences of "a broken knee."

The *metacarpus* (Gr., *meta*, beyond, *carpus*, the wrist), *cannon*, or *shank-bone*, consists of one large bone and two small ones, called *splint-bones*. The cannon-bone is plain and cylindrical, enlarged at the two ends, the upper of which articulates with the second or lower row of the knee-bones. Behind its head it has two indentations to receive the two splint-bones, one on each side. Below, it has two condyles (knots), by which it articulates with the *great pastern* and the sesamoid bones, in such a way as to give them remarkable freedom of action in a forward or backward direction, but almost prevents any lateral action at this joint. The splint-bones, as we have said, are placed one behind each side of the cannon-bone; they are each jointed to the lower carpal bones and have also a synovial jointing with the hinder part of the cannon. They taper downwards, and end two-thirds down the cannon-bone, in a button-shaped extremity, which is unattached. In age the ligamentary attachment of the splints hardens into bony substance. The purpose of this mixture of fibro-cartilage is to allow of motion, yet limit its extent. It gives that elasticity which is necessary to the animal's (and his rider's) safety. A strain from extra weight or effort is apt to produce inflammation in these ligaments, when they become

vascular, hot, and painful, and are converted into bony formations, called, after the bones themselves, "splints." The inner splint-bone is more liable than the outer (see *post*, SPLINTS). At this point the comparative anatomist notes that the wide palm of the human subject and the paw of the toed animal is converted into a simple solid cylindrical bone and two small additamentary ones—the splints just described.

The bones of the pastern are four: the *large pastern*, the *lesser pastern* or *coronet*, and *two sesamoids*.

The *large pastern bone* is the first of the oblique group of bones that form the extremities of the horse. It is cylindrical, and on its length and its obliquity depend the elasticity and ease of the animal's motions. Nevertheless, as its length throws greater strain upon the tendons and ligaments to restore it to its position after each effort, very long pasterned horses are most liable to strain and break down, although more "springy" in movements within their powers.

The *lesser pastern*, or *coronary bone*, supports the lower end of the great pastern, and then expands to a large surface. At its upper end is a projection which fits into a hollow in the great pastern. It has two projections on its sides, to receive the perforans tendon. It rests upon and articulates into the coffin and navicular bones, which end the series.

The *sesamoids* are a couple of small wedge-shaped bones at the hinder and upper point of the fetlock, just behind the lower end of the cannon-bone, to which they are attached, and also to the upper end of the great pastern-bone, and thus support a portion of the stress and weight imposed on these upright and sloping bones. They are placed side by side with their smaller portions upwards, and by their thicker and lower ends they are firmly held to the pastern bones by stout tendons, in addition to the great suspensory ligament. The use of these small bones is obvious. They are most strongly attached to the pastern, but admit in action of a certain amount of downward motion when pressed by the cannon-bone; the flexor tendons keeping them from being too far displaced. In horses with very oblique pasterns the cannon-bone is always resting on the sesamoids, which tends to fatigue and weaken the springs. On the other hand, horses with very erect pasterns do not have these sesamoids duly depressed by the cannon-bone; hence a want of elasticity in motion and danger when their pace is accelerated.

The *coffin-bone* is peculiar to the horse and his congeners. In shape it corresponds with the shape of the hoof, which, with its appendages, it almost fills. (See Plate IX.) Its bony fibres are placed perpendicularly in rough lines, and its substance is very porous. In front is a projection to which the tendon of the extensor pedis is attached; its two lower and lateral processes are called the "wings" of the coffin-bone. On these wings is a groove to receive an artery which sends off branches, as explained in detail hereafter in the ANATOMY OF THE FOOT. The porous character of the coffin-bone serves a threefold purpose: it gives lightness with solidity to the foot; it affords protection to the nerves and vessels which ramify through its interior; and lastly, gives a strong hold to the laminæ and structures on its outer side, thus giving strength and durability to the whole machine.

The *navicular-bone* (Lat. *navicula*, a little boat), called also the shuttle-bone, the *nut*, and the *quiltor*, is situated behind and below the coffin-bone, and between its two wings. Its upper surface is continuous with its articulation with the coffin-bone; its lower rests on the perforans flexor tendon, that tendon on the insensible frog, that on the sensible frog, which has the tough and flexible horn of the external frog below it. The upper surface of the navicular-bone receives much of the weight of the animal, with synovia only to relieve the pressure, but below its elastic yielding is evident. It also forms a point of attachment for the perforans tendon. As Navicular Disease is one of the most ruinous scourges of horseflesh, we shall have more to say thereon in the proper place, where the *hoof*, also, will come to be considered.

THE TEETH we have considered of such general interest, apart from the general structure of the bones, as to bestow upon them, in a former part of this Work, a separate chapter. (See AGE OF THE HORSE, *ante*, pp. 104—112.) Their diseases and the operations upon them will come in the veterinary part hereafter.

There are also some internal bones, which shall be elsewhere noticed. These are the *os hyoides*, or tongue-bone, so called from its resemblance to the Greek letter *υ* (upsilon); it is situated at the base of the tongue, several of the muscles are connected with it, to which, in its several movements, this bone serves as a fixed point: it also supports the muscles acting on the larynx and fauces.

The bones of the internal ear (figured in Plate V.) will be described in the proper place.

THE APPENDAGES of bone are *periosteum* (bone covering), *medulla* (marrow), *synovia* (joint-oil), *cartilage*, and *ligament*.

The *Periosteum* is a strong, fibrous membrane, covering the bones, and serving for the insertion of muscles and their tendons. It has few nerves, and is consequently scarcely sensible in a healthy state; but when diseased its sensibility becomes increased, and the most acute pain is produced. This is the case in splint and spavin; for, in these diseases, the bone beneath enlarging, presses forcibly against the periosteum covering it; and this membrane being inelastic, and consequently incapable of expanding, violent pain, attended with lameness, takes place.

This membrane, when covering the bones of the skull, is called *pericranium;* and when on cartilages, *perichondrium:* it is of a white colour in animals after death, but in the living subject it is red, and much more vascular than tendon.

Medulla (marrow), is found in certain hollow bones, and throughout the spinal column. It is enveloped in a membrane which lines the cavities of bones, and which is secreted

from arteries which are seen entering the bone for that purpose. Formerly it was supposed the marrow possessed sensibility, but that idea is exploded, it being impossible to trace nerves into it. But though the marrow is itself perfectly insensible, this is not the case with the membrane containing it, which is supplied with nerves, and is consequently sensible.

The marrow was at one time thought to serve as nourishment to the bones, but this opinion is now also abandoned. It is supposed, with more reason, that it performs the same offices as the fat, in being absorbed when there is occasion for it to supply animal waste.

Synovia, popularly termed *joint oil*, is not an oil, but a fluid similar in appearance to white of egg, secreted by the membrane lining the interior of the joints. Its service in lubricating the joints is immense. Indeed, but for its interposition, the grinding at the extremities of bones would render movement intolerably painful: with this slippery addendum the joints are made to slide over each other pleasantly and smoothly. When an excess of secretion of synovia takes place, the joint swells and "dropsy" follows. When this happens on the hock of the horse, it is called "bog-spavin." In other joints it is recognised in what is called by farriers "wind-gall."

Cartilages are of four kinds: articular, inter-articular, non-articular, and temporary. They serve many useful purposes by their smooth and elastic properties. First, they form the extreme and prominent parts of the body; such as the nose, ears, &c.; which, from being composed partly of cartilage instead of bone, are better enabled to resist injuries. The ribs, also, are cartilaginous in that part of them connected with the breast-bone, and which is most exposed to injury and violence. Secondly, in the fœtus, cartilages supply the place of bones. Young animals, being very liable to falls and other accidents, have a material of an elastic and yielding nature in place of bone. Hence we seldom meet with fractures in the bones of the young, because they are still, in great part, cartilage. There are cartilages in the foot of the horse, which act as a spring, and, by their elasticity, serve to prevent concussion.

The third kind of cartilage is more universal than any of the rest, and is intended to prevent friction between the ends of bones, by being interposed where they form joints. In this case, the cartilage itself is covered by a firm membrane, called *perichondrium*, which performs the office of a gland in secreting a fluid termed synovia. This fluid prevents friction in the joints. Continually covering the membrane by which it is secreted, it necessarily prevents the surface of that membrane from coming into contact with the opposite one. These cartilages are, as we have said, yielding and elastic; they carry no red blood, nor has any fluid been yet injected into them. They have, however, a small number of vessels, with a transparent fluid, and this is seen in the jaundice of the human subject, when the cartilages become yellow. They neither ulcerate nor exfoliate, nor do they ever granulate. They possess no sensibility; their nerves, if they have any, not being discovered; but the membrane covering them is both sensible and vascular. These properties are peculiar to this last kind of cartilage only; for the other classes are subject to disease, in consequence of which they become ossified. Cartilage is popularly called "gristle."

Ligaments are dense, white, fibrous substances which connect and tie the bones together. They are inelastic, and but little vascular; they, however, are covered by a membrane, which has several vessels, and which is similar nearly, in structure and use, to that of the cartilages of joints. The ligaments of a horse are not so liable to disease as those of the human subject are, but they frequently meet with injuries by the ends of the bones forming a joint pressing forcibly upon them when the animal makes a false step; in this case the horse is said to be sprained.

The ligaments of the horse are liable to be wounded, which often proves dangerous, from the synovia of the joint escaping, and the air insinuating itself into the cavity. The object, then, should be to shut up the opening that has been made into the joint; for so long as it remains unclosed, the synovia will escape, friction will take place, and, the inflammation increasing, the pain will at length become so violent as to produce a symptomatic fever, which frequently ends in death.

CHAPTER XVIII.

EXTERNAL STRUCTURE OF THE HORSE, CONTINUED.—THE MUSCLES AND TENDONS.—MUSCULAR MOTION.—1, MUSCLES OF THE HEAD AND NECK.—2, OF THE TRUNK.—3, OF THE FORE-LIMBS.—4, OF THE HINDER-LIMBS.—5, OF THE ANUS AND TAIL.—6, THE SKIN AND HAIR.

Muscle is the part of an animal popularly termed the flesh, or meat. It consists of collections of fleshy fibres, forming bundles, which are connected together by cellular membrane; and these bundles are again connected to others, till the whole muscle is produced. Each muscle is attached by its extremities to different bones. One of these extremities is called its origin; the other, its insertion. A muscle accomplishes motion by expanding its belly, or middle part, and contracting its ends towards the centre; when the parts to which those ends are attached must necessarily be made to approximate. Thus, when we wish to bend the hand at the wrist, the muscles engaged in this action, by expanding their middle part, contract their extremities, and consequently shorten their lengths; and having one set of ends fixed in the bones above the joint of the wrist and the other in the bones of the hand below it, the attached parts are pulled towards each other, and the flexure we desire is produced. In this manner are all the movements of the frame accomplished; and for this intent every animal designed for motion is supplied, more or less, with muscles, which constitute its flesh.

The muscles differ greatly in size and shape, being fitted both to the degree of force required of them, and the figure of the part they help to form. Thus some are long and round, as are most of those that move the limbs; while the muscles of the trunk of the body are generally broad and flat. Muscles often terminate in tendons for insertion. Tendons consist of a white, inelastic, insensible, and hard substance; and, as they require less room than muscles, they are well calculated to preserve the shape of the limbs and other parts.

It should be observed here, that the muscles of one side of the frame have corresponding ones on the opposite side; and that they take their names generally in the horse, as in the human subject, either from the functions they perform, their figure and shape, or from the parts which they act upon. The most convenient way of considering these will be to divide them into—

1. The Muscles of the Head and Neck.
2. The Muscles of the Trunk of the Body.
3. The Muscles of the Fore-limbs, or Anterior Extremities.
4. The Muscles of the Hinder Limbs, or Posterior Extremities.
5. The Muscles of the Anus and Tail.
6. The Skin and Hair.

Of Muscular Motion.—Numerous and complicated as are the motions of the horse, they are all reducible to two kinds—*voluntary* and *involuntary*. Each of these is effected by the contraction of the muscular fibre, which constitutes the fleshy portion of every vertebrated animal, and is the immediate agent of motion in them all. This contraction of muscular fibre is induced by the presence of a stimulus, which, acting on the irritability of the fibre, forces it to contract; and here we arrive at the immediate cause of animal motion.

Contractility, then, is that power in muscular bodies by which their actions are directly executed. These actions are called *voluntary* when effected by the contractility at the instigation of the will: *involuntary*, when accomplished by the same contractile power, but at the instance of some stimulus different from that of the will, and wholly independent of it. Thus, the blood, acting as a stimulus to the heart and arteries, causes these organs to contract, by which the circulation is sustained independently of volition. So also is it with the stomach, intestines, and indeed all other involuntary motionary organs; they are forced to contract by the presence of a stimulus different from that of volition, and consequently perform their functions likewise independent of the mind. But the case is different with the voluntary organs. Here no single movement can take place but by the command of the will. Thus, for instance, do we wish a horse to walk, trot, or gallop; or that from any of these paces he should instantly discontinue and remain at rest; before the act we desire can be accomplished, it must first be known and determined upon in the mind of the animal. This subject, however, will be more fully explained when we come to speak of the brain and nerves.

Whether this contractile power of muscles, by which the motions of animals are executed, be derived from the nerves, or is a property wholly distinct from them, is a dispute amongst physiologists yet to be determined. All that is certain is, as we have seen, that whilst some muscles perform their functions wholly independently of the mind, and are therefore termed involuntary muscles; there are others called, in contradistinction, voluntary muscles, because they are unable to accomplish the smallest motion without the interference of the nervous influence. We will therefore avoid a subject yet veiled in uncertainty, with an observation on the close dependance of muscular motion on the atmospheric air.

That certain properties, absorbed by the blood from the air taken into the lungs in breathing, are absolutely essential to the continuance of those movements called involuntary, and which directly support life, is demonstrated by numerous experiments. Thus, for instance, if an animal be confined to a certain quantity of air, it will continue without feeling change while it has a sufficiency of that fluid to respire; but the vital portion (oxygen) of the air being at length consumed, and no fresh supply admitted, the creature begins to gasp. His circulation becomes languid, convulsions follow, and all the vital movements gradually ceasing, death, to all appearance, shortly follows. And, in fact, if no means of recovery be promptly used, the creature absolutely must die. If, on the other hand, the apparently lifeless body be removed from the foul air in which it expired, and fresh oxygenated air be forced at proper intervals into its lungs, the heart will, probably, after a short time, be stimulated into its usual contractions, the circulation restored, and with it the life of the animal. Thus we see, that a constant supply of fresh atmospheric air is absolutely essential to life; and that, where it is denied, the muscular power must soon cease. Hence the necessity, which we have already urged, of preserving to horses in stable a sufficiency of pure unrespired air; for if its total absence suspends, in a few minutes, life altogether, surely the partial corruption and diminution of this fluid must, in proportion, impair their strength, and expose them to disease.

Again, we observe the great dependance of muscular motion on the atmospheric air, in the increased quantity of this fluid which a horse, and indeed any other creature, respires when under violent exertion. This may be easily seen in the changes which a race-horse exhibits when running. Prior to commencing the race, his breathing is but little increased, and he respires not much more air than usual. As his exertions increase, his nostrils expand; he breathes quicker, and his blood is made to circulate much faster than before, owing to the additional stimulus it has received from the air in the lungs. He is now pushed by the rider, and his own generous and noble spirit urges him to surpass some rival. They rapidly approach the goal—both animals exert themselves to the utmost. At this moment all the appearances already described are at their height. The race being ended, and the horses allowed to walk gently, the increased breathing and circulation still continue, but not so violently as before. By degrees both subside to their ordinary degree of action, and the animal recovers the normal condition he exhibited prior to the race.

Now racing being a rapid movement of the animal, wholly performed by the voluntary muscles, and these muscles depending on the nervous energy to enable them to act, the increased motion which is necessary to the speedy gallop, requires additional energy from the nerves; hence, in fact, the increased velocity of the blood's circulation under violent exertion. The blood flowing, during the period of exertion, in greater abundance to the brain, excites that organ to impart a larger supply of that mysterious energy, without which the increased action of the muscles would flag and be no longer sustained. As the blood, then, is the medium which contains the properties which the brain separates for the purposes of exertion, and as these properties are greatly derived from the atmospheric air in the process of respiration, we find the breathing also accelerated, by which a more rapid oxygenation of the blood is also effected.

1. MUSCLES OF THE HEAD AND NECK

As there are a great number of motions peculiar to the parts belonging to the head and neck, they are supplied with numerous and some special muscles and ligaments. Some of these have their origins at a greater distance from their insertions, such as those which sustain the head, and give forward, backward, and sideway, or occasionally partially rotary motions to the parts. Of these two are common to the head and neck, and eight pairs pertain to the head only. The muscles, strictly so called, have some of their origins from the breast-bone, and also from the vertebræ of the neck and chest. These are inserted, some into the occiput, others into the processes of the two temporal bones. Those of the neck which act in concert with the muscles of the head also take their origins from the breast-bone, the spines of the vertebræ of the chest and the lateral processes of the same; these are mostly, some higher or some lower, inserted into the transverse processes of the neck bones, and compose the bulk of flesh on those parts.

Muscular power alone would be insufficient to constantly sustain the head of the horse; nature has therefore supplied a provision as simple as it is efficient. At the back of the occipital bone, immediately below the crest, a round cord of ligamentous fibres, called the *ligamentum colli* (ligament of the neck), or "pack-wax," has its origin. This has some remarkable peculiarities. It passes over the first vertebra of the neck (the atlas) without any attachment, but is fixed firmly to the second vertebra, so that, while supporting the head at this point, it leaves the head free to turn on the first or second vertebral joints. The principal stress is on the *dentata*. It then sinks deeply, and is attached to all the other vertebræ of the neck; each of these attachments forms a separate point of support for all in front of it. Thus, when in a state of rest, the animal's head, without the fatigue of muscular tension, is supported by this great ligament.

But the head of the horse was not intended to be constantly carried high. In a state of nature the horse's food lies on the ground, or nearly so. This ligament varies, in one respect, from all others—it is elastic; that is, will yield when force is applied to it, and retract to its ordinary dimensions so soon as that force is withdrawn; thus, this ligament is some inches longer when the horse is grazing than when his

head is elevated. The thickness of the occipital bone immediately below the crest is to adapt it to receive this ligament, which is carried down to the spines of the back, and there firmly secured.

The *Eyelids* have three pairs of muscles; one pair opens, and the other two pairs shut them. The pair that retracts is peculiar to the eyelid only, while the two others are inserted into both, to bring them together, and to shut the eye. All of them rise from the edge of the hole in the bottom of the orbit, through which the optic nerve passes to the eye.

The *Eye of the Horse* is moved in its different directions by six muscles, which take their rise from the bottom of the orbit, and are inserted into the sides of the eyeball, as in the human subject. There is, however, in the horse a seventh muscle, called the *retractor oculi;* it arises from the bottom of the orbit, and is inserted all round the ball of the eye. It is very strong, and is intended to draw the globe of the eye into the orbit from injury, at the same time that the haw is forced out for the better defence of the eye.

The *Nose* has four pairs of muscles, for widening and contracting the nostrils; they arise from the upper jaw and from under the eyes, and are inserted into the cartilages of the nostrils, and part of the upper lip. The action of these muscles is very perceptible in horses that are much heated by exercise, in broken-winded horses, and in cases of fever, when the nostrils open and contract in proportion as the animal is oppressed with disease.

The *Lips* have five pairs that are proper, and two common to the mouth and cheeks, some of which compose the fleshy part of the cheeks. The chief use of these muscles is to enable the horse to gather his food.

The *Upper Jaw* being of itself incapable of motion, all the muscles that serve to open and shut the mouth, belong properly to the lower jaw. The chief of these are the temporal muscles, which make up the fleshy part of the temples; also the muscles already mentioned as belonging to the chin and upper lip, and which have a considerable share in pulling down the jaw, so as to open the mouth; while the temporal muscles have the chief share in pulling it up, and shutting the mouth. There are other muscles for moving the jaw several ways in chewing, which are called the *masseters;* besides these, one pair thrust the jaw forwards and another pull it backwards.

The *Tongue* is itself a muscular substance, made up of fibres variously combined together, and in such a manner as may best suit and correspond with all its different movements. The tongue has five pairs of muscles proper to it alone, and two pairs that are common to it and the bone called *os hyoides.* Some of them arise from the lower jaw and *os hyoides,* and others that rise from this bone have their insertions into the apertures of the lower jaw-bone. One pair that pull the tongue backwards arise from the temporal bones, and are inserted into the sides of the tongue; and another pair from the lower jaw, near the furthermost grinding teeth, and are inserted into the ligament (or bridle) of the tongue; by which means they are suited to all its various motions. The muscles common to the tongue and *os hyoides* act chiefly in concert with the others, and give the tongue such motions as forward the aliment into the gullet, when it is sufficiently chewed and prepared to pass into the stomach.

The *Larynx,* or head of the wind-pipe, has six pairs of muscles for moving its different parts. The *epiglottis,* which serves as a valve for opening and shutting the wind-pipe, has its muscles very small, excepting in animals that chew the cud. These muscles are all more or less liable to be affected with colds; which is the cause of that soreness of throat observable in some horses, hindering them from drinking and swallowing their food.

The *Pharynx,* or head of the gullet, has also its muscles, which are often affected in colds: their office is chiefly to widen and contract the upper orifice of the gullet.

The *Muscles of the Ears* in horses are very distinct and perfect, and may be easily traced from their origins to their insertions. In man they are small, because in the human ear there is little capacity for motion; while brute creatures, being without hands, make use of their ears to drive away flies and other offensive things. The motion of the ears is also necessary to brute creatures for the reception of sounds, and to avoid danger. Therefore we may always perceive somewhat of the intentions of a horse by the motion of his ears. When a horse sees any remarkable object before him, he pricks up his ears, and points them forward, with an intention to hear, especially when the object is attended with any noise. When the noise or sound comes on one side, he turns his ears that way, to take the sound. When the noise is behind him, he lays his ears backwards; which is most observable in hot or timid horses.

The ear is properly distinguished into the outward and inward ear. The outward ear has four muscles; the first lifts the ear up, and points it forwards; the second pulls the ear backwards; the third draws the ear forward, and points it downward; and these act together, and move both ears, when a horse looks steadfastly to anything lying on the ground. The fourth assists the second, and pulls the ear backward and downward towards the neck. When a horse is wanting in a quick and sprightly motion of his ears, it is, in great measure, owing to the weakness of these muscles. For this defect is always more or less manifest in those that have their ears uncommonly large and thick, in which case the muscles are not fully adequate to the weight they are to move; and these horses are commonly the most dull and sluggish.

The internal ear has two muscles for moving the small bones it contains, which are employed in hearing; as will be explained when we come to treat of that organ.

From this mechanism of the muscles of the head and neck, and particularly by their remote origins of the breast and spine, it appears how well they are suited to the

several articulations of the joints, so as to secure them from harm in all their various turnings. Otherwise, in parts abounding with articulations, though well connected and tied together by strong ligaments, the horse would easily be injured by quick motion or a trifling accident.

II. THE MUSCLES OF THE TRUNK.

The muscles of the trunk include all those employed in respiration and other important functions. They may be divided into those of the breast or chest, and those of the abdomen (belly), and the muscles of the back and loins, most of which are endued with great power.

But first it will be necessary to describe a muscle called *panniculus carnosus* (the fleshy pannicle), or subcutaneous muscle, which is peculiar to quadrupeds; at least it is not found in the human subject.

This muscle may be said to belong to the skin, its action being wholly on this part. It serves, by throwing the skin into folds, or rugæ, to remove any offending matter, as insects, &c., that may lodge upon it; and, for this purpose, it is closely connected with the skin covering the ribs, shoulders, and hinder parts of the body of the animal. It has also attachments with the muscles lying beneath it, and which serve as so many fixed points during its motions.

The Breast has four pairs of muscles for widening and dilating the chest, and two pairs that straiten and compress it. These make up that portion of flesh which covers the brisket and the breast from its upper part downwards to the pit of the stomach, expanding over most of the foremost ribs. Some of them have their derivations forwards, and from under the shoulder-blades and rack-bones of the neck and chest, and some backwards from the spines of the rack-bones of the loins, and from the os sacrum; and are most of them so inserted into the ribs as to render their action of elevating and depressing the chest easy and complete. The intercostals are the external and internal small muscles which are situated between the ribs, and these also assist in widening and compressing the chest alternately in inspiration and expiration.

The Diaphragm, Midriff (or skirt, as some call it, in horse or bullock), is a muscular substance which divides the cavity of the chest from that of the abdomen, and is a principal agent in the act of respiration. Its fleshy fibres arise from the internal circumference of the chest, and, converging like rays to a centre, are all inserted into a tendinous flat substance at the middle. This muscle not only serves to divide the thorax from the abdomen, but also greatly contributes to the act of breathing. When its fibres contract, its convex side, which is turned towards the chest, becomes gradually flat, and, by increasing the cavity of the breast, affords room for a complete dilatation of the lungs, by means of the air which is then drawn into them by the act of inspiration. The fibres of the diaphragm then relax; and as it resumes its former state, the cavity of the chest becomes gradually diminished, and the air is driven out again from the lungs by a motion contrary to the former one, called expiration.

The Abdomen has five pairs of muscles, which arise from the ribs, haunch-bone, share-bone, breast, and other contiguous parts, and are mostly inserted into the white line that divides the abdomen in the middle. One pair pass obliquely downwards; another pair obliquely upwards; a third have a straight direction from the breast to the share-bone; a fourth pair assist the straight muscles in pulling down the breast; the last are the transverse pair, which take their course from the loins and lowermost ribs on each side to the white line. This partition, or *white line*, of the abdomen, is formed by the tendinous junctions of the muscles of both sides, and is particularly well adapted to so large and roundish a surface; for had these muscles not been determined in the middle, but been stretched over the whole abdomen, it would have been impossible for them to have acted with such force and energy. The use of the abdominal muscles, besides completing the cavity of the abdomen, and supporting the bowels, is to assist the muscles of the chest in respiration, and also in expelling the fœces.

The Back and Loins have four pairs of muscles, common to both. The first are remarkable for their great length, extending from the haunch-bones and os sacrum, and reaching to the two temporal bones. These being attached to the spines in their passage, are a great security to the back, and assist the other three pairs in all their motions. When all the muscles of the back and loins act together, the whole back is extended; but when the muscles of either side act solely, the body is inclined to that side only.

III. MUSCLES OF THE FORE-LIMBS.

The *Shoulder-blade bones* are carried through their different movements by four pairs of muscles; they arise from the hind part of the head, from the transverse processes of the neck, and from the uppermost ribs, and are inserted into the blade-bones at different points. By these muscles the shoulder-blades are moved forwards, backwards, upwards, and downwards.

The *Shoulder—i. e.* that part which reaches from the point of the blade to the elbow—has nine muscles for performing its several motions. The first arises from the first rib, and, passing over part of the blade, is inserted into the shoulder-bone about its middle: this muscle helps to raise the shoulder upwards. The second rises from the spine or ridge of the shoulder-blade, and is inserted into the neck of the shoulder-bone: this also helps to raise the shoulder upwards. The two depressors pull the shoulder downwards. The first has its origin from the os sacrum, from the haunch-bone, and rack-bones of the back, and, with its fellow on the other side, spreads over a great part of the back, from whence it is called *latissimus dorsi*, or the broadest muscle of the back. The other rises from the lower side of the shoulder-blade, and is inserted into the upper and inner side of the shoulder-bone The two pairs

that bring the shoulder forward, are the pectoral muscles, and another which rises from the interior part of the blade-bone, near its brim, and is inserted into the middle of the shoulder-bone. The pectoral muscles are so called because they cover most of the breast, and are inserted into each shoulder-bone, a little below their round heads. The remaining three muscles move the shoulder backwards. The first has its origin from under the spine of the blade-bone, and is inserted into one of the ligaments of the shoulder-bone; the second is placed between the shoulder-blade and ribs, and is inserted into another ligament of the shoulder-bone.

The motions of the shoulders of horses and most quadrupeds are more limited than in man, their chief action being forwards and backwards, wherein they have a capacity of being raised higher or lower, according to their several requirements.

The *Fore-arm*, extending from the elbow to the knee, is carried through its motions by powerful muscles, arising from the blade-bone; some of these muscles are inserted, by tendinous ends, into the olecranon, or point of the elbow, and extend the fore-arm, while the arm itself is bent. Others are inserted into the bones of the fore-arm for bending this part of the limb.

The *Shank*, which reaches from the knee to the pastern, has two muscles that bend the knee, and two for extending it. The flexors arise from the inner and upper part of the shoulder-bone, and, passing beyond the knee on the inside, are inserted into the hinder part of the top of the shank. The extensors derive their origins from the external and superior part of the shoulder-bone also; and their tendons, passing over the knee, are inserted into the fore-part of the head of the shank; and, together with the ligaments of this part, help to secure and strengthen the knee-joint.

The *Fore-pastern and Foot* have also their flexor and extensor muscles; which, from their arrangement and liability to injury, deserve particular notice. The extensor arises from the external and inferior end of the humerus, and also from the outward and lower extremity of the radius; and descending fleshy to within about two inches of the knee, it here becomes tendinous. From this point its tendon descends along the knee, under an annular ligament, and, continuing its course down the anterior surface of the cannon-bone, it passes over the fetlock, where it is also bound down by another annular ligament; still descending, it receives, about the middle of the large pastern, two slips of ligament, from what is called the suspensory ligament, which shall be hereafter explained. And now the tendon of the extensor muscle expanding, is inserted partly into the anterior and lower end of the large pastern; in part, into the anterior surface of the small pastern; and, lastly, into the superior and anterior process of the coffin-bone. The use of this muscle being simply to extend the lower part of the limb, but principally the foot, and carry the leg forward after it has been raised from the ground by the flexors, it is neither so strong as these, nor so liable to injury.

The *flexor muscles*, from having to support a part of the animal's weight, are necessarily very strong and powerful; their tendons constitute what are vulgarly called the "back-sinews;" and from the peculiar arrangement of these tendons, the muscles are themselves distinguished into the "perforating" and the "perforated."

The first arises by three distinct heads; viz., two from the lower end of the shoulder-bone, and one from the ulna; and descending fleshy, till approaching the knee, each portion here becomes tendinous; when the whole, uniting, form one strong broad tendon, which passes at the back of the knee, under a ligament, the inside of which secretes an oily liquid for keeping the surface of the tendon moist, and thereby preventing friction with the neighbouring parts. The tendon now descends along the posterior side of the cannon-bone, till having arrived within about two inches of the fetlock-joint, it perforates the tendon of the other flexor muscle, and runs within it as in a sheath, until both reach as low down as the lower end of the large pastern. The perforating tendon now passes over the navicular bone, and is inserted into the inferior and posterior concavity of the coffin-bone.

The second, or *perforated flexor*, arises from the posterior and inferior end of the humerus; and becoming tendinous as it approaches the knee, continues its course downwards to where it divides to form a sheath for the other tendon. After this it still descends, passing behind the pastern, and is inserted partly in the heels of the frog, but principally into the lower side of the large pastern, where it forms lateral ligaments to the pastern joint.

The *suspensory ligament*, of which we have already spoken, arises from the head of the large metacarpal bone, and dividing into two branches about two inches above the sesamoid bones, both branches are inserted in those bones, and serve materially in keeping them in their right place during violent motion of these parts.

IV. MUSCLES OF THE HINDER LIMBS.

These are not only more numerous about the hips and loins than those about the shoulders, but they are of larger volume; a necessity imposed by the fact that they not only have to take their share of the animal's weight, but are also the organs of propulsion. For this purpose, therefore, the hinder part of the horse's skeleton is filled up to roundness with large and powerful muscles. Those giving motion to the thigh arise, some from the hinder part of the spine, others from the pelvis: these are inserted into the thigh-bone to effect its several movements. Some of these muscles form the fleshy part of the hip, whilst others pass over the whirl-bone, and form an additional security to the hip-joint.

The *Leg*, comprehending that part usually called the thigh, reaches, in the horse, from the stifle to the knee-pan, or hock. It is carried through its several motions by powerful

muscles, some of which take their origin from the bones of the pelvis, others from the thigh-bone, and, descending, are inserted partly into the patella, or knee-pan, partly into the tibia or leg-bone. These muscles extend, bend, and move the leg a little to the side; and they, together with the muscles remaining to be described, compose the fleshy portion of the hinder limbs.

The *Instep*, including that part which reaches from the hock to the pastern-joint, and commonly termed the small of the leg, has its motions performed by means of a few powerful muscles. It is bent, or brought forward, by two muscles chiefly, which arise from the superior part of the leg-bone, and descending along its anterior surface, are inserted into the fore part of the cannon-bone, a little below the bend of the hock. But the muscle extending this part, being that which is principally concerned in effecting the progression of the animal, deserves a more particular description.

This muscle corresponds with that called *gastrocnemius* in the human subject, and which forms the calf of the leg; in the horse it is a single muscle, but arises by two heads from the posterior part of the thigh-bone. These heads, descending thick and fleshy, soon unite, and form a very strong and powerful (tendon called the tendon of Achilles), as in man; this tendon, continuing its course downwards, is inserted into the point of the hock, which, by its projection, enables the muscle to exert a greater force in sending the animal forward.

The remaining muscles of the posterior limb, which move the pastern and foot, being nearly similar in arrangement and action with the corresponding ones of the fore extremity, we shall refer to the description of them for a knowledge of the former ones.

V. MUSCLES OF THE ANUS AND TAIL.

These consist of four principal muscles:—

1. The *sphincter* (Gr., *sphingo*, to contract) *ani*, which encircles the opening of the anus, and enters it to the depth of four or five inches. It has, unlike other muscles, neither origin nor insertion. Its contraction, like the string at the mouth of a bag or purse, is powerful in health, and its relaxation in disease, or its loss of *voluntary* constriction, is a bad symptom.

2. The *retractor ani inferior* is fixed to the *os innominata* (see Bones, *ante*), and inserted into the *rectum*, or straight gut. It mixes its fibres with the sphincter ani, and pulls back the gut after the animal has voided dung.

3. The *retractor ani superior* is attached to the under side of the sacrum, and corresponds with the last-described muscle in mingling with the fibres of the spincter ani, but on the upper side. It co-operates with it in pulling the anus in and upwards.

4. The *levator ani* consists of two slips of muscular fibres, which lift the anus, as their name implies.

The Muscles of the Tail may be taken as five: 1, the *compressor coccygis*, attached to the edge of the *os innominata*, to the first, and next three bones of the tail, on the under side; 2, the *levator*, which lifts; 3 and 4, the *curvators*, which bend the tail right and left; 5, the *depressor*, which lowers the tail. These muscles are contained in a sheath as far as the last vertebra of the loin, and fastened to all the following bones down to the end of the tail.

Internal muscles will be noticed under the several viscera.

VI. THE SKIN AND HAIR.

Under the general name of Skin is comprised two exterior layers of the covering of the body, the *cutis vera*, or true skin, and the *epidermis*, or scarf skin. Connected with these are the fatty cellular membrane and the muscle, already mentioned, the *panniculus carnosus*, which gives the motion to the skin, so remarkable in the horse.

The *epidermis*, cuticle, or scarf-skin, is the outer thin and tough, and somewhat transparent, integument.

The cuticle is composed of thin flexible scales, somewhat resembling the scales of a fish, and similar to them in arrangement. The cuticle is produced by the *cutis vera* (true skin), and is perforated by both its exhalant and absorbent pores. In almost all parts of the body the cuticle is thickly clothed with hair; but that of the nose, the lips, and the interior of the ear, the borders of the eyelids, and the inside of the superior portion of the thighs, is naked, and in all those places is thinner in substance than on the other parts which are invested with hair. The colour of the cuticle is the same in all horses, whatever be their hue. But it is a known fact that the skin of the silver grey Arabian horse is of a bluish black; but whether this colour is in the cuticle or in the rete mucosum has not been decided.

The *rete mucosum* is merely the first secretion of the cuticle, which is deposited in minute oval bodies, containing a small quantity of colouring matter. This pigment disappears as the secreted skin is pushed outward; the ovoid particles being flattened till they become colourless hard scales, which fall off in the form of dandriff or scurf. When a blister is applied, it irritates the true skin, which exudes serum, and the cuticle, being impervious, is raised into bladders (vesications).

The cuticle is everywhere perforated by minute holes, corresponding in situation, size, and number to those of the cutis. First, there are the sebaceous glands, nourishing the hairs; secondly, the perspiratory, or exhalant pores; thirdly, the absorbent, or inhalant pores; and lastly, larger-sized pores, through which unctuous secretions in various parts are emitted. The cuticle is destitute of both nerves and blood vessels, and consequently devoid of sensibility.

The *cutis*, or true skin, is that portion which is converted into leather. It lies immediately under the scarf-skin, and is attached to the under parts by the cellular and adipose (fatty) membranes, and in some places fits so tensely that it is incapable of motion of any kind. In

other situations it is more loose, and can be pulled into folds. In the blood-horse it is thin and highly sensitive; while in the cart-horse it is much thicker and far less sensible. The texture of the hair seems to depend in a great measure upon that of the cutis, for we find that of the thick-skinned black horse much coarser than in the racer and other high-bred varieties.

The *cutis* is beautifully adapted for giving strength as well as protection to the muscles; for we find in those parts that require to be firmly bound together, such as the bones of the knees, the pasterns, and tendons of the limbs, it adheres with such tenacity that it cannot be raised from those places, acting the part of a powerful ligature to the parts which are subjected to the greatest degree of stress; while, in those situations where its being tight would interfere with the action of the animal, it is loose.

The *cutis* is of a strong fibrous texture, very tough, yet supple, elastic, very vascular, and sensitive. Its fibres are curiously interwoven in almost every direction, and so interlaced as to give great strength to its texture, making it almost impenetrable by a knife in the living animal, and possessing extreme elasticity. It is this quality which adapts it so closely to the animal, whether he is plump and muscular, or reduced to skin and bone. In man and most other animals, where, from disease, a great reduction of the muscular fibre has taken place, the skin becomes loose and shrivelled. It owes this great elasticity to the innumerable larger and smaller glands which penetrate its entire substance, furnishing that unctuous matter, preserving the skin soft and pliable, maintaining that greasy moisture which its surface possesses, and giving a sleek appearance to the hair. When the animal gets out of condition, and the skin is diseased, the coat assumes a rough appearance, the hairs refuse to lie down, and it is said that the coat "stares."

The skin at the bend of the knee and hock is bountifully supplied with this excretion, to give them suppleness, and to preserve from friction those parts which are subjected to such constant and active movements. Sometimes this secretion exceeds the quantity necessary for due action, from want of attention and cleanliness becomes inspissated, and collects about those parts. If this hardness is permitted to remain, it will become a watery sore, which will terminate in lameness, stiffness, and pain in the joint when the animal bends it. When this is situated in the bend of the knee, it is termed mallenders; when it is seated in front of the hock-joint, it is called sallenders; diseases hereafter treated on.

The skin of the heel has numerous glandular pores, through which the unctuous secretion oozes. Sometimes these are unduly excited, the secretion becomes altered in its substance and odour, producing the disease called grease.

The cutis, when destroyed by any means, does not regenerate quickly. Great care should therefore be taken not to allow any portion of it to be broken. Many think that it is of little consequence for horses to have the skin of their back rubbed off by friction from a saddle. Such parts as have lost their *cutis* have it but slowly reproduced; and even when it has been restored, its vital power is much weaker than it was originally; for, although it appears at first to be very vascular, its vessels after a time either shrink in calibre, or some of them become altogether obliterated.

THE HAIR.—Each hair of the horse is a minute tube, having a bulbous end inserted in the cellular membrane which lies just beneath the *cutis*. From this little gland each hair penetrates the cuticle, or outer skin, and grows of various lengths and sizes. The hair covering the body and part of the legs is fine and soft, that which invests the ridge of the neck, crown of the head, and the tail, is of coarser texture and considerably lengthened. Each hair, as we have said before, is a tube; the outer covering is derived from the cuticle, within which a horny substance is enclosed; this horny portion being so disposed as to make each hair an elongated cone. The coat is of a uniform thickness all over the body, excepting upon the inner parts of the thighs, under the arms, &c. It varies in quality, colour, and length in different breeds. The thoroughbred racer, the Arabian, Barb, and Turkish horses are remarkable for the shortness and sleekness of their coat; while the cart-horse, the Shetland pony, and horses of all northern climates, are distinguished by its length, roughness, and coarseness. The lighter the shade of colour, the finer the hair; and it has been found that in chestnut and light bay horses there are more hairs in a square inch than in black and other dark-coloured horses.

The coat is shed twice a year, in spring and autumn. In a state of nature this commences with great regularity as to time; but in a state of domestication this process is much influenced by the temperature and stable management. The hair of the mane and tail is never shed, except in specific diseases of a mangy character. The treatment of a horse when shedding his coat will be found in its proper place, under STABLE-MANAGEMENT, Clipping, Singeing, Clothing, Conditioning, &c., in the First Division.

CHAPTER XIX.

THE BRAIN AND NERVES.—THE ORGANS OF SENSE :—I. THE EYE AND VISION.—II. THE NOSTRILS, THEIR MEMBRANES AND SINUSES: SMELL.—III. THE EAR, AND ITS CONSTRUCTION : HEARING.—IV. THE TONGUE AND ITS ORGANISATION : TASTE.—THE PALATE.

THE BRAIN AND NERVES.

THE origin and seat of the nervous system is the soft white and reddish mass called the brain, contained within the cavity of the skull. Its membranes (or *meninges*) are three or, more correctly, *two*. These, by lining the inside surface of the skull, prevent its inequalities from injuring that delicate organ. The first membrane is called *dura mater*, as in the human subject; it is of a strong tendinous nature, and serves to prevent concussions of the brain, by supporting its different divisions with the folds which this membrane sends in between the separated portions of that organ. The second (the *pia mater*), is strictly no more than soft cellular tissue. It differs from the first in being extremely soft and sensible. It lies next to the surface of the brain, dips into all its furrows and convolutions; and as this membrane is the medium through which the blood-vessels pass to the brain, for supplying its waste and recruiting the stock of mental energy, so it sometimes becomes the seat of disease. There is a very thin and delicate membrane lying between the two already described, but it does not enter the fissures of the brain, like the *pia mater*, or second membrane of that organ.

The third, the *membrana arachnoidea* (Gr., spider-web-like membrane), is a fine serous membrane, in connection with the inside of the *dura mater*. After investing every vein and artery, it is doubled back upon the surface of the brain itself. The arachnoid accompanies the spinal marrow out of the skull. It clings closely to the surface of the brain, and is said to facilitate the motion which is continually going on during life throughout the lobes of the medullary mass.

The brain of the horse, like that of most other animals, is partly of a roundish figure. It is of a pulpy consistence; and in colour is white internally, but greyish on the outside. As so soft a mass may be liable to concussion and injury from the violent blows and motions to which the head is frequently liable, the all-wise Creator has divided its substance for a considerable way from the surface in several places, and supported the divided parts by introducing folds of the *dura mater* between them, so as to sustain each portion of the brain in its proper place, and prevent it striking against, or being struck by, the adjacent portions of that organ.

In consequence of this partial division of the substance of the brain, it is commonly described as consisting of three great portions, though in reality the separations cease long before we reach the centre of its base. The first great division, called *cerebrum*, is placed above in man, but below in the horse, owing to the position of the skull of the latter; and to the same cause is to be attributed the elevation of the second portion of the brain, termed *cerebellum*, above the first in this animal. The third portion of the brain of the horse also corresponds in name with that of the human subject. But in the former creature it occupies the hinder part of the skull, while in man it is situated below. It is a continuation, or union, of the white or medullary substance of the other two portions of the brain; and is partly on that account, and in part from its figure, called the *medulla oblongata*.

From this third portion arises what is generally termed the *spinal marrow*, but which in reality is a continuation of the brain. Its substance being, like that organ, partly of a white and partly of a greyish colour, and being covered and defended by similar membranes to those protecting the brain. This continuation of the brain passes out of the head by the great opening in the *occipital*, or hinder bone of the skull, and running along the canal formed by the bones of the spine, or back-bone, in which it is safely lodged, gives off several nerves to the body and limbs, as will be presently seen.

The NERVES are white fibrous cords, which arise either from the brain or spinal marrow, and, passing off in pairs, are distributed to all parts of the body. Their texture is filamentous, and they are bound in a sheath of cellular tissue called *neurilema*. They receive blood, but do not become red. A nerve has no end; it passes round a part and goes into another sheath. Nerves have the power of reuniting. (See NEUROTOMY, *post.*) Some suppose nerves to be transparent, from the bottom of the horse's eye being discernible through that part of the optic nerve called the retina; but, notwithstanding this circumstance of the retina's transparency, both in the horse, dog, cat, and several other animals, yet that the other nerves of the frame are transparent is still unproved. The course of the nerves is in company with the arteries and veins, and, like these, they communicate, or their branches run into each other, and form what is termed a plexus. By this contrivance sensation is carried on, notwithstanding some principal branches should be obstructed or destroyed;

which could not be the case but for this vicarious communication. That an accident or injury of this sort may be of the least possible evil to the creature, and the soundness of the parts be again restored, the all-wise Creator has endowed the nerves, like other parts of the frame, with the power of regeneration. This is proved by dividing either branch of the eighth pair of nerves, called the *par vagum*, when it will be found that a coagulable lymph will be thrown forth, which, after changing into a substance possessing all the qualities of nerves, will re-unite the divided parts, and effect their regeneration as before. In this experiment also, it will be seen that while one branch of the nerve is totally divided, the other branch, by its communication, carries on sensation in the parts to which the divided branch is distributed, and which, but for this communication, must be rendered wholly without feeling by the division of the nerve. For if both branches of the same nerve (the *par vagum*) be divided, the communication with the brain is entirely cut off. If this happen to a horse he immediately dies, though a dog will survive some time.

Nine pairs of nerves are counted as arising from the brain within the skull; a tenth pair, with the spinal marrow, passes out of the great opening of the head. The remaining thirty-six pairs branch from the spinal marrow, after it has descended into the canal formed for its lodgment. Of those of the brain (*cerebral nerves*), the first pair are called the *olfactory*, because, passing through the ethmoid bone, they are spread in innumerable small branches all over the membrane lining the inside of the nose, for the purpose of producing the sense of smelling.

The second pair are called the *optic nerves*. They pass through the sphenoidal bone of the skull, and, entering each orbit of the eye, form at its back part that nervous expansion called *retina*, a network to which the animal is indebted for vision. (See *post*, under Eye.)

The remaining seven pairs are distributed chiefly and almost exclusively to the different parts of the head and neck. The seventh are the *auditory nerves*. (See The Ear.) The eighth pair are peculiar, and called on this account *par vagum*, or *pneumogastric nerves;* they have branches running to almost all parts of the body.

The tenth pair, arising from the spinal marrow just as this substance leaves the brain, go principally to be distributed on the exterior of the head.

The Spinal Nerves, arising from the continuation of the brain contained within the canal of the spine, are, as we have said, thirty-six pairs. They pass out from the spinal marrow between the interstices of the vertebræ, and are distributed partly to the internal organs of the body, in part to the muscles covering the frame, and lastly to the limbs, in which they may be seen descending in branches.

There are 7 vertical, 18 dorsal, 6 lumbar, and 5 sacral pairs of nerves. Each spinal nerve has a double origin (see Plate V., Fig. 5, Spinal Cord, &c.), by filamentary bundles, one from the upper, the other from the under portion of the spinal cord. The filaments of the upper part only convey sensation to the brain. The lower ones merely effect motion (*motory* nerves), by carrying from the brain to the muscles the will (volition) of the animal. They form a ganglion (or knot) at a little distance, and thenceforward become of a mixed character, motor and sentient nerves being blended.

The brain and nerves of a horse, like those of other creatures, endow all the other parts of the animal with feeling or sensation. This is shown by tying or otherwise obstructing a nerve going to any part, so as to cut off the communication between this part and the brain, when a loss of feeling instantly takes place below the point of obstruction; this being removed, the parts recover their sensibility.

Nerves are also the cause of all voluntary motion. As may be seen by the loss of this motion taking place from the compression of the brain, either from an extravasation of blood or water, or from some other mechanical cause, when the whole body becomes paralysed, and the power of motion suspended. But on removing the compressing cause this paralysis will vanish, and the animal be restored to its capability of voluntary motion. If the spinal marrow be compressed, the same loss of feeling and motion will also take place, but only in the limbs and such parts of the body as receive their nerves from it; and the same return of both these powers will follow the removal of the compression. The obstruction of a nerve will, in like manner, cause a loss of motion in the muscles to which it is distributed, but which will also be removed with the obstructing cause.

Through what medium the brain and nerves cause the voluntary motions, is as unknown as is the mode in which these organs effect sensation and perception. We know that the will, having determined on an act, sends its commands along the nerves from the brain to the muscles to be engaged; these, irritated by the influx of the nervous energy, instantly contract (the mode in which muscles effect motion), when the act we desire is thus produced. This is the case in man, and also with the horse. Various and complicated as are the motions performed by this animal, independent of those termed involuntary—which are for the most part vital movements, carried on in the internal parts of the frame—yet are all the former ones the consequence of the will, nor can a single one of them be effected without this determination being first made. This appears evident from the obedience of a horse in performing such movements as we desire; and it is also illustrated in the resistance sometimes made by that animal to the accomplishing of our wishes. For both the execution of the act and its refusal are the result of that prior operation in the mind which we term volition.

Now where there is volition there must be perception, otherwise the former faculty could have no objects for its operation, and would be useless. This perception, for sake

of clearness, we shall call the *sense* of the brain, as what we term *sensation* may be said to be that of the nerves. These possess the power of being impressed by various substances in nature, and of sending their impressions onward to the brain; which organ, having the power of being further affected by these impressions, perception or consciousness of the impressing object takes place in the mind. This may be ranked as the basis of all the other operations of the mind in animals, and is the medium through which they receive all the knowledge they possess of the objects existent in creation.

This perception again is divisible in the horse, as in man, into two kinds: 1, *Direct perception*, or such as is caused at the instant by the propagation to the brain of the impressions received by the external organs of sense—thus the eye, being impressed with the figure or colour of any object, communicates the impression by the optic nerve to the brain, where the perception or idea of the impressing figure or colour is immediately formed. 2, *Perception by reflection*, which is also the delineation in the mind of impressions, but such only as had been some time before conveyed to the brain from the organs of external sense, and consequently are now merely reproduced by that act of the mind called memory—or such as are created within the brain itself by the operation of the mind which we call thinking. And that the mind of a horse is capable both of recollection and thought, to a certain degree, is indisputable. The first is provable by a variety of familiar circumstances, known to every one conversant with the animal, therefore not requiring to be particularized; the second is shown by the increased exertions made by the animal in leaping and clearing a fence, wall, gate, &c.; which unusual exertions must have been perceived and determined upon as necessary prior to his arriving at the place to be thus cleared.

But merely seeing and knowing things through the medium of sensation and perception, would not be sufficient to draw the animal from a state of inactivity. To effect this, the Creator has used the same means, but in a more humble degree, as in man; namely, he has interwoven pleasure and pain with the existence of the horse, and so contrived both, that they have the power, not only of leading him into action, but also of directing him to the choice of fit actions afterwards. This capability of pleasure and pain is evinced in so many actions of the horse as not to require demonstration.

We have now sketched the great outlines of the horse's mental constitution. We shall next consider the Organs of Sense by which the animal ranks so high in the scale of organized creation.

THE ORGANS OF SENSE.

The mind, as we have said in the general sketch, having charge of the frame, and being in constant correspondence with material objects around, organs are requisite to receive and transmit to the mind, for its information, the different impressions which these objects may make. Accordingly, we find that the eye is impressed by light; the ear by sound; that the nose is adapted to smell; the mouth to taste; and the skin (already treated of) to feeling.

I. THE EYE, AND VISION.

The horse has a very extensive field of vision. His eye is lodged for its security in the orbit, formed partly by the bones of the skull, and in part by those of the face, as in the human subject; but it differs from the eye of the latter in some particulars. The horse, for instance, is without eyebrows, and the upper eye-lid alone is furnished with eyelashes, excepting a few straggling hairs, which grow from the lower lid. There is also a seventh muscle for drawing the horse's eye inwards from injury, which is not to be found in man; while the more effectually to protect this tender organ in the animal, there is a cartilaginous substance, called by farriers the haw, by anatomists *membrana nictitans* (winking membrane), which, when forced out of the orbit where it is lodged, by the action of the retractor muscles drawing the eye farther into the socket, covers a great portion of the anterior part of the horse's eye. This provision against injury, which is unnecessary in man, who is furnished with hands, is very complete in birds: the haw in these creatures covering the whole fore part of the eye, and serving as an eye-lid during their sleep. In other respects the horse's eye does not differ materially from that of man, except that the transparent fore part of the former is considerably more extensive than in the latter, and consequently the horse possesses a greater range of vision.

At the back part of the eye there is a large quantity of fat, for protecting that delicate organ from the inequalities of the orbit, and also, by keeping it smooth and moist, to prevent friction in its different motions. Besides the protection it receives anteriorly from the eye-lids and haw, this part is washed by the fluid called tears, which is secreted from a small gland situated near the outer angle of the lids, and being spread by the action of the eye-lids over the whole anterior surface of the eye, not only keeps it moist and transparent, but also serves to remove dust and other injurious substances. The tears, having rendered these services to the eye, pass off by two openings at the inner angle of the eyelids, and are thence conveyed into the nose by a canal, the termination of which may be seen in each nostril. This canal, though not large, is capable of having fluids injected through it to the eye, or from the eye into the nose. But care should be taken that the fluids so injected are of a mild nature, otherwise the membrane lining the canal is in danger of becoming inflamed; in which case, the passage of the tears being obstructed, they will be forced to flow over the face.

Another fluid, of a mucous quality, is secreted from the surface of the membrane lining the eye-lids, for the defence of the eyes against the irritating saltness of the tears. This membrane, called *conjunctiva*, not only lines the inside of

both eye-lids, but is reflected over the whole fore-part of the eye, and consequently serves to keep the eye in its proper situation, and prevents all extraneous bodies from insinuating themselves behind it. It varies in its structure according to the nature of the parts it covers: the portion spread on the anterior part of the eye is transparent and but little vascular, while that lining the lids is full of vessels, as may be seen in inflammation of the eye. We shall now pass to the eye-ball, or that part of the eye which is directly engaged in vision.

The muscles of the globe of the eye are seven; four termed *recti* or *straight*, two others are the *obliquus major* and *minor*, and the seventh the *retractor oculi*. That they may act with promptitude, six nerves are directed to the eye or to particular muscles. The four *straight* muscles which rise from the back of the orbit are inserted into the ball of the eye, immediately opposite, and at equal distances from each other. One of these rises to the upper part of the eye, immediately behind the transparent and visible portion of it, the office of which is to raise the eye. When it contracts, the eye must necessarily be drawn upwards. Another is inserted immediately opposite, at the bottom of the eye, for the purpose of depressing the eye, or enabling the horse to look downwards. A third is inserted at the outer corner, which turns the eye outward; and a fourth is inserted at the inner corner for turning the eye inwards. By means of these, the eye can be turned in any direction at the will of the animal. Should the animal wish to look upward and outward, then the outer and upper muscles are called into action, and can be modified in any manner at the will of the horse. These muscles perform another duty, namely, keeping the eye in its place, for while grazing the principal weight of the eye rests upon them; and to aid them in this, the seventh muscle, called the *retractor*, is added. This arises from the edge of the foramen through which the optic nerve enters the orbit. The use of this muscle is to support the eye generally, or when it is suddenly called into great action, and, aided by the straight muscles, it draws the eye back out of the reach of danger, and in the act of drawing it back it forces the haw to protrude as an additional defence.

These muscles perform another important office in altering the focus of the eye to accommodate itself to the examination of distant or near objects. The straight and retractor muscles draw back the eye, and force it upon the fatty substance, and thus in a slight degree flatten it, bring it nearer the retina or mirror, and adapt the eye to the observation of distant objects.

But as these muscles are chiefly employed in supporting the weight of the eye, they might not have power to turn it so quickly and to such an extent as the animal might wish or require; therefore the eye is furnished with two other muscles, whose entire office is to turn it. These are the *oblique muscles* already mentioned. The upper one is curiously constructed. It emanates from the back part of the orbit, and follows a direction upwards, and towards the inner side, and there, immediately under the ridge of the orbit, it passes through a perfect mechanical pulley, called *trochlea* (Gr. a pulley), and, turning round, takes a direction across the eye, and is inserted a little beyond the middle of the eye, and towards the outer side. Thus the globe of the eye is directed inward and upward. This is not all that is accomplished by this remarkable mechanism. That the eye may be completely defended, it is sunk deep in the orbit; but it may be occasionally requisite to bring the eye forward, and enlarge the field of vision. Under the influence of fear, the eye is positively protruded, and it is not only forced more forward, but the lids are opened more widely. It may be asked, how is it accomplished? The pulley-muscle, or *trochlea*, readily effects this, while as the straight muscles at the same time do not oppose it, or only regulate the direction of the eye, it is really brought forward. The lower oblique muscle has its insertion just within the lachrymal bone, and, proceeding across the eye, is fixed into part of the *sclerotica* opposite to the other oblique muscle; thus turning the eye in an opposite direction, and also assisting the upper oblique muscle in bringing the eye forward from its socket. The mechanism of the eye will be understood from an examination of the figures and reference to Plate VII., Fig. 1, ANATOMY.

The globe of the eye is of a roundish shape, and may be divided, for sake of description, into two parts; the transparent and the opaque. The former constitutes the whole anterior portion, which is pellucid, for transmitting the rays of light, and is very extensive in the horse. The latter comprises what is termed the white of the eye; it commences at the circular edge, or termination of the transparent part, and, running backwards, covers the entire hinder portion of the eye-ball. The opaque part serves principally to enclose and defend the transparent and more delicate parts of the eye, and to limit the transmission of light. It is composed of the following parts; viz., the external, white, dense coat, covering the whole posterior part of the eye; this, from its hardness, is named the *sclerotica*: it is but little vascular, and is seldom diseased.

On the internal surface of the sclerotica is spread the second coat of the eye. It is a delicate, soft membrane, and is well adapted for the expansion upon it of the optic nerve. This coat, called *choroid*, is also opaque, and differs in appearance in various creatures, being black in some, white in others, and variegated in several animals. This difference of colour depends on the pigment lining the surface of the *choroid* coat; and to this is to be ascribed the peculiar colour of the pupil of the eye in different creatures. In animals with white furs, as white rabbits, &c., the choroid coat being white, the eyes appear of a red colour. This, also, is the case even in the human subject, with persons having very white hair and eye-lashes; the pigment covering their choroid coat being generally fair, the pupils of their eyes also have a reddish hue. But the

pigment of the human eye being in general black, the pupil, in most persons, also appears black, or nearly so. The use of the black pigment, besides producing the various and beautiful shades, from the soft light blue to the deep sparkling black, which we see in the human eye, is to absorb and render useless the superfluous and superabundant rays of light transmitted to the bottom of the eye; which, if not thus absorbed and rendered harmless, might irritate and injure the retina, or optic nerve, or otherwise confuse vision. Hence we may know the reason why dark-coloured eyes are generally stronger and better enabled to endure much light than are the light-coloured; for the black pigment on these being less in quantity than it is on the former, the light eyes have not an equal power of absorbing and moderating the rays of light as the dark-coloured ones, but, receiving them with comparatively little diminution, their force is too great for the retina to tolerate. Hence it becomes irritated, and the animal is forced to close, or nearly so, the lids, to exclude the stimulus of the light, either in whole or in part. In the horse this is partly compensated by the change of shape in the pupil. (See Plate VII., Figs. 2 and 3.)

The pigment on the choroid coat of the horse's eye is black at its lower part, but of a light green superiorly; and from the combined effect of these two colours arises the greyish appearance of his pupils. The choroid coat, after lining, as we have said, the whole posterior surface of the eye, extends towards the anterior part of this organ. Here its edges are thrown into folds for the purpose of occupying less space; and, inclining inwards towards the *crystalline lens*, these folds, now called *ciliary processes*, attach themselves all round its circumference. These also are lined with black pigment, and serve to confine the passage of the rays of light to the lens. But what principally directs and limits the rays of light passing into the eye, is that circular curtain in the transparent part of this organ, which we see extending from the white part all round to the opening in the centre called the *pupil*: this is the passage through which the rays of light are transmitted to the nerve at the bottom of the eye. This curtain is termed *iris*, and has a muscular power, as may be seen in the enlargement and diminution of the pupil, or central opening of the eye, but which in reality is occasioned by the spreading towards the centre, or the receding from it, of the iris. The pupil being simply the opening formed at this part by the central edge of the iris. In a strong light, or when we want to view some very minute or near object, the iris contracts the pupil, by which the rays of light passing into the eye are greatly limited. On the other hand, the pupil is seen to be widely dilated when there is but a faint light, or when the object to be viewed is at a great distance. The iris, like the choroid coat, owes its colour to that of the pigment with which it is lined. In the horse it is generally of a cinnamon colour, which appears to be least liable to disease; but sometimes the iris is white, which is the cause of what are called wall-eyes in horses.

The *pupil* of the eye differs in shape in many creatures: in man it is circular; in the horse, horizontally oblong; and in cats, perpendicularly oblong. Hence the sphere of vision is different in the eye of each, owing to the capacity of its pupil. Thus the human eye, having a circular pupil, sees equally well at all sides, while that of the horse has a wider ranger of vision at each side, and the cat's from above downwards.

The *optic nerve* descending from the brain, passes through an opening in the bony orbit, and enters the back part of the globe of the eye in a trunk tolerably large; and having penetrated the sclerotic and choroid coats, already described, it then expands upon the latter into a delicate and partly transparent membrane, for receiving the rays of light transmitted to it by the transparent parts of the eye. It is now termed *retina*, and constitutes the third coat of the eye; on it are painted the various objects we behold, and it is the seat of the sensation of light.

We now come to the transparent parts of the eye, which constitute a most important portion of this organ. They consist of pellucid membranes and humours arranged in the following manner:—

First, the transparent cornea completes the globe of the eye at the fore-part, its circular edge running all round to be attached to the sclerotic opaque coat, just as the glass of a watch is joined to the case beneath. This membrane is of a hard texture, and serves to confine the fluids of the eye, and also, by its convexity, to refract the rays of light passing into the eye.

Immediately behind the cornea, lies the *aqueous humour*; it is a clear, thin, watery fluid, as may be seen on cutting the cornea, when this fluid will escape. This aqueous humour occupies the space between the cornea and the crystalline lens, and is partly divided into two portions by the iris, which floats like a circular curtain in this humour. The use of the aqueous fluid is, first, to support the convexity of the lucid cornea; and, secondly, to assist the latter in effecting refraction.

The *crystalline lens* is the next humour to be described. It is partly of a globular form, transparent, and tolerably hard in consistence, particularly towards the centre. It lies immediately behind the aqueous fluid, and has the vitreous humour (to be presently described) between it, posteriorly, and the retina, or optic nerve.

The *lens* is retained in its situation partly by these humours, and, in part, by the ciliary processes; which, as before mentioned, attach themselves all round to its anterior surface, for the purpose of confining the passage of the rays of light to the lens. The function of the lens is similar to that of the other transparent parts: but, owing to its greater convexity and density, it accomplishes refraction in a much greater degree than they do.

Between the lens and the retina is situated the remaining humour of the eye. It is called *the vitreous humour*, from its resemblance to fused glass, and is a little hollow on its ante-

rior surface, for lodging the back-part of the lens. This humour consists of a fine pellucid fluid, contained in a clear cellular membrane, as may be seen by cutting the membrane, when the fluid will escape drop by drop. The use of the vitreous humour is to complete the refraction of the rays of light just before they fall on the retina behind it.

Of Vision.—The eye effects vision through the means of light; for the rays passing from the objects we see to this organ, enter its transparent part, and are transmitted backwards to the retina, or expanded nerve, at the bottom of the eye. Here the rays impress the nerve producing the sensation of light, and also of the figure, colour, and motion of the objects viewed; and these sensations being propagated onwards by the nerve to the mind in the brain, there produce ideas or images of the visible properties of the things so creating impression; thus the operation and intention of vision are completed. The eye, then, is an apparatus for receiving the images of visible things, in the manner of a mirror, and for transmitting them to the mind for its information. The latter operation is effected, as we have said, by the nerve passing from the back part of the eye to the brain; and the former one is accomplished by the sensible or susceptible power of the retina, or expanded nerve at the bottom of the eye, which enables it to receive the images of objects as they are conveyed to the retina by the rays of light passing to it from these objects through the transparent parts of the eye. Now, as the retina, the seat of impression, and delineation of objects, is extremely small—not being larger in man than the section of a hollow globe of an inch in diameter, and being not greatly increased in the horse, in comparison to the vast range of vision of which the eye is capable—it follows that there was a necessity of making a provision in the eye for reducing that great range into a miniature size, otherwise the whole of it could not be painted, as we perceive it is, on the limited retina. For this purpose, then, are the transparent parts of the eye principally given; their great use being to refract and converge the rays of light passing from any object, so that the image of the object may be conveyed to the seat of impression in such a diminished form as is fitted to the size of the part. This conveyance, and consequent diminution of the figures of objects, they effect by their convexity and density; it being a law in optics, that these properties produce refraction in proportion to the degree in which these qualities exist. Thus, the rays of light coming from some object of magnitude, as a house or tree, at no great distance, strike first upon the transparent cornea; penetrating this membrane, they pass on, converged in proportion to the density and convexity of the membrane, to the aqueous humour; here, in their transmission, they become further converged; lastly, entering the crystalline lens and vitreous humour their convergence is completed, and the distinct figure of the object, in miniature, falls on the expanded nerve, and produces that impression we call vision. We shall suppose the animal looking at an arrow with the barb downwards, B C, Plate VII. Fig. 1. From every part of the arrow, rays of light will be sent forth in straight lines; and, in passing through the pupil, it is clear that those which flow from the under portion of the object, C, must flow upwards, while those from above, B, must pass downwards; and pursuing this principle, all the intermediate rays, *d e f*, will intervene, consequently a reversed picture of the object will be formed upon the retina at E F.

Paley makes the following observation on this subject: he says, "In considering vision as achieved by means of an image formed at the bottom of the eye, we can never reflect without wonder on the smallness yet correctness of the picture, the subtlety of the touch, and the fineness of the lines. A landscape of five or six square leagues is brought into a space of half-an-inch in diameter; yet the magnitude of objects which it contains are all preserved, are all discriminated in their magnitudes, positions, figures, and colours. A coach passing at its ordinary speed for several minutes, passes in the eye only over one twelfth of an inch, yet is the change of place in the image distinctly perceived throughout its whole progress."

II. THE NOSE, ITS MEMBRANES AND SINUSES.

The sense of smell in animals is of the highest importance. It is with them one of the leading means of distinguishing objects. In the horse, the nose and its apparatus are extensive and beautifully contrived. The nose extends from the forehead down to the lower extremities of the nostrils, where it has two large communications with the air; its breadth, too, is that of the whole face. Besides the nostrils, communicating with the outer air, there is an interior opening to the fauces (Lat., pl. of *faux*, a mouth). The openings of the nostrils end with the nasal and intermaxillary bones. Just over the arch of the palate, the nose communicates with the frontal sinuses by a sort of valve or flap, which, however, cannot to any great extent admit air into the sinuses. The nose is divided down the middle by the cartilage called the *septum narium* (Lat., *septo*, to separate), or division of the nostrils. The septum rests in a bone called the *vomer* (Latin for ploughshare), which is grooved to receive it.

The *frontal sinuses* are passages between the two tables of the frontal bones. There is also a bony partition which divides them into two equal portions. These sinuses communicate also with the nasal and the maxillary cavities. This conformation greatly increases the loudness and resonance of neighing. There are also important communications from the eye, called the *puncta lachrymalia* (Lat., tear-piercings); these open into the canal within the lachrymal bone, called the *nasal duct* (Lat., *ductus ad nasum*); this is continued between the turbinated bones, and ends by an opening inside the nostril, easily perceivable. This duct, which carries off the superfluous saline fluid secreted by the lachrymal glands, is lined with the pituitary membrane, and therefore often clogged up in glanders. (See Glanders, *post.*)

The *pituitary membrane*, which is the highly sensitive and delicate lining of the whole nasal passages throughout all their divisions, is the grand medium for the expansion of the olfactory or first pair of nerves, and with these forms the organ of smell. The pituitary membrane is part of the great mucous lining which begins at the eyes, nose, and mouth, pervades the stomach and intestines, and ends at the anus. It is furnished with a mucus, secreted over its whole surface, by which it is constantly kept moist, pliant, and susceptible. By this means insects are prevented from penetrating into the lungs. The design of this expansion of the olfactory nerves is to supply the place of touch, and what is acquired by experience by man. It is by this exquisite sense of smell that the horse selects such food as is best calculated for his nutriment, and is enabled to reject what is poisonous. By smell he judges of the quality of his food in a domestic state, and examines a stranger. The horse will recognise his master or favourite groom by the sense of smell, and frequently expresses such recognition by a neigh. These cavities are also the organs of voice; the sound reverberates through them, and increases in loudness as through the windings of a French horn. All the air which passes to and returns from the lungs must go through the nostrils, as he can breathe through the nose only. The nostrils ought therefore to be large and expanded. The skin also which covers them should be thin and elastic, that they may the more readily yield when the animal requires a greater supply of air while trotting hard or galloping. In the race-horse the nostrils are wide and flexible, while in the cart-horse they are confined, and surrounded by a quantity of cellular substance and thick skin.

The common skin covers the nose and upper lip, but without its usual accompaniment, the adipose (fatty) membrane. It has also some fine hair fringing the edges of the nostrils. The integument is turned in for a little distance up the nostril, being easily distinguished by its colour from the delicate mucous membrane. The well-known pouch called the *false nostril*, outside each nasal opening, is made by a doubling-in of the integument. The purpose of these false nostrils is to allow the true nostrils to enlarge without distorting the face. The openings of the nostrils are guarded on each side by cartilages, and these are acted upon by the muscles of the nose and lips.

There are four distinct cartilages attached to the nostrils, which are exceedingly elastic, and bring them back to their ordinary dimensions whenever the muscles cease to act. The bones, also, of the nose are tapered off to a point, to give a wider range for the action of the muscles; while the cartilages are so constructed as not only to discharge the office above referred to, but also to prevent this tapering point of bone from injury.

Blaine thus summarizes the physiology of the nasal organs:—"Comparative anatomy shows that the sense of smell is in most animals placed at the entrance of the respiratory organs; by which they are made subservient to both purposes of breathing and smelling; and by the same means are rendered as well voluntary as involuntary agents; for the action of respiration will carry all the effluvia from bodies, whether sought for or not, against the sensitive pituitary membrane. The herbivorous tribes smell vegetable matters, and have an abhorrence of all fleshy odours. In all the vertebrated animals, the parts connected with the organ of smell are, like the parts composing the other organs of sense, double. The cognizance taken of the volatile portions of bodies continually flying off from them, and impressed on the sensitive surface of the internal nostrils, is transmitted by the nervous expansion of the olfactory nerves to the brain; where it produces the sensation we understand by the name of smell."

III. THE EAR AND ITS CONSTRUCTION.

The *ear* consists of an inner and an outer part, called the external and internal ear The form of the outer ear, which shall be first considered, is admirably adapted to the habits of the animal; it consists of that part which is visible, from its root at the temporal bone to the point. It is formed by a flexible yet firm cartilage of an oval shape, hollow, and terminating in a point. It is varied in its motions; and as the horse is generally seen with the conch, or shell, of one ear directed forward and the other backward, there seems good reason to conclude that the sense of hearing is the only double sense that is equally true when one side only is brought into use.* The hair within the shell of the ear is long and fine, guarding it from the entrance of insects, dust, or foreign objects floating in the air. The clipping of this hair is a silly and dangerous practice. There is a peculiar gland inside each ear, which secretes a scaly whitish and greasy substance.

The *cartilages* of the ear are three. The *concha*, or shell, is the conical body which gives it form; it is covered by the skin, and clothed with muscles. This cartilage is attached to the skull-bone (cranium), through the second, the *annular* (ring-shaped) cartilage, a small movable body. The third is the *angular* cartilage placed upon the forehead, and which moves with the other cartilages by means of the muscles of the ear.

The *muscles of the ear* are twelve in number. They raise, depress, and partly rotate the ears. A specific description of the office of each would be tedious and useless, save in the dissecting theatre.

The *meatus auditorius* (Lat. *meo*, to flow, to run), is partly bony, partly cartilaginous. It is lined with fine

* Dr. Arnott, in his *Elements of Physics*, says:—"When horses or mules march in company at night, those in front direct their ears forwards; those in the rear direct them backward; and those in the centre turn them laterally or across. The whole troop seeming thus to be actuated by one feeling, which watches over the general safety." (vol. i. p. 478.)

attenuated skin, which is stretched across its base, and has several *follicles* (Lat., *folliculus*, a little bag), to secrete the ear-wax.

The *membrana tympani* is a delicate membrane covering the cavity called the drum (Lat., *tympanum*) of the ear, over which it is expanded, and separates the outer from the inner ear. The tympanum, which is roundish in form, is therefore the first cavity of the internal ear.

The mechanism of the *internal ear* is so beautiful an example of creative design, that a brief description is demanded; the various parts here mentioned are figured and referred to in Plate VI., Fig. 1, and its accompanying description.

The cavity of the tympanum contains four small bones, united to the membrane and to each other. These are called *malleus* (the hammer), *incus* (the anvil), *stapes* (the stirrup), and *orbicularis* (globe-like), from supposed resemblances to those objects. All these bones are moved by muscles, which it is here superfluous to describe. The internal ear presents several openings. The *mastoid cells* are small cavities in the substance of the mastoid (Gr., *mastos*, the nipple, *oidos*, like—nipple-shaped), processes of the hard temple bone. They are lined by a fine membrane, communicate with each other, and have a common opening near to the entrance to the Eustachian canal.

The *fenestra ovalis* (Lat., oval window), is an opening between the tympanum and the *vestibule* (Lat., a porch), a cavity just beyond that of the tympanum. Below this is the *fenestra rotunda* (Lat., round window). The *semicircular canals* are three bony passages leading into the vestibule; and lastly, the *cochlea* (Lat., *cochlea*, a spoon), a spiral canal inside the opening of the vestibule into the tympanum.

The *Eustachian tube* (from Eustachius its discoverer), opens at the upper and front edge of the hollow of the tympanum by a small slit in the bony wall, and passes thence through the petrous part of the temporal bone, part of the sphenoid, when it becomes cartilaginous, and expands into the guttural pouch. The guttural pouches are large and empty bags in the horse, connected only by transparent cellular tissue, and each closed by a valvular opening which separates it from the nose. The nerves of the inner and outer ear are furnished by the soft portion of the seventh pair. The blood is supplied by the carotid arteries, and returned by the jugular veins.

The sense of hearing is thus excited:—The collision of bodies produces the phenomena called sounds, and these are a series of waves or tremblings communicated to the surrounding medium,—air, water, &c.,—until they reach the external ear, which, in the horse, is remarkably adapted for catching these sonorous waves.

The sound collected by the *concha*, outer ear, passes through the lower or *annular* (ring-shaped) *cartilage*, and through irregularities, which, while they break and modify it, carry it on to another canal, partly cartilaginous and partly bony, conducting immediately to the internal mechanism of the ear. This canal (the *external auditory passage*) has at its base, stretching across it and closing it, the membrane called *the drum*, or tympanum. The vibrations now reach the four little bones already described. In Mr. Youatt's popular volume, "The Horse" (pp. 68—72), published by the Society for the Diffusion of Useful Knowledge, is an amusing and fanciful account, borrowed from human surgery, of the functions of these bones. These speculations are purely conjectural as regards the horse, and may, therefore, be passed over. What follows is more to our present purpose.

The impression, then, has been conveyed, by the medium of the bones, from the membrane of the drum to the membrane on which the stirrup rests, and which closes the *fenestra ovalis*, opening into the *labyrinth* of the ear.

Passing the *fenestra ovalis*, we arrive at the seat of hearing. A very irregular cavity presents itself, filled with an aqueous fluid, while the substance or pulp of the soft portion of the seventh pair of nerves (the *auditory* nerve) expands on the membrane which lines the walls of this cavity. These interior chambers are filled with water instead of air, because it is not one-hundredth part so expansible, and, moreover, its powers of conducting sound are so much greater, that while sound passes through air at the rate of 1,132 feet in a second, it passes through water 4,000 feet in the same time. Sound, too, is propagated more intensely through water than through air.

The fenestra ovalis opens into the *labyrinth*, which is divided into three compartments. First is the *vestibule*; on the upper side are several foramina, or holes, which conduct to the *semicircular canals*, also containing fluid. The hinder one is a perfectly semicircular canal, with two openings into the vestibule. The other two run into each other in a part of their course, and have one common opening, and one peculiar to each; so that these canals open into the vestibule by five apertures.

On the other side is another complex mechanism, of which the use is not known. It is the *cochlea*, a spiral lamina, which at the top approaches the Eustachian tube.

The *cribriform plate* extends beyond the base of the cochlea to the vestibule, and those portions of nerve there enter which spread over the vestibule and the semicircular canals; but the principal part of it seems to be given to the cochlea. What is the distinct and peculiar office of these parts, so curiously and yet so differently constructed, we know not. In the horse the *cochlea* is much larger, compared with the canals, than it is in the ox or sheep; but for what especial purpose we are unable to determine. Nor can we account for the large pouch-shaped opening of the Eustachian tube in the horse, nor for the small development of the mastoid cells in the horse, while they are exceedingly large in the ox. There are many parts of the frame, the precise use or function of which we cannot ascertain; but, as far as we do understand the mechanism of the various

animals which pass under our notice, all is admirable in adaptation to its purpose.

IV. THE TONGUE AND ITS ORGANIZATION.—TASTE.—THE PALATE.

The TONGUE is the large fleshy body for the reception of which the cavity of the mouth seems to have been specially formed. It is composed of a bundle of small muscles, which unite to form its body, mixed with glandular substance and fatty matter. It is covered by the mucous membrane called the *buccal* (Lat., *bucca*, mouth), which also covers the gums and the palate. The top of the tongue has papillæ* of considerable size at the sides; towards the tip they are smaller. The tongue is free from the lower part of the mouth for a short distance from its lower end; thence it is fastened to the bottom of the mouth by a fold of the lining membrane called the *frænum* (Lat. for bridle). At its base the tongue is fixed to the *os hyoides* (see *ante*, BONES AND MUSCLES), and to this most of its muscles are attached.

The tongue is a double organ; that is, all its muscles are in pairs. The fibres too, if traced, will be found to cross each other net-fashion; that is, those of the right side end upon the left side of the tongue, and vice versâ. These muscles consist of five pairs and a small single one.†

The *nerves* are the *lingual*, or mouth pair, which effect its motions; the *gustatory* (tasting), a branch of the fifth pair; and the *glosso-pharyngeus* (Gr., tongue-throat) nerve, of which the *glossal* branch only goes to the tongue, and is supposed also to confer a peculiar delicacy of sympathetic sensation to the organ.

The *arteries* of the tongue are derived from the branch of the carotids beneath the jaw-bone, and the blood returned into the jugular (throat) veins.

The protrusion of the tongue is an action somewhat difficult to explain clearly. If we give to the muscles of the tongue the single property ascribed to them by anatomists, that of contraction, we shall be at a loss to account for a body wholly of muscle being elongated and propelled out of the mouth, and, moreover, at the same time, moved in almost every direction according to the will. The glandular and the fatty matter interposed may account for some of this peculiar action, by their hardness, and partial resistance, acting in some measure like bone; but the question is too purely scientific to deserve space for its discussion in a work like the present.

The tongue is of great assistance to animals, in place of hands. It is not only engaged in the process of taking the food into their mouths, but in its preparation by mastication, by disposing it under the grinders, again collecting it, and conveying it to the back of the mouth to be swallowed. Its use in discriminating flavours we shall immediately notice.

The TASTE is originated or resides in the nervous papillæ of the tongue; and the importance of these organs to quadrupeds is evinced by their great number and length. By it, "what to eat, drink, and avoid," is a question of almost infallible solution; deleterious or poisonous food being immediately rejected, unless disguised so as to prove the rule by the exception. Taste would appear to be absent when the mouth and the food are completely dry: but in this case the saliva at once comes to the rescue. Liquids are therefore much more quickly and discriminately tasted than solids; the latter requiring mixture with the saliva, and mastication, for their due appreciation. The tongue in the horse, as in most vertebrated animals, is endued with high sensibility in this respect; but its discrimination is heightened by the co-operation of the sympathetic nerves of smelling. Who that has ever seen the loathing with which a horse turns from a greasy bucket, before he has even touched the water it contains, but must own the intimate connection of these senses?

Closely connected, too, with this organization, is the action of the *salivary glands*. These are three in number on each side. The first and largest pair are called the *parotid glands*.‡ (See Plate VI.) These are situate on each side, in the hollow formed by the articulation of the head and neck, extending from the root of the ear to the angle of the lower jaw. It is formed of *lobes* (Gr., *lobos*, a rounded body), connected by cellular membrane. From each lobe issues a vast number of small ducts, which finally unite in a tube which empties the saliva into the mouth. This tube, called the *parotid duct*, on leaving the gland, passes along the inner side of the jawbone; then, in company with the submaxillary artery, crosses below the bone, and then enters the mouth near the third grinding tooth. These ducts will discharge a pint and a half to a quart of fluid per hour in the mastication of moderately dry food.

The next pair of salivary glands is called the *submaxillary*. They are much less in volume than the parotids, and are embedded in the channel between the sides of the lower jaw. They are also composed of a number of kernels, each having its proper duct, which unite in one trunk, and penetrate the *buccal* muscle, and open in and upon the *frænum* or bridle of the tongue, about a couple of inches from the front teeth. The terminations of these ducts are marked by small bulbs or projections, which, after the disease known as STRANGLES, by ignorant farriers are called VIVES, and made the subject of barbarous treatment. BARBS or PAPS, in inflammation of the mouth, often sequent on catarrh, are also seated in these projections, and brutal torture is inflicted on the animal with knife and cautery by the farrier.

* From the Lat. *papus* (nipple of the breast). The papillæ are terminations of nerves. These minute projecting filaments are said each, with much probability, to contain a separate branch of the nerves of touch.

† These are called *Hyoglossus brevis* (a pair), *Hyoglossus longus* (a pair), *Accessories* (two pairs), *Genio hyoglossus* (a pair), and the *lingualis* (single). These all attach in different ways to the *os hyoides*.

‡ Gr. from *para*, near, *ous*, *otis*, the ear.

The *sublingual glands* are the third source of *saliva*. They are yet smaller than the submaxillary, but more numerous. They open by numerous little ducts, which may be seen on each side of the mouth. The openings resemble little folds of the skin of the mouth and underside of the tongue. When inflamed they have the appearance of small pimples, and receive a number of absurd names, as *gigs, flaps,* and *bladders,* and the farrier cuts them off or burns them down!

Besides these six great sources of supply, there are little glands scattered about the whole cavity of the mouth. These are the *labial* glands on the inner surface of the *lips,* the *buccal* glands on each side of the *mouth, folliculose* and *mucous* glands on the interior of the mouth, surface of the tongue, and soft palate. These all take part in or sympathise with the salivary secretion or its diseased retention.

The *palate* of the horse has two divisions, the *hard* and the *soft.*

The *hard palate* is full of vessels, and is formed of condensed cellular tissue. It lines the roof of the mouth, and is divided into ridges called *bars.* (See ANATOMY, Plate V., Fig. 3, and Plate VI., fig. 2.) The use of these is the retaining of the food within the mouth in the act of mastication. For an account of the barbarity practised on this part, see Art. LAMPAS, *post.* Bleeding in the palatine vein for Staggers, &c., will be noticed under the proper head.

The *soft palate* (*velum* or veil) falls down behind the tongue, where it divides the mouth from the fauces. It is an expanded *uvula* (diminution of Lat., *uva,* grape or berry) adhering to the arch of the palate bone, where the hard palate terminates. Its lower loose edge rests upon the *epiglottis* (Gr., *epi* upon, *glotta* the tongue), at the opening of the larynx, called the *glottis.* Sloping in this direction, it is easily raised by any substance or fluid seeking to pass from the mouth, and is closed more firmly by anything coming in the opposite direction. Air itself has not body enough to raise the *velum palati.* The horse, except in coughing, therefore breathes through his nostrils. The soft palate has much glandular matter in its substance. It has one lifting muscle (*levator palati*) and two *depressors.* The last-named pair keep the soft palate in its place resting on the epiglottis. We shall have something more to say of this when we come to Swallowing (deglutition) and Respiration.

The *fauces* merely designate a part at which several structures join. Eight distinct parts open into the fauces, the two guttural pouches, two Eustachian tubes, the *pharynx,* the *larynx,* the *mouth,* and the nasal orifices, which have only one common opening—the nasal septum or division ending before reaching the fauces.

The *gums* are a compact, elastic substance, surrounding the neck of each tooth, and, adhering to its periosteum, support it firmly in all directions. The *buccal* membrane covers them and lines the mouth. The gums, in health, have little feeling; but when diseased they are intensely sensitive.

The *lips* of the horse are highly endowed with feeling. This may be seen by the combination of touch and smell when the horse is gathering his food. As he collects it, the delicate sensibility of the upper lip, aided by the olfactory nerves, enables the animal to reject all poisonous or unsavoury plants, and receive only the grateful and nutritive food. Grooms and farriers are well aware of this sensitiveness, and accordingly screw on the twitch here, to paralyse and dominate the animal.

The internal parts of the mouth are supplied with blood by the inferior and superior maxillary arteries, after passing through the foramina in the upper and lower jaws. The facial artery and the lateral nasal also pour in blood. Motion is derived from the *portiodura* (facial) nerve, and the sense of touch from the supramaxillary branch of the fifth pair.

We here leave the cavity of the mouth. We shall consider the *pharynx* and *œsophagus* with the stomach; the *larynx* and *bronchiæ* with the lungs and respiration.

CHAPTER XX.

THE ORGANS OF CIRCULATION AND RESPIRATION.—VISCERA OF THE THORAX (CHEST), THEIR MUSCLES, MEMBRANES, AND VESSELS.—THE HEART: ARTERIES: VEINS AND CAPILLARIES: THE BLOOD: CIRCULATION.—THE LUNGS: THE LARYNX: THE TRACHEA: BRONCHIAL TUBES: RESPIRATION, CHEMICAL AND MECHANICAL.

THE ORGANS OF CIRCULATION AND RESPIRATION.

THE second great cavity of the body, the thorax, or chest, contains the central organs of circulation and respiration. The first consists of the heart and the two great lobes of the lungs, with their appendages. When the chest is opened, a smooth bright membrane is perceived, lining its internal surface and covering its contents. Each side of the chest has its own *pleura* (Gr., *pleura*, the side), or lining membrane, and they double and join together in the middle of the chest into a strong septum (or division) called the *mediastinum*;* besides this rib-lining (called *pleura costalis*), and lung-lining (called *pleura pulmonaris*), there is a third for the heart, of smaller size; they are all serous membranes, as such, secreting a fluid called serum, and preventing friction from the constant motion of the parts. The left pleura is smaller than the right, the right lung having an extra lobe, and therefore requiring a larger sac to hold it. The heart is farther continued in a bag called *pericardium* (Gr., *peri*, around, *cardia*, the heart), lined by the pleura just mentioned. This membrane usually contains about an ounce of pale yellow lubricating fluid. The use of the pericardium is to confine the heart in its situation, to sustain it in its reciprocal action with the lungs, to guard it from any undue collision, and to serve as a general protection to the heart. When the pericardium becomes inflamed, an undue secretion of this fluid is induced, sometimes to such an extent as to obstruct the action of the heart. (See PERICARDITIS, and DROPSY OF THE HEART, *post.*)

The great muscles and membrane of respiration, the intercostals and the *midriff* or *diaphragm* (Gr., *diaphragma*, from *diaphrasso*, to separate by a partition), we shall speak of presently.

The HEART itself is a large hollow involuntary muscle of immense power: that is, its action is independent of the will of the animal, which is not the case with the organs of respiration, the action of which the animal can suspend for a short period, accelerate, or retard. There are four cavities in the heart (see ANATOMY, Plate XII.), two below, called *ventricles* (diminutive of Lat., *venter*, a belly), and two above, called *auricles* (*little-ears*, from Lat., *auris*, the ear). Each of these *ventricles* has two large openings, one into the *auricle*, or upper cavity, the other forming the mouth of a large artery. The cavities are separated by a muscular or fleshy partition called a *septum*. The *right ventricle* has within it curious fleshy pillars, called by anatomists *carneæ columnæ*, from which proceed *tendinous cords* (*cortina tendinea*), attached to three valves between the right auricle and ventricle, shutting them off from each other when closed. The *left ventricle* is longer than the right, but smaller in size, and has much thicker walls. The *right auricle* is irregularly round, and has two large openings for blood, each being the mouth of a *vena cava*. The *left auricle* is more muscular though smaller, and receives the *pulmonary* (lung) *veins*, five in number. It has also some fleshy and tendinous cords, or contractile braces. The *valves*, too, are strong membranous appendages, and there are also valves at the commencement of each artery, as well as between the auricles and ventricles. Those to the pulmonary artery are called the *semilunar*; that of the right auricle, the *tricuspid* (from having three flaps); that of the left, the *mitral* (from having two flaps). The use of these valves is to prevent the return of the blood; for the *aorta* (Gr., *aorta*, coffer, ark) never being entirely empty when the ventricle dilates, the blood remaining in the artery would be sucked back but for this contrivance—the pressure closing the semilunar valves. The heart is furnished with blood for its own sustenance by the *coronary arteries*, it being returned by the *coronary veins*. Its nerves come from the eighth pair—the *cardiac plexus*, consisting principally of the *par vagum* and *sympathetic nerves*. (See BRAIN AND NERVES, *ante*, p. 195.) Such is the main apparatus by which circulation is initiated and carried on, with the aid of arteries and veins.

THE ARTERIES † are elastic tubes originating from the ventricles of the heart by two great trunks, the aorta and the pulmonic, the subdivisions of which supply the whole body with blood. They are mostly seated deep under muscle or bone, for their better security. Some arteries, however, as that of the lower jaw, run close to the surface; and it is from this circumstance, and the jawbone resisting the pressure

* Formed from the Latin, *quasi in medio stans*, as standing in the middle.

† *Artery*, from the Greek *arteria*, signifying an air-vessel. The ancients, ignorant of the circulation of the blood, finding the arteries always empty after death, supposed they were tubes containing air.

of the finger, that the submaxillary artery is felt for the pulse of the horse. The outer coat is condensed cellular tissue, so elastic as to keep the artery cylindrical when empty. The middle coat is of a yellow elastic tissue, and the internal coat a serous tissue, like synovial membrane. By conveying the blood to the different parts of the body, the arteries keep up the vital principle, bearing nutriment and heat; and as the heart is the first propelling power, so the arteries, being distended by the column of blood, contract their muscular coats and drive the fluid continuously onward. The dilatation and contraction is called the *pulse*, and is perceptible in the larger branches, but not in the very small ones, except in cases of inflammation. It is noteworthy that the arteries of the horse have a much larger proportion of the elastic coat than those of man, and hence acute inflammations in the horse run their fatal course far more quickly.

The principal arteries of the horse are :—the *aorta* dividing into posterior and anterior; the *posterior aorta*, which furnishes blood to all parts except the head and fore-limbs; the two *iliac;* the *inguinal* (groin); the *renal* (kidney); the *mesenteric* (intestinal); and the *femoral* (thigh) arteries.

The *anterior aorta* supplies the head and fore extremities. It is continued to the near third rib, when it divides into two branches called *arteriæ innominatæ* (nameless arteries). The *left branch* supplies the *dorsal* to the *back*, and two *vertebrals* to the *spine*. The *right branch* of the *aorta* is much larger and longer than the left. After giving off several branches (see plate), it becomes the common *carotid*, which again divides into the right and left *carotids*,* supplying the most important vital and sentient organs of the head and brain.

The *axillary artery*, as furnishing the fore extremities with blood, is next in importance. It gives branches to the *humeral* (shoulder), that again a branch to the *brachial*, and to the scapula and ribs; again behind the fore-leg to the seat of the "spur vein." A branch becomes the *radial* (spokebone, fore-arm) *artery*, which proceeds downwards, now reaching the flexor muscles; yet lower, it is the *metacarpal* (beyond the wrist) *artery*, and goes down under the nerve on the inner side of the leg; thence, at the lower part of the cannon-bone, it divides just above the fetlock into two *plantar* (Lat. for sole) *arteries*, on the sides of the pastern bone, and by the back of the foot, where each sends a branch into the fatty frog. The main trunks continue along the wings of the porous coffin-bone, bend downward, and, uniting, form the *circumflex artery*, which runs round the margin of the sole. The General Anatomy of the Foot will complete this subject. An examination of the anatomical plates will make the arteries and their courses more clear than any amount of verbal description.

* From the Greek *carōo* (to cause to sleep); because the ancients thought these vessels supplied the vapour or spirit which sent the brain to sleep.

We have said that the contraction and dilatation of arteries produces the *pulse*. The pulse of a middle-aged horse in health is from thirty-six to forty beats per minute; when slower it indicates debility, when accelerated, inflammatory disorder. It is sixty in the colt at birth, but gradually decreases till full growth. The smaller the horse, the more rapid the pulse, all other things being equal. The thorough-bred, from higher irritability, is quicker in the beat by five or six pulsations per minute than the heavy and coarse-bred animal. The *pulse* will receive due medical consideration when we come to treat of fever and inflammation. We may state that the arteries of the horse are seldom, if ever, found ossified, a circumstance of frequent occurrence in man.

The Veins and Capillaries. *Veins* are the general termination of arteries, their extremities commencing from them, after the manner of two trees joined by the extremities of their branches. They collect the remnants of the blood which the arteries had distributed over the body, and convey it back to the heart, to be prepared for taking a fresh round over the frame. The veins are furnished with valves on their internal surface, which are so constructed as to permit the blood to flow towards the heart, but to prevent its return. These valves are in great abundance, being found at the distance of only an inch, or even in less space, from each other; they are folds of the internal coat of the vein, and are generally to be met with three together, in the horse. Valves are not equally distributed throughout the veins of the horse. In some parts, where the blood has to travel upwards, against gravity, they are numerous; when it has to flow downwards, there are few or none. There are few in the viscera. In the jugular vein (Plate VI., Fig. 5) the valves are all placed opening towards the heart. Thus, when the horse is standing with his head elevated, the blood has only to fall through the vein, the valves being open, but when he has his head lowered, as in feeding, and the venous blood has to return upwards (or against gravity), the valves act and prevent its descending.

All the branches of the veins, returning from the different parts of the body, run into two great trunks, called *cavas*, which are inserted into the right auricle of the heart; the anterior cava conveys the blood returning from the head and anterior parts of the animal, whilst the posterior cava conveys that returning from all the hinder parts of the animal. Both empty their contents, as before observed, into the right auricle of the heart. Again, the blood distributed over the lungs, is also returned to the heart by eight pulmonary veins in the horse, but only by four in the human subject. These eight trunks are formed from the venous ramifications spread over the lungs, and empty themselves into the left auricle of the heart. The structure of the veins differs from that of the arteries, the former being much more thin in their sides, and having no pulsation; and hence the blood is

forced through them principally by the impetus occasioned by the contraction of the heart and arteries, and which is communicated to it while passing through the veins. This, perhaps, is one reason why they are much more numerous in their branches than are the arteries, and also why they anastomose* more frequently; for otherwise, the injuries these delicate vessels are liable to in their passage between the muscles must interrupt the circulation, and be productive of bad consequences. This provision for guarding the circulation of the blood against obstruction, by multiplying the venous communications, is particularly to be seen in the foot of the horse, where a most beautiful net-work is formed by innumerable branches of veins running into each other.

The *Capillary Vessels* (Lat., *capilla*, a hair) are so called from their minute fineness. Small as they are, they are indispensable to nutrition, calorification, secretion; indeed, every great function of the living body is performed mainly by these little channels. The great blood-vessels known as arteries pump the blood from the heart, and the veins return it exhausted. The arteries are arborescent, and increase in number and diminish in size as they become more distant from the circulatory centre; in like manner the veins branch out and anastomose. Now between these dwindling terminations of the arteries and the beginnings of the veins, comes the peculiar network of countless vessels called the *Capillary System*. Some of these are large enough to admit three or four red globules of blood, some only one, and most will pass nothing but the *serum* or fluid part. Minute research upon this subject would overload these pages; the functions and organization of the capillaries will be found in Schwann's *Microscopical Observations of Animals*, translated by H. Smith, and Paget's *Supplement to Haller's Physiology*.

OF THE BLOOD.

Blood, in its primary or essential character, is alike in all animals. It is *red* in the higher orders, though its intensity of colour varies much under different circumstances. Venous blood is almost purple, and arterial of a bright red colour, for causes we shall note when we come to respiration. The temperature of the blood of the healthy horse is about 100° (98·24° in Tiedemann's comparative tables), of man 98°, the ox 104°, the dog 101°, the cat and monkey 103°, pigeon, hen, and duck 109° to 111°. Arterial blood is one degree warmer than venous. In fever a rise of 3 to 7 degrees is not uncommon.

The specific gravity of blood varies, as well as its temperature. Water being taken as 1000, blood may be estimated at 1050 specific gravity, and it has been found to bear the proportion of 1120 to 1000. Venous blood is heavier than arterial.

* Gr. *ana* (between), *stoma* (a mouth). The Latin word *inosculata* means the same thing, the opening of one vessel into another, as do the arteries, veins, and lymphatics (capillaries).

The quantity of blood in an animal, in proportion to its size, also varies. Very fat animals have less in proportion than lean ones; and it is said the domesticated horse has less than the wild animal of the Pampas. A middle-sized horse has had forty-four pounds taken from him.

The blood, while circulating in the body, is composed of two parts, a liquid and a solid. The one called by human anatomists *liquor sanguinis*, the other, cellular in its character, blood-corpuscles, or globules. When blood is allowed to stand after being taken from the body, it separates into two distinct parts, one the solid portion, which contains the corpuscles and the fibrin or coagulable lymph, called the *clot* or *crassamentum*, the other the pale yellowish fluid called *serum*. The process of separation is termed *coagulation*. The proportion of red globules, fibrin, and serum, varies in different animals. The *red particles* seem connected with the strength and excitability of organs, as the parts subjected to the greatest exertions,—as muscles,—have most of them; colour being attended with development of flesh. *Fibrin*, however, appears the chief nutritive constituent of the vital fluid. If the *serum* and *red globules* are separated from it, a tough, white, fibrous mass remains, which in general character and chemical composition resembles muscular fibre deprived of its membranes and colouring matter. This forms the solids of the body, even to the callus of bones. It coagulates spontaneously, is dissolved in alkalies, but not in oils, spirits, or water. Spontaneous coagulation is much slower in the blood of the horse than in that of man; the human blood "*sets*" in seven or eight minutes in ordinary temperatures; that of the horse takes twenty-four hours to coagulate.

The fluid basis of the blood (*serum*) serves to dilute it, and forms almost one-half of its bulk. It is slightly saline, and less putrefactive than the coagulum. It remains fluid in those degrees of heat between 30 and 160 degrees Fahrenheit: with a less heat it freezes; in a greater it partially coagulates. It appears chemically composed of albumen, gelatin, saline matter, and a considerable quantity of fluid, which drains from it, called the *serosity*. Serum appears not only the fluid base of the blood, but it also dilutes all the secretions: when morbidly increased, it gives rise to dropsy. The blood, therefore, is viewed as a compounded fluid, made up of these several parts, and which, considered as an aggregate, is the most essential component of an animal. All parts of the body are formed of it; and all parts of the body can be resolved again into it, by means of the absorbents; hence we must conclude that there is a very intimate connection between the solids and the fluids.

The absorbents and excretories will come to be considered presently. The practice and indications of BLEEDING will find their place under INFLAMMATORY DISORDERS, and OPERATIONS.

Minute analyses of the blood of men and animals, and much curious information, may be found by those who would exhaust the subject, in Quain's *Anatomy* (by Sharpey),

Carpenter's *Physiology*, Liebig's *Animal Chemistry*, Milne-Edwards's article "Blood," in the *Cyclopædia of Anatomy and Physiology*, &c.

THE CIRCULATION OF THE BLOOD.

Such is the apparatus,—heart, arteries, veins, and capillaries,—by which the circulation is effected, and the composition of the fluid which is circulated. The manner in which the blood is sent to every part of the frame may be thus described. There are *two* circulations: one the *general* or *greater*, the second, the *pulmonary* (lung) circulation. We will take the first or greater circulation. The blood is now dilating the left auricle, which being stimulated contracts, and the left ventricle dilating, the blood is forced into the lower cavity on the left side. The left ventricle is filled, and, contracting, sends the vital stream into the aorta; that also contracts upon the pressure from within, driving it into the right and left aorta, and so on into all the ramifications of the blood-vessels and the capillaries. Having performed its office, it is returned from the capillaries by the veins; and, lastly, by the two great *cavas* (veins) into the right auricle of the heart. This double pump acts synchronously (Gr., *syn*, together, *chronos*, time), the right and left ventricle contracting and dilating at the same instant, and the auricles following suit. Thus, at the moment the left ventricle pumps its contents into the aorta, the right ventricle empties itself into the pulmonary artery. Therefore, as the left auricle receives the pulmonary blood at the same time as the right auricle receives the venous blood from the two *cava veins*, the dilatation and contraction are simultaneous. Anatomists call these the *systole* (Gr., *systolè*, contraction), and the *diastole* (Gr., *diastolè*, dilatation). The *systole* sends the blood into the aorta and the pulmonary artery, and produces what we call the *pulsation* or *beating* of the heart.

The second is the *pulmonic circulation*. This is carried on as follows:—the two *cava veins* pour their stream into the right auricle, when that cavity dilates after its muscular squeeze. When it contracts again, it sends it into the right ventricle; thence it is urged into the pulmonary artery, being prevented from returning in each case by the valves already described. By the division of the pulmonary artery within the lungs (see Plate XII.,) the blood is exposed to the air-cells, and is changed in the capillaries from venous to arterial blood, in other words, is aërated, or *oxygenated*. The blood, thus restored in colour and stimulus, is brought back to the heart (the left auricle) by the pulmonary veins. This is termed the *pulmonary* circulation. It is noteworthy that this is the reverse of the greater circulation, inasmuch as here the arteries carry out venous blood and the veins return arterial blood. These two circulations, it will be seen, form but one direct round for the transmission of the blood through the whole system.

THE LUNGS, THE LARYNX, AND BRONCHIAL TUBES.

The cavity of the chest is filled by two soft and slightly elastic masses called the LUNGS. They are divided into two large sections, one on each side the body, which again are subdivided into lobes; but the grand division is into the right and left lung; each lying within its respective side of the chest; and, as well as the internal surface of the ribs, being lined or "varnished" with the thin membrane (the *pleura*) already described. The right lung has four lobes, the left, three only, as we have before noticed. The colour of the lungs varies with age; in the colt they are pink, in the full-grown horse, darker red; in the old horse, bluish-grey and granulated.

The *larynx* (Plate V., Fig. 3, Plate XII., Fig. 5), which is the commencement of the windpipe (*trachea*), opens in the fauces (see *ante*), forming a cartilaginous box, which is the seat of the voice. It has five pieces, connected with the *os hyoides*. (See TONGUE, &c.) The larynx has six cartilages; the *thyroid* (Gr., *thyros*, a shield, *oidos*, like), *cricoid* (Gr., *cricos*, a ring, and *oidos*), two *arytenoid* (Gr., *arytaina*, a funnel, and *oidos*), and the *epiglottis* (Gr., *epi* upon, *glotta* the tongue). The larynx is further coated with muscles within and without, giving it an immense range of movements. The lining membrane of the larynx is the most sensitive of the whole animal system. A grain of any substance, or even a drop of water, passing on to it, throws the animal into an involuntary and uncontrollable spasmodic coughing. It is thus the sentinel and guardian of the passage to the delicate apparatus of the lungs. Its folds are called the ventricles (bags) of the larynx, and it also covers the various ligaments extended across the tube, called the voice-cords (cordæ vocales).

The arteries of the larynx are the carotids, the veins empty themselves into the jugulars; the nerves, the *recurrents* and superior *laryngeal*, both from the eighth pair (*par vagum*).

The variations of sound emitted by the voice of quadrupeds appear to be governed principally by the number and form of the sacs of the larynx. There are usually three of these; one of them is seen under the vault formed by the anterior boundary of the thyroid cartilage, having its aperture near the root of the epiglottis. The other two are oblong sinuses contained between the lateral walls of the glottis and the thyroid cartilage. In the horse these sacs are very long and wide, and are not unlike the usual ventricles of the glottis. The aperture of the outer cavity is very large in the horse; in the ass, the opening into each of the three sacs is a small hole, and the anterior sac forms a bag-like cavity. In the mule these organs differ, but their anatomical formation is in general blended between those of the horse and ass.

Neighing appears to be produced by expirations, as are most of the vocal tones from the horse. The vibrations produced by the resonance of different sized cavities, assisted by

movements of the cartilages of the nostrils, produce the compound sounds which are emitted.

Knuckering, as it is termed, is only a lesser neigh, with shorter, deeper, and less forcible tones, expressive of affection and joy. The horse has one acute sound, produced by the act of inspiration, which usually expresses either play or lust; but in most other instances sound is produced by the horse by expelling air. The tongue, teeth, and lips are not much concerned in the voice of the horse.

The *trachea* (or windpipe) is a large canal arising from the ring-like (cricoid) cartilage of the larynx, and reaching down the front of the neck into the chest. It is formed of more than fifty rings of cartilage, tapering from the front, having a strong muscular band their whole length, which unites them but does not fix them in position, thus leaving the trachea perfectly flexible. Outside of it is fastened a cellular substance; inside, it is lined by a mucous membrane, the secretion defending it against changes in atmospheric temperature. At the third dorsal vertebra it separates into two branches (*the bronchial tubes*), the principal divisions of which again branch off before they enter the lungs; and these again subdivide into numerous tubes, ending in small cavities known as the *air-cells of the lungs*.

We have said that the *bronchial tubes* are branchings off of the larynx. They are composed of many pieces of cartilage, connected together by fine ligament (see Plate XII.); the cartilages becoming almost imperceptible as the tubes grow fine or approach the air-cells. The right and larger branch of the bronchiæ, given to the right lung, quickly divides into three trunks. The left, which is the longer, from the necessity it has to stretch itself under the posterior aorta, divides into two principal trunks. The bronchiæ are lined throughout by the same mucous membrane as the larynx and trachea, furnishing a moisture that loads the expired air or breath. The extreme ramifications of the bronchiæ, as has been previously stated, end in minute air-cells; over whose surfaces are spread, in exquisite minuteness, the capillary ramifications of the pulmonary arteries, whose trunks accompany the bronchiæ to the lungs side by side. The pulmonic veins receive the blood from the surface of the cells, whence it is by these last vessels returned. The lungs are themselves nourished by their appropriate arteries, whose blood is returned by bronchial veins, as explained in the circulation of the blood. Their nerves are furnished from the sympathetic, and lymphatic vessels are distributed throughout them.

The Diaphragm (see also MUSCLES, p. 334) forms a fleshy and tendinous partition, dividing the cavity of the chest from that of the abdomen. It is of a broad circular form, flattened from before backwards; its front surface is convex, and concave behind; divided or forked above, and having two elongations or appendices extending backwards, with pointed extremities. On that side next the chest it is invested by the membrane which covers the lungs, and towards the belly by that which covers the intestines. It adheres to the spine, the ribs, and the breast-bone by strong muscular fibres. Its structure is fleshy and tendinous. The fleshy parts are those which form the circumferent portions of the large muscle, and the principal part of the crura or appendices. The tendinous parts consist of a thin circular expansion, occupying the middle of the larger muscle, and uniting that with the lesser. Through the muscle are seen three remarkable openings, an upper one in the interspace between the crura, for the passage of the aorta; one a little lower, formed by the decussation of the crura, for the œsophagus; and the third, or lower one, perforating the cordiform, or heart-shaped tendon, for the reception of the posterior vena-cava.

The diaphragm is the chief agent in respiration; it acts in opposition to the abdominal muscles, which are the chief expiratory powers. By the contraction of its radiated fibres, with the assistance of that of the crura, the cordiform tendon is transformed to a plane surface, and the dimensions of the chest from front to back thereby considerably augmented. When this muscle acts, in consequence of the shortening of its fibres, it loses its convexity, as above stated, and the chest being thereby enlarged as well as the lungs, the air rushes in, and inspiration is performed. This muscle also assists in the natural constant motion of the bowels, lending its powerful aid in expelling the fæces and urine; and, in females, facilitates the birth of the young animal.

The membrane by which the diaphragm is covered is very liable to inflammatory attacks. In all cases of disease of the lungs and bowels, the diaphragm is almost certain to become inflamed and attended with considerable irritability; and this is the cause of the breathing of the horse being so much affected during inflammation of the chest and abdomen. It is likewise concerned in coughing, yawning, and sighing. Sometimes it is ruptured by violent over-exertion. We are, however, unable to give distinct indications of this condition; but no instance is known of the animal surviving this injury. In cases of small rupture some portion of the intestines insinuates itself into it, and there becomes entangled, so that an incurable obstruction is the consequence. In the event of a large aperture, the intestines protrude through it, and, by pressing upon the heart, totally suppress respiration. This organ performs such an important part in the act of breathing, that it may be easily imagined it is liable to be ruptured when the respiration is strong and hurried.

RESPIRATION, CHEMICAL AND MECHANICAL.

Respiration is that function of the animal by which the various tissues of the body are subjected to the chemical influences of the oxygen of the atmosphere, and the carbonic acid thus formed expelled from the body. This is attended with the evolution of heat. In the higher animals, as the horse, this process is constant, its suspension for a few minutes causing death. When an animal thus dies of deprivation of oxygen, he is said to be suffocated. The

absorption of oxygen by the animal effects three great objects:—1. The preparation of the objects of food taken up by the glands and blood to the objects of nutrition. 2. The removal of certain constituents which have performed their office. 3. The production of heat, which produces the accumulation in animals called "warm-blooded;" any of these objects unfulfilled, the higher animals die more or less quickly.

Mechanically, *inspiration* is the act of drawing in the air and expanding the cells of the lungs to their utmost. This distends the walls (parietes) of the chest, presses back the midriff upon the stomach, liver, &c.; the expulsion of the air is *expiration*, the two movements *respiration*.

The function of the lungs may be shortly stated. The blood, passing through the capillaries of the body, and contributing to the nourishment of the frame, and furnishing all the secretions, becomes, as we have described, changed. It is no longer able to support life: it is possessed of a poisonous principle, and that principle is a superabundance of a substance called carbon, which must be got rid of before the blood can again be usefully employed. That ingredient in atmospheric air called oxygen, has a strong attraction for this carbon, and will unite with it wherever it finds it. The chest enlarges by the action of the diaphragm and the intercostal and other muscles, as explained; and the lungs expanding with the chest, in order to fill up the vacuum which would otherwise exist between them and the sides of the chest, these cells enlarge, a kind of vacuum is formed in each of them, and the air rushes down and fills them: being thus divided from the venous and poisoned blood by these membranes alone, it is enabled to act upon the blood, and attracts from it this carbon which purifies, renders it arterial blood, and fits it for the purposes of life. This being accomplished, the chest contracts, the lungs are pressed into smaller compass, and a portion of the air impregnated with the carbon, and rendered poisonous in its turn, is squeezed out. Presently the chest expands again, the lungs expand with it, and fresh pure air is admitted, which is shortly pressed out again, empoisoned by the carbon of the blood. These alternate expansions and contractions constitute the act of breathing.

When the animal powerfully exerts himself, a more ample supply of pure blood is required to sustain the energies of life, and the action of the muscles forces the blood more rapidly through the veins. Hence the quick and deep breathing of a horse at speed. Hence the necessity of a capacious chest, in order to yield an adequate supply, and the connection of this capacity of the chest with the speed and the endurance of the horse. Hence the wonderful relief which the mere loosening of the girths affords to a horse blown and distressed, enabling the chest to expand and to contract to a greater extent, in order to yield more purified blood. Hence also the relief afforded by even a short period of rest, during which this expenditure is not required, and the almost exhausted energies of these organs have time to recover. Hence, likewise, appears the necessity of an ample chest for the accumulation of much flesh and fat; for, if a considerable portion of the blood be employed in the growth of the animal, and it be thus rapidly changed, there must be provision for its rapid purification, and that can only be effected by the increased bulk of the lungs, and a corresponding largeness of the chest to contain them.

As the diseases of these organs are among the most serious to which the horse is exposed, and interfere most with his usefulness, they will occupy due space in the part devoted to Veterinary Practice.

A few considerations on the aeration of the blood in the fœtus will be found under GESTATION AND FOALING.

CHAPTER XXI.

THE ORGANS OF DIGESTION, ASSIMILATION, AND EXCRETION.—THE ABDOMINAL VISCERA: THE STOMACH: THE INTESTINES.—MASTICATION, SWALLOWING, AND DIGESTION.—CHYME AND CHYLE.—THE ABSORBENTS, THE EXCRETORIES, THE LIVER, THE PANCREAS, THE SPLEEN.—VOMITING.

THE ABDOMEN.

THE external parts of the abdomen are, the common integuments; the abdominal muscles (see *ante*, p. 190); the parts of generation in the horse, and the udder and mammæ in the mare.

The interior of the third great cavity, the abdominal, contains:—the stomach, the intestines, large and small, the liver, and the urinary organs.

The whole of these are enveloped in a strong, dense, serous membrane, called the *peritoneum* (Gr., *peri* around, *tonōo* I extend), which forms not only a covering but a support to these organs, and facilitates their movements as they slide, press, or accommodate themselves and each other in the various actions of the living animal. It also secretes a moist vaporous fluid which prevents friction; and some physiologists have held, and with great probability, that the drying up of this vapour in the heat of inflammation is the cause of the intense pain produced in that case by any motion of its contents. (See INFLAMMATION.) The peritoneum, by its various folds, forms the *mesentery* (Gr., *mesos* middle, *enteros* an intestine), *omentum*, &c., by which these organs are attached to each other or to the walls of the abdominal cavity. In front the peritoneum is connected with the diaphragm, partially covering its hinder surface; it also covers all the contents of the abdomen, except portions of the uterus, bladder, and rectum. In males it covers the spermatic cords and testicles, and also lines the *scrotum* (Lat., *scroteum*, a leathern coat). Some of its folds form ligaments, as those of the liver and mesentery, and contain numerous small glands, through some of which the *lacteals** (Lat., *milk-bearers*, from *lac*, milk) pass. The peritoneum is immensely strong as well as elastic, as may be seen in the distension, and "tucking-up" in flatulent and spasmodic colic.

The *omentum*, already mentioned as one of the folds of the peritoneum, is a curious and delicate fatty membrane, facilitating motion of the viscera. It has a very low sensibility, bearing cutting or tearing with little or no pain to the animal. It is this "caul," which is the seat of the deposit in man and fat animals, which occasions corpulency or protrusion of the belly. It is seldom so much loaded with fat in the horse as in man and in the ruminant animals.

The STOMACH of the horse (see Plate XIV. Fig. 1), which is remarkably small, lies immediately behind the liver, its principal portion occupying the left *hypochondrium* (Gr., *upo* under, *chondros* a cartilage). The spaces in the abdomen under the false ribs are called "right" and "left." The right and left central is called the *epigastric region* (Gr., *epi* upon, *gaster* the belly), the middle the *umbilical* (Lat., *umbilicus*, the navel) *region*. The *hypogastric region* is behind an imaginary line drawn from the one side of the ilium to the opposite side, this is again divided into right and left *iliac regions* and the middle is called the *pubic* region. The central portion is divided by a white line called *linea alba*; a full explanation of these imaginary compartments is convenient in strict anatomical descriptions, but would be superfluous here. The forward (convex) part of the stomach lies upon the diaphragm and false ribs of the left side. Its hinder (concave) part is hidden by the intestines. Its lower surface is covered by the *omentum*† or fatty caul; attached to its left extremity is the *spleen*, and its right bend is in contact with the left and middle lobes of the *liver*.

The stomach may be compared to a sac or pouch, formed for the reception of the food as it passes from the mouth to the *pharynx*, and thence through the *œsophagus*, or gullet, by the cardiac orifice into its cavity. As we have said before, it is remarkably small; the stomach of a twelve-stone man will contain more than three quarts, while the horse, eight times his weight, will scarcely hold three gallons; like other hollow muscles, however, it is capable of considerable distension. The *pyloric opening* is the outlet by which the contents are discharged into the *duodenum*.‡

The stomach has three general investing coats: the first elastic, being a doubling of the *peritoneum*; the second of white muscular fibre in two separate layers; the last one, placed longwise, seems a continuation of the outer coat of

* Their office is to take up the chyle and transmit it to the heart; *see post*, DIGESTION AND NUTRITION.

† From the Latin *omen*, so called because the Roman soothsayers prognosticated from the *caul* (*omen-tum*) in their sacrifices.

‡ Lat. *duodeni*, twelve; the ancients supposing that it was of the breadth of *twelve* fingers.

the œsophagus, strengthened by additional fibres; these pass obliquely round the stomach, and then twist themselves into a whirl or vortex, and seem intended to prevent the return of the food.

The *inner coat* is mucous membrane, having a double character: one, hard, called *cuticular* (skin-like); the other, soft, covered with numerous beautiful projections, like the pile of velvet, is called the *villous coat* (Lat., *villosus*, shaggy). The *cuticular coat* is a continuation of the lining of the mouth, pharynx, and œsophagus, extending half-way down the stomach, where it ends abruptly and the villous coat begins. It is folded in the œsophagus and perforated with excretory orifices, as we shall presently note. It is to the cuticular coat that we have generally found bots adherent, though they attack other parts.

The *villous coat* is soft, wavy, and covered with innumerable small bloodvessels; it is full of folds, which expand when the stomach is filled. This portion of the stomach secretes the *gastric juice*, and within it the *chyme* is formed. The blood of the stomach is plentifully supplied from the gastric, splenic, and hepatic arteries, which are here very winding, to avoid distending the organ. The gastric veins, which return the blood by the venæ portæ, are peculiar in being without valves.

Passing through the *pyloric* (Gr., *pyle* an entrance, *oreo* I guard) *opening* we come to the INTESTINES (Lat., *intestinus*, from *intus* inside). These are divided, in the horse, into *large* and *small* intestines, and extend from the pylorus to the anal outlet. The whole length of this irregular tube (see Plate XIII. Fig. 1) is from eighty to ninety feet, of which the large intestines form twenty to twenty-four feet, and the small intestines from sixty to sixty-six feet. It is not easy, as we have said when speaking of what anatomists call "regions," to describe in words the situation of the intestines; the "large," however, may be said to fill the forward and lower parts of the abdomen, the small to fill the space above and farther back, but occasionally shifting position on account of the *peristaltic motion*. They are prevented from going far out of place by the peritoneum, which forms bands, as already described, and moors fast the intestines. The first (*membranous*) coat of the intestines is derived from the peritoneum; the second is the *muscular*, presenting organic fibres—the lengthening and contracting of the *longitudinal*, and the constricting of the *circular* muscles, producing the *peristaltic* action. (See *post*, DIGESTION.) The circular muscles are the most powerful, the intestines being found firmly contracted in cases of violent death. The inner surface of the intestines is both mucous and villous, extremely sensitive, and full of vessels.

Of the intestinal canal the first portion is the *duodenum*, hanging loosely on the right side and attached to the hollow side of the liver, from which it rises, and is fixed to the back bone, taking the name of *jejunum*.* The duodenum of the horse is twenty inches, instead of *twelve*, so that the term is a misnomer.

The *jejunum* is attached to the *mesentery*, which follows its convolutions, and has two smooth surfaces. Numerous lacteal glands are situate on the folds of the *mesentery* and *mesocolon*, which are, as we have said, mere folds of the peritoneum.

The *jejunum*, when it passes into the *iliac region*, takes the name of the *ilium* (Gr., *eileo*, I turn about), but there is nothing but an imaginary division. It then passes into the *cæcum*, protruding some distance into its cavity, to prevent the return of its contents.

The cæcum (from the Lat., blind-gut), is the first *great intestine*. It derives its name from the fact that it is open at one end only. The *cæcum* rests on the belly (navel) portion of the *linea alba*, and is generally seen toward the right side upon opening the peritoneum. The head of the *cæcum*, in which the *ilium* terminates and the *colon* begins, is generally near the diaphragm and liver. There are here several muscular bands which pucker up the intestines into little purses called cells, in which water or fluid is generally found, scarcely ever solids.

The *colon* (Gr., *cholon*, from *chole*, bile), originates in the cæcum, and is the largest of all the intestines. It reaches across the abdomen from left to right, and having reached it, bends back upon itself at the sigmoid (Gr., *sigma*, the letter S, *oidos*, like) flexure. It is connected along this bend from the cæcum to the flexure or turn, but is loose on the other side, so that, when the belly is burst, the colon may trail upon the ground without breaking the other intestines. The continuation of the colon is the *rectum* or straight gut.

The *rectum* is thicker in substance than the other intestines, and has a longitudinal muscle on each side (for their action see *ante*, p. 336, MUSCLES), the rectum is plaited with cell-like depressions, to prevent the too frequent expulsion of the dung. It is loosely suspended from the spine and rump-bone by a band called *mesocolon*, part of the peritoneum. The anus is opened by the force of the peristaltic action, and shut by the *sphincter ani*. (See p. 192).

MASTICATION, SWALLOWING; THE PHYSIOLOGY OF DIGESTION.

At the close of Chapter III., and incidentally elsewhere, we have spoken of the salivary glands and their secretion, we shall here pass from mastication to the act of deglutition or swallowing. The organs engaged in this are, after the teeth and tongue, the *pharynx* and *œsophagus*, with their muscles.

The *pharynx* is a bag of a funnel shape, with its trumpet end forward, lying at the entrance of the gullet and back part of the fauces, and held fast to the upper end and back of the larynx, or windpipe, by three pairs of strong muscular bands. These all join in a tendon at the back or upper side of the pharynx. The dilator muscles of the pharynx and their action will be described in the physiology of the act of swallowing.

* Lat. *jejunus* empty. It is generally found empty in the dead body.

The *œsophagus* opens from the smaller end of the funnel-like pharynx, and leads thence to the stomach, which it enters by the *cardiac* opening. It tends a little to the left side in its course, and goes behind the trachea, passing through the chest and along the dorsal vertebræ, inside layers of the pleura, thence through the diaphragm into the stomach. It has three coats: a cellular and membranous one; a second *muscular* (longitudinal and circular); and an inner one, *cuticular* (skin-like), wrinkled into folds. It has a remarkable power of muscular contraction and expansion, for the purpose of propelling its contents. The physiology of swallowing is thus summarized by the late eminent veterinarian Delabere Blaine.

When a horse grazes, he first places with his lips a tuft between the teeth; when, elevating his chin, the sharp edges of the under cutting teeth become applied to the grass, and cut it through, while at the same time the upper incisors help to nip it off. Oxen and sheep, wanting upper nippers, wrap a tuft of grass round with their tongue, and then apply it to the under incisors, by which it is held fast, while a movement of the head tears the grass up; and thus we find that they are obliged always to carry the chin forward in collecting their grass. When a quantity of herbage is thus gained, it is carried by the tongue and muscles of the cheek to the upper part of the mouth, to encounter the action of the grinders: the matter being conveyed from side to side, to be placed in the most favourable direction for perfect mastication, by means of the tongue. During this process, it continues to be mixed with the salivary fluid, from the parotid, the submaxillary, and the sublingual glands (see *ante*), which pour out their secretions, excited by the pressure of the surrounding muscles.

The vegetable mass having been thus completely masticated, is placed at the back of the tongue; when, by the pressure of that organ towards the palate, it is squeezed against the velum palati. The soft palate readily yielding to force coming from the mouth. The morsel is at the same time driven against the covering of the throat (epiglottis), which, by its own elasticity released from the downward pressure of the velum palati, is raised, and covers the opening to the windpipe. The food is thus propelled into the fauces. Then the windpipe (*trachea*), protected by the *epiglottis*, rises and urges the mass into the funnel-shaped pharynx; the contractors of which transmit it to the gullet (œsophagus); and its muscular coats, contracting as it descends, ultimately lodge it within the stomach. The mouth remains closed during the act of swallowing, that these muscles may find a fixed point. The deglutition of liquids is not very different. The muscles of the tongue draw it downward, whereby a tendency towards a vacuum is formed: to counteract this, the water is by atmospheric pressure forced into the mouth; when the entire agency which operated in the case of a solid is called into action, the raised velum palati closing the opening to the nostrils, and thus preventing the liquid from returning by that passage. We shall resort to the same authority for an explanation of the function of digestion, feeling that we cannot improve upon his horse-knowledge on this point

Digestion may be characterized as that power whereby substances which are received into an animal body lose their own properties, and become endowed with those necessary to support the constitution of the creature that imbibes them. To restore the tone of parts, rest is required; and to repair waste, food becomes necessary; while hunger and thirst stimulate animals to take in solid and fluid aliments. That the stomach is influenced by the blind longings of inorganic life, is proved by the fact that the mere mechanical distention of a draught of water will, for a time, satisfy the sensation of hunger; but simple distention not satisfying an instinctive desire, instead of affording relief, it only adds to the general prostration. It is probably by its distending properties that food taken partly invigorates long before perfect chylification has taken place. This fact is however better established by no man having absolute power to quicken or delay his desire for nourishment. The mere want of food does not dissipate immediately the strength; but the body can for some space support itself, and desire, though felt before, be actually forgotten; thus the inanition of a hunter long employed in reaching a distant cover, is no bar to his after-exertions in the chase. The moment he hears the well-known sound, he receives a temporary supply of nervous energy; which, acting on his irritability, produces renewed muscular exertions: but the chase over, a double prostration is the consequence; for the nervous impulse being expended, it often happens that the stomach is sympathetic with the general frame, and the horse becomes "too tired to eat."

Thirst differs from hunger principally by its impelling us to receive liquids instead of solids. The instinct, which is independent of reason, and superior to the will, calls for fluids often not required for repair: it is true, perspiration will produce thirst, and that diuretics will do the same; but these are artificial, not natural causes. Drink is also instinctively sought, for no cause save that of fickle appetite, induced by long indulgence, which cannot be reckoned among life's necessities. Stimulated, therefore, by the sensations of hunger and thirst, animals seek for matters to which they are instinctively directed by their senses of smell and taste.

The mastication, insalivation, and swallowing of the food, have already been noticed. To the saliva, however, by no means is usually given its full merit as an important agent in the digestive process. When we consider the quantity secreted, the chemical nature of the fluid, its remarkable affinity for oxygen, and that a complete mastication invariably produces a direct change in the qualities of the food, it would be most unphilosophical to regard it as a mere diluent. The masticated aliments received into the stomach become subjected to the further action of the

gastric fluid, the produce of the secreting surface of the villous division of the stomach. The true gastric juice is possessed of a solvent power, which is shown in a remarkable manner by the food being dissolved by its action.

The ordinary process is after this fashion with the horse. The masticated vegetable matter is first deposited in the cuticular cavity of the stomach; whence it is propelled forward by muscular contractions of the organ, from left to right, towards the pyloric opening; being, however, so turned and contorted in its passage that every portion of the insalivated mass becomes first macerated with the cuticular secretion, and then receives the solvent gastric juice. It is thus that a mass of matter undergoes the chymifying process within the stomach, after which it is hurried onward to be converted into chyle within the intestines.

Chyme (Gr. *chymos*, humour or juice) is the masticated but undigested mass of food. It is a pulpy semi-fluid, with a slightly acid taste, creamy in appearance when the food is oily, like gruel when farinaceous. Part of this is absorbed by the stomach itself, and goes direct into the blood; the remainder goes into the duodenum, and is mixed with the bile and pancreatic juice, forming a milky fluid. This is called—

Chyle (Gr. *cholos*, juice), and passes into the jejunum and *ilium* and is there taken up by the *chyliferous absorbents* and passed into the large vein of the heart by the *thoracic duct*. The remainder of the worn-out food finally assumes the form of fæces, and is expelled.

THE ABSORBENTS.

The Absorbents, although we cannot easily trace them, are distributed over every part of the body. Injections show them in some parts, but it is by their constant operations and effects they are best recognized. Thus the hardest parts of bone are removed by a natural process, or absorbed. Inorganized cartilage is likewise taken away, to allow the arteries and veins to enter, and bone to be deposited, when ossification ensues.

Absorbents are minute, thin-coated, transparent vessels, having numerous valves, like veins; they are spoken of as deep-seated and superficial; but as the difference of position is accompanied by no difference of structure, we shall here regard them as of one kind. Every absorbent conveys the materials it takes away from various parts into the blood; with which their contents mingle, and ultimately become blood; or they are emitted with the excretions. In starvation it is by means of the absorbents that the marrow is carried out of bones, and the fatty matter from other places in the body is emptied into the blood, which in this manner helps to support, or keep alive, the subject starved. It is thus accounted for why a fat animal is longer dying from starvation than one that is thin.

The absorbents, which take up the nutritive portion from the food within the intestines, are called lacteals, because the substance they extract is at first white, like milk; otherwise they are the same as common absorbents, all of which enter and pass through one or more of the little reddish bodies called absorbent glands.

The functional effects of this system are abundantly active in the constitution at large; we are certain that the various organs of the body are continually changing, wholly or partially. It appears to be the office of the arteries to build up new parts, and to repair the waste of others; but the old ones must be first of all pulled down and removed by absorption, which is least active in youth, equal with the arteries in middle life, and predominates in age. By this wonderful power the roots of the temporary teeth are absorbed, that their crowns may give way; by this also the muscle which governs the testicles, having fulfilled its office, is absorbed, and the thymus gland (sweetbread) is likewise removed. It is thus cartilage is taken up, to make room for a bony deposit when the animal approaches maturity. By the absorbents the fluids as well as solids are continually changing, being taken up and carried back, but always in a fluid state, into the mass of blood; it is by them that the dead parts are separated from the living in sloughing and ulceration. By the superficial absorbents, even gases are received from without. The water held in suspension by the atmosphere is thus taken in; hence grazing horses require little or no water, more especially if not exposed to the heat of the sun, whereby evaporation or exhalation is promoted. The functional office of the absorbents is most important also in the preservation of life under casualties. Long fasting is thus borne; their capability of displacing the animal oil or marrow from the bones, and the fat from the body generally, is here employed to make up the want. Hybernating animals live during their torpidity by a slow absorption of the adipose matter; thus it is found in the instance of the torpid bear, that, however fat he may enter his seclusion, he returns lean and emaciated.

To our acquaintance with the power of the absorbents, the practice of medicine is greatly indebted; and although we own few means of lessening absorption, we fortunately have many of increasing it. Mechanical friction is the most active and universal agent in stimulating the absorbents, as the hand-rubbing of horses sufficiently proves. Pressure, also, increases their action: thus we bandage the swollen legs; we girth the bodies of our horses, to promote absorption of the interstitial fluid. Exercise, by swelling the muscles, produces pressure; and thus exercise will remove swelled legs, and promote absorption generally. Blisters likewise exercise an influence over absorption. A still stronger stimulant is iodine; which is especially useful in enlargement of the glands. Purgatives and diuretics, and whatever tends to lower the pulse, promotes internal absorption. For, by offering an impediment to the circulation, removing the contents of the intestinal canal, and increasing the urinary secretion, an absence is caused in the materials for building up, which the absorbents endeavour to repair by removing other parts.

THE LIVER.

This ponderous secretory and excretory mass, the largest in the system, is placed nearly in the centre of the body. The circumference of the liver (Saxon, *lifer*) may be taken as two to two-and-a-half feet, thick towards the middle, and thinner at the edges. It lies between the stomach and the diaphragm, with its right lobe in contact with the duodenum and the right kidney. It is kept in its place by what are called the ligaments of the liver, but these are merely prolongations and thickenings of the peritoneal envelope already described. Besides the right and left ligaments, there is one in the centre, between the diaphragm and the middle lobe, called the *suspensory ligament*. Besides its lobes, the liver has several deep indentations, one of which separates the two large lobes, and is named the *great fissure* (Lat., *fissus*, a cleft); inside this, in mares, may be seen the remains of the umbilical vein which supplies the fœtus, and in a smaller cleft about the middle of the concave surface, may be seen the opening for the vena portæ. Numerous lymphatic vessels run over the surface of the liver, and the bloodvessels pass within a sheath called Glisson's capsule, a thin membrane, formed of white fibres, immediately beneath the peritoneum. The circulation of the liver, as we have noticed before, presents a remarkable peculiarity. The numerous veins of the intestines join into one common trunk which enters the liver as the vena portæ. This trunk vein, having pierced the liver, branches off once again into innumerable divisions dispersed through the whole substance of the liver, performing the functions of an artery, its contents being distributed for secretion. The blood circulated through the whole body of the gland is poured from the terminations of the vena portæ and the *hepatic* (Gr., *hepar*, the liver) *artery*, into the hepatic veins, which empty their contents at the hinder cava.

In the glandular capillaries a great change takes place in the blood, by which the fluid called bile is separated; the biliary pores end in small tubes, which, uniting, form the *hepatic duct*. As it leaves the liver, it accompanies the hepatic artery, and passing below the vena portæ, empties into the duodenum, five inches from the pyloric, or lower, opening of the stomach. Unlike the dog and man, the horse has no gall bladder. As the horse in a natural state is continually feeding in small quantities, and often emptying his small stomach, an uninterrupted flow of bile to assist digestion, rather than a store of that secretion for a heavy meal, seems to point to the reason of this peculiar organisation.

THE PANCREAS.

The Pancreas (Gr. *pan*, all, *creas*, flesh) is a flat gland that appears to have much in common with the salivary glands in its secretion. It is of irregular figure, in three lobes, and extends across the spine between the stomach and left kidney. Its upper side touches the top of the abdomen. its under, the great bend of the stomach. We have said it greatly resembles the *thymus* gland in its fleshy structure In the ox the butchers sell the thymus and the pancreas indiscriminately as "sweetbreads."

The bile and pancreatic fluid are both concerned in the preparation of the chyle, to which duties they are specially appointed; but over and above this it appears that the bile is useful in depurating the blood, and removing from it certain noxious elements, which, if retained, would become highly injurious. The pancreatic fluid is only secreted during digestion, but the bile is poured out at all times; and, if not secreted, from any torpid condition of the liver, the blood becomes overloaded with noxious particles, headache follows, and, finally, fever and even fatal injury. Bile is a kind of soap, and appears to act specially in converting sugar into albumen and the fatty compounds necessary for the support of life. The pancreatic fluid, on the other hand, seems to render the fat taken as food fit for absorption, which it is not in its raw state. But not only is the liver useful by supplying bile, but it also directly purifies the blood as it passes through it, in the return from the intestines to the heart; and besides this, it seems to exert a powerful influence in assimilating the new material to the condition which it must attain as a part of the blood Here also fibrine is largely formed from albumen, and fat from sugar.

THE SPLEEN.

The Spleen (Gr., *σπλην*) is a spongy livid body of soft structure, and having no excretory duct; its colour shades from red-brown to purple, and its size is various. It is triangular in shape, and so tender that its substance would be torn by the slightest violence, were it not for its membranous peritoneal covering. It is attached on its upper and thicker edge to the left side of the stomach, but the chief portion of it lies behind and rather above the stomach. Its front part comes in contact with the left lobe of the liver; its hinder is connected to the left kidney, and concealed by the convolutions of the colon. It is abundantly supplied with bloodvessels, absorbents, and nerves, especially the two first-named, yet the particular use of the spleen is still merely conjectural.

Great enlargement and also rupture of the spleen have been noticed after the death of horses; but we know little of the causes or the symptoms which indicate disease of this organ.

VOMITING.

Vomiting.—A structural peculiarity in the stomach of the horse remains to be noticed, by which, in all ordinary cases, the animal is denied the power of vomiting. The whole of the alimentary canal in that animal exhibits uniformity of intention, unfavourable to vomiting. The soft palate closes all return of the contents of the stomach by the mouth; and consequently, if vomiting were to occur,

the rejected mass must come out by the nostrils. The next structural impediment may be observed in the œsophagus; which, by having a different arrangement of its muscular fibres to that of ruminants, evidently proves that regurgitation forms no part of the natural economy of the horse. The obliquity of its insertion, the number, strength, and direction of its fleshy layers, must form a sufficient bar to all ordinary tendency of the aliments to return. And the superior resistance offered by the greater volume of muscular fibre around the cardiac extremity, must, in all cases, effectually prevent it. The dog and cat, which vomit rather freely, have the muscular fibre much the thickest at the pyloric orifice. Were the equine and the canine stomachs handed to a person perfectly ignorant of anatomy or physiological discussion, his sense of touch would be sufficient to decide the matter, so very marked and obvious is the difference. Added to the above reasons, though not of much force, is the circumstance of the horse's stomach being situated far from the abdominal muscles: this prevents these last from directly acting upon the digestive bag in that animal, but certainly cannot prevent their action being felt through the pressure of surrounding parts.

CHAPTER XXII.

THE URINARY ORGANS.—THE RENAL CAPSULES: THE KIDNEYS: THE BLADDER: THE URETHRA.—THE ORGANS OF REPRODUCTION: OF THE MALE: OF THE FEMALE.—GESTATION: FOALING.

THE URINARY ORGANS.

THE RENAL CAPSULES are two irregularly-shaped bodies in front of the kidneys. They are large in the colt, but decrease in size as the animal grows. They consist of two substances, one yellow and vascular, the other paler and fatty: a fluid may be squeezed from these in the young colt. Their nerves come from the plexus called the *renal plexus*. Their functions and use are unknown.

THE KIDNEYS.—These are the most important glands engaged in the urinary circulation. They are supposed, small as they are, to carry, by the renal arteries, one-eighth of the whole blood of the body. The kidneys are situated in the upper part of the abdomen and dorsal region. The right kidney, against the liver, is more forward than the left, owing to the latter being pressed backward by the spleen. The bean-shape of the kidneys is too well known to need description; their central notch is the entrance for their arteries and vessels, and the outlet of their veins and ducts. They are kept in position by their coating membrane, often well lined with fat. The kidneys lie on the top of the peritoneum, and are outside the peritoneal sac. Lying behind (or above) the intestines, they are concealed by them in dissection, until shown by their removal. (See Plate XIII. Figs. 1 and 2.) When the kidneys are divided, two distinct structures are visible. The outer, called the *cortical* (Lat., *cortex*, bark), is of a dull dark red, and granular in structure: this is the web of *emulgent* capillaries, and the minute terminations of the urinary ducts. The second part is the *medullary* (pith or marrow-like), lighter in colour, and with a number of minute radiating tubes forming papillæ (Lat., *papilla*, a small nipple). The urine is secreted from the capillaries of the *emulgent arteries*, coiled round the small ends of the renal ducts, thence it passes through the tubular portion of the kidneys, flows towards the cup-shaped mucous membranes called the *calices* (Lat., *calyx*, a cup), and falls into the *infundibula*, which are canals or grooves enlarging into the *ureters* (Gr., *ouron*, urine), which last carry the urine into the bladder. Each ureter passes out of its kidney, and, connecting itself with the broad ligament (*ligamentum latum*), travels with it to the upper side of the bladder. Each ureter goes obliquely through the coats of the bladder, which thus perform the office of a valve.

The chief function of the kidneys is the secretion of the urine, and carrying off an ingredient which enters into its composition, called the urea, a substance which, if allowed to circulate with the fluids, would prove poisonous. The urine varies more in its quantity and quality in the horse than in any other animal with which we are acquainted, and hence the necessity of attending to its appearance and composition during disease; because attention to this enables the veterinarian to detect the disease, and also to judge the quantity of medicine which may prove beneficial to the animal. In the application of these, much good or much evil may be the result.

THE BLADDER is a muscular and membranous sac of a pear shape (*pyriform*), which, when distended, nearly fills the cavity formed by the great bones of the haunch, called the pelvis. (See *ante*, BONES.) In this undistended condition it is wholly confined to the cavity of the pelvis; but, when full its fundus advances before the pubes into the abdomen, the advancement being in ratio with the degree of distention.

The bladder is provided with three coats. The outer one covers the greater portion of it, and is part of the peritoneum. The muscular coat consists of two layers of fibres; the external running longitudinally, and the inner circularly, which enables it to yield to the pressure of the urine as the cavity fills, and again contract to a small size when emptied. This contractile property also assists in expelling the urine from the bladder. The inner or mucous coat is white, soft in its texture, and highly organized. It possesses numerous follicles, or little glands, from whose excretory pores issues a plentiful mucous secretion, to defend it from the acrimony of the saline and other matters contained in the urine. This mucous matter being perpetually washed off from the surface of the inner coat by the urine, is kept constantly renewed, and it is sometimes voided in considerable quantities. When this is the case, it may be apprehended that the urine is unusually acrid, or that calculi or other irritable matter is within the bladder. About an inch before the cervix or neck of the bladder, in the sides of the bag, the orifices of the ureters are placed, which enter the bladder in an oblique direction, and prevent any reflux of the urine at the time the bag is contracting, which gives them the property of valves. The bladder terminates in a small neck of yellow elastic tissue, round which is a powerful muscle, which keeps the passage closed and retains the urine until the animal wishes to

expel it; or when the bladder contains a certain quantity of fluid, the muscular coat contracts, and, the lungs being filled with air, the diaphragm is rendered convex towards the intestines, and they are by that means pressed upon the bladder, and by their united powers the fluid is forced through the *sphincter** at the neck of the bladder, and escapes into the *urethra* (Gr., *ouron*, urine), whence it is voided on the ground. The urethra we shall notice in its more important functions in connection with the generative system.

THE REPRODUCTIVE ORGANS.

THE MALE ORGANS OF REPRODUCTION.

In the male animal the organs are mostly external; in the female, internal; in both, they are so connected with accessory organs as to answer a double purpose.

The *scrotum* (Lat., *scroteum*, a leather coat), the *testes* (Lat., *testis*, a witness, *q. d.*, evidence of virility), the *vasa deferens* (Lat., *vasa*, vessel, *deferens*, carrying), the *penis*, *theca* (Gr., sheath), *prepuce*, and *urethra*.

The *scrotum*, or bag, is formed of the common integuments of the belly, and is outwardly smooth, thin, and scantily grown with hair. It has a peculiar muscular inner coat, called *dartos* (Gr., *daro*, to excoriate), by which the scrotum is corrugated and drawn up. It has also an internal septum or division, visible outwardly, which separates completely the two testicles.

The *testicles*, which fill the scrotum, are two glandular bodies, first formed within the abdomen. The coverings of the testicles are a white fibrous coat, continued up to the spermatic cord, and another from the *cremaster* (Gr., suspender). The *cremaster* muscles arise from the oblique abdominal muscle, and each support a testicle. The middle of the testes is divided by a *mediastinum* into separate portions like the segments of an orange. The third coat of the testes is a vascular tunic (called *tunica vasculosum*), being the nourishing covering of the gland, from which its vessels branch into all the divisions. These divisions are filled with the ends of the ducts called *lobules* (little lobes) in which the semen is secreted. The testicle is white, firm, and externally smooth.

The *vasa deferens*, as the excretory duct of the semen, joins the *spermatic cord*, and, passing through the abdominal rings, proceeds to the upper side of the bladder, terminating in the urethra in the opening of the seminal vesicles. These membranous sacs (*vesiculæ seminales*) contain a special mucous secretion, and have large excretory passages ending in the urethra close to the *vasa deferens*.

The *prostate glands* are three or four in number. The *lesser prostates* (Cowper's glands) are two small bodies, the size and shape of a chestnut, near the greater prostates, lying upon the spines of the *ischium* (haunch-bone). These also seem agents in elaborating the seminal fluid, but how has not been yet discovered.

The *spermatic cord* is covered by the peritoneum. It commences at the internal abdominal ring, passes through the groin, and comes out through the external abdominal ring.

The *penis* of the horse is a firm body, two feet in length, formed of an elastic and erectile tissue. One of these occupies the under portion beneath the urethra. The other is above the urethra, and is flaccid when not distended by venous blood, which, when the animal is under sexual excitement, it becomes to an immense degree, increasing in bulk and becoming very firm. At the extremity is a bulb called the *corpus spongiosum*, which, though appearing distinct, is continuous with the lower portion of the erectile tissue.

The *sheath*, which encloses the penis from view, is formed of the general integuments continued loosely from the scrotum to the navel. The outer fold of the sheath owes its size to a ring of ligament which keeps its orifice firmly open, and from this the integuments are doubled back, becoming thinner and more full of vessels, again doubling back over the glans penis and forming the foreskin, or *prepuce*.

The *urethra* is the canal continued from the bladder through the body of the penis to its point. That part of the urethra encircled by the *prostate glands* is called the *prostatic* part, the other, the *membranous* part; and the part whereon the well-marked muscle, called the *accelerator urinæ* runs, is named the *muscular* part. From the lower surface of the points of the ischium come two muscles, inserted in the *crura*, called the *erectores*, whose function is expressed by their name. The urethra is highly sensitive and full of vessels; it secretes a mucus, by which it is protected from the action of the urine. Several mouths of ducts enter it, called *lacunæ* (Lat., *lacunæ*, dots or pits). The nerves of the urethra rise from the loin (lumbar) and sacral flexures.

ORGANS OF REPRODUCTION IN THE FEMALE.

The genital orifice of the mare is surrounded by two roundish folds of loose, fatty, cellular tissue, covered with dark-coloured skin, called the *labia majora* (Lat., *labia*, lips, *majora*, greater). Two other folds lie within these, called *vulvæ*, or *labia minores*, moist, fleshy, and full of vessels. The vulva has within its substance a sphincter muscle, called *sphincter vaginæ* (closer of the sheath).

At the bottom of the valve appears the *clitoris*, a body of erectile tissue, having a thinner extension of the same tissue on the vulva, and through the first or outer chamber of the vagina.

The *vagina* (Lat. for sheath), which lies between the bladder and the rectum, and extends from the labia minores to the neck of the womb, called *cervix uteri* (Lat., *cervix*, neck, *uterus*, cavity).

* From the Greek *sphingo*, to contract, or draw together, like the mouth of a bag or purse.

The erectile tissue of the vagina is covered by a structure answering to the *dartos* of the male, and its mucous lining is thrown into numerous *rugæ* (Lat., *rugæ*, wrinkles), or irregular folds, varying in different animals, and remarkable for their want of uniformity. There is a contraction of the membrane lining the vagina near its middle, which divides it into two chambers. The hinder or outer of these is lined with erectile tissue, and is very full of vessels, the forward or inner portion is much less sensible and leads into the womb. A little way up the vagina, just within the vulva, on the lower side, is a small fold of membrane, easily felt by the finger. This is the opening into the urethra, or urine-passage, which is very short in the mare.

The *uterus*, or womb, is a rounded body, having at its *fundus* (Lat., bottom) two horns or wings. These are lined with mucous membrane, full of folds; outside this is a thick white layer of muscular fibre, and outside this a thin cellular layer, and the common covering of the abdominal viscera, called peritoneum. Near the ends of the "horns" are two tubes, named after Fallopius, their discoverer, the *Fallopian tubes*. These are somewhat the shape of a cornucopia in the mare, small where they issue from the horns of the womb, and expanding at their extremities. They have been compared to a French horn, which they also resemble in being convoluted. They have a curious ragged fringe at the larger end, called, fancifully, *morsus diaboli* (Lat. for the devil's bite), attached to the *ovaries* (Lat., *ovum*, an egg) at one point. The loose pieces of this fringe are violently agitated during coition, and, seizing the ovum as it falls from the ovaries, convey it to the Fallopian tubes; these are also lined with mucous membrane, and their muscular coat is continuous with that of the uterus. The whole apparatus is supported by the peritoneal thickening known as *the broad ligament of the uterus*. The opening of the free end of the Fallopian tubes into the cavity of the abdomen, is a remarkable and solitary instance of a mucous membrane opening into a serous sac.

The *ovaries*, like the testes of the horse, have three coats: the outer, the peritoneum; the middle, white fibrous tissue; the internal, full of blood vessels. Old anatomists compared them to the testes, but the similarity ends with their form. They are cellular internally, and in the cells are the germs of eggs, which, as they come to the surface, are matured, and in copulation burst the coats and are carried down the Fallopian tubes. Whenever an ovum escapes, a corpus luteum is formed, of a yellow spongy mass, at the spot where the ovum has escaped from.

Before the period of conception, the Fallopian tubes become more full of blood, and have a writhing or peristaltic motion, like that already described as impelling the food along the intestinal canal. Certain prominences are also observed at this time on the surface of the ovaries, produced by the swelling of vesicles (called, after their discoverer Graaf, Graafian vesicles); these are the germs of the coming foal. The Fallopian tubes then become attached by their open fimbriated (Lat., *fimbria*, fringe) mouths over these prominences, and, receiving the vesicles as they burst through the peritoneal covering of the ovaries, convey them, by the peristaltic motion before mentioned, into the womb.

These germs are sometimes fecundated before they reach their destination, when what is called extra-uterine conception occurs. In these cases the germ never reaches the uterus at all, but remains in the intermediate canal, and attaches itself to its surface. In this position the fœtus may grow, expanding the tube as it grows, till at length it gives way, and the fœtus escapes into the general cavity of the abdomen.

The *mammary glands* in mares are placed a little in front of and between the hind legs. They are two in number, each composed of a bag and teat, with a muscular coating like the scrotum of the horse. The main substance of the gland is made up of bloodvessels and ducts for carrying off the secretion. The milk is secreted in minute glands, which empty into the ampullæ (Lat., *ampulla*, a bellied bottle) or dilatations, whence it is carried by other ducts which communicate with the milk-bearing tubes (*tubuli lactiferi*), which last end in the point of the teat. Thus much of the organs of reproduction. The physiology of conception, gestation, and parturition come next to be considered.

We may notice that although the male appetite is constant, it is by no means uniform. Cold weather, low feeding, and the absence of the effluvium of the mare, greatly moderating it. During the period when the mare is in "season," his desire is at its height. It is at periods when the stallion is "cold," that the avarice of breeders and dealers sometimes leads them to the ruinous folly of administering stimulants, to provoke him to an act of itself exhaustive, and, in excess, fatal. Farcy, glanders, and wasting we have seen consequent on this attempt to force nature.

GESTATION AND FOALING.

Conception follows the copulative act. Most mares require but one "leap" of the horse, to conceive; which having done the "heats" cease, and the mare will refuse the male. As the "heats" recur at periods of nine days (as often eight), it will be as well, to make sure, to show the mare the stallion, and observe whether there is any sign of sympathetic orgasm. If so, she may be again covered.

We have already noticed that impregnation is effected by the action of the semen upon the ovum; whether by actual contact and inoculation or by sympathetic influence, is yet questioned, perhaps both. The evidence, we think, is in favour of an actual flow of the impregnating fluid through the tubes and oviducts to the ovarium; and this view is strengthened by the fact that in animals which produce several young at a birth, several of the fecundated ova never reach the uterus at all, but remain in its "horns," and there mature, till expelled as living animals complete in all their functions.

The ovum being lodged in the cavity of the uterus, a

considerable change takes place in that organ. It gradually enlarges so as to accommodate the contained fœtus as it grows. A greater quantity of blood is now also determined into its vessels for affording the proper nourishment. When the ovum has become sufficiently large to enable us to distinguish the germ of the fœtus, we find it consists of two membranes containing a fluid, in which swims the fœtus, still gelatinous and without shape. Gradually increasing in size, its parts are at length developed; and we see it attached to the whole internal surface of the uterus of the mare by a thick spongy mass. This is called the *placenta*, and is the organ through the medium of which the future animal receives its nutrition in the uterus of the mare.

The placenta consists principally of bloodvessels, which are collected at the centre of its membrane, so as to form a cord; this cord is continued to the navel of the fœtus, which it enters; and a vein runs from it onwards, to empty its blood into the venous canal, which further conveys this fluid to the vena cava, contiguous to the heart. Having entered the right auricle of the heart, the blood passes by an oval hole (which is peculiar to the fœtal state, being closed up after birth) into the left auricle, and a part finds its way by the right ventricle into the pulmonary artery. But as even this portion of the blood is not intended to enter the lungs of the fœtus, it is conveyed by a canal (also peculiar to the fœtus, being afterwards closed up), which communicates with the aorta. From the left auricle the blood passes into the ventricle of that side, and thence into the aorta, to be circulated through the fœtal system, for conveying to it the principles of life and nutrition. Thus it will be seen that the blood does not circulate through the lungs of the fœtus; for, breathing being incompatible with the fœtal condition, the lungs require no more of that fluid than is necessary to their growth. The blood, after having given out life and nutriment to the fœtus, is returned to the placenta by two arteries, which, arising from the aorta, a little after it has entered and divided into two branches in the pelvis, are called the umbilical arteries: these arteries pass out at the navel along the cord, and re-convey their contents into the placenta.

How the communication between the uterus and placenta is carried on, is still a mystery. The supposition, however, is, that the placenta performs an office, with respect to the fœtus, analogous to that of respiration effected by the lungs after birth; and also, that it is the medium for supplying the blood with new materials for the growth of the fœtus.

There is, it is true, an indirect communication between the mother and the embryo foal, in the attachment of the outer membrane of the placenta; but the fœtal vessels in no way communicate with those of the mother, and the finest injection fails to find its way from one to the other. The vessels, however, pass *near* to the uterine arteries of the mother, through the agency of two umbilical arteries and a vein, which occupy the membranous cord. This, when the fœtus is fully grown, is an inch in diameter and three feet in length, and is called the *umbilical cord*, from passing into the navel (umbilicus) of the foal. (See Plate XIV.)

The membranes forming the *placenta* (or womb-cake) are at first two: the outer, called *chorion* (Gr., *chorion*, protection), the inner the *amnion;* * and at a later period of pregnancy a third membrane is developed, called the *allantoid* (Gr., *alla*, a sausage, and *oidos*, like). The allantoid communicates with the bladder of the canal called the *urachus* (Gr., *urax*, a mouse), which contains the urine of the fœtus, and is always full of the contents of the fœtal bladder. The amnion, which immediately encloses the fœtus, contains and secretes a fluid called *liquor amnii*, in which the embryo floats. The bowels of the fœtus at birth are full of a yellow mass of pap-like consistency, called *meconium* (Gr., *meconios*, inspissated poppy-juice). The *urachus*, which reaches from the bottom of the bladder of the fœtus, and the allantoid sac, break at birth, and that part which the foal keeps dries up, and forms the long ligament of the liver.

The term of gestation in the mare is between eleven and twelve months. Blaine records, *Cyclopædia*, p. 282, that of 582 mares, covered but once, and observed and registered, the shortest period from copulation to parturition was 287 days (78 short of twelve months), the longest 419 days (54 days beyond the year); thus making the extraordinary difference of 132 days, or four months and 12 days between the extreme periods of gestation.

Parturition.—When the period for foaling approaches, the weight of the young animal rapidly increases, and the fluid of the amnion, which before was almost equal to its weight, decreases by absorption. The uterus, which was completely within the pelvis (Gr., basin) thrusts its fundus against the epigastrium and becomes painful from distension. The udder enlarges, and sometimes milk may be squeezed from the teats; if milking does not alarm the mare, it will give her ease. In most cases an adhesive matter appears about the teats some hours before foaling. At last, the vulvæ (see *ante*), swell and protrude, and the tail is erected; some heaving of the flanks, acceleration of the pulse, and restlessness are generally observable, with deep drawings in of breath, constriction of the abdominal muscles, and a forcing of the uterine contents by aid of the diaphragm (itself pressed by the inflated lungs) backwards, to effect the expulsion. The mouth of the womb dilating, and the attachment of the chorion breaking, the hind legs are now set wide apart, and the membranes protrude like a bladder. This bursts, the liquor amnii escapes, and in favourable cases brings down the foal with it. In more protracted births, the head and forelegs are gradually forced into the vagina. Severe spasms follow till the foal is born; and the placenta (now called the *after-birth*) either comes

* From a Greek word (ἀμνιον), which originally meant the vessel for receiving the blood of the victims sacrificed, but was afterwards applied to this membrane, with its contained fluid.

away at the same time as the foal, or is long and dangerously retained, the fall to the ground rupturing the umbilical connection of the newly-born animal. In ordinary cases, the lungs of the foal immediately begin to act, and, directed by his newly-awakened organs of smell, he seeks the milk of his mother.

When the foal is weakly or torpid, it may be judicious to hold it up to the teat. The first milk, be it remembered, has a peculiar quality. It is purgative, and clears out the meconium from the alimentary canal of the young animal. Should the mother be dry, or die, cows' milk, boiled, or better, asses' milk, where procurable, will support the foal. Some celebrated racers have been hand-reared. The udder of the mare is not fully supplied with milk till the fourth day. When the nippers of the foal become fitted to bite the young grass, the mare weans it; or rather the udder dries up and returns to its ordinary form.

There is an interesting and remarkable point in the economy of the fœtus, with regard to the descent of the testicles. The inner and outer abdominal rings have been already described, and, it must be remembered, the walls of the abdomen are chiefly formed by four pairs of powerful muscles, joined in the middle by the *linea alba*, where it is perforated by the navel (*umbilicus*). Now, in the fœtus, the testicles are placed just behind the kidneys, and from that situation they eventually make their way into the scrotum. While in the belly, they are wrapped in the peritoneum, and attached to a ligament of almost triangular form: this ligament is called *gubernaculum testis* (ruler of the testicle), and is full-grown at birth. It then shrinks and draws down the testicle gradually to the abdominal ring, bringing with it the peritoneal covering, and thickening its substance. The *gubernaculum* absorbs when no longer useful, and an open communication is formed with the cavity of the scrotum, the matured testicles descend to the purse destined to hold them. This peculiar descent of the spermatic organs takes place soon after birth; and until the fourth, fifth, or sometimes sixth month, the testicles are found outside the outer abdominal ring. After this they are drawn back again, and remain in the canal of the groin (inguinal canal) till the tenth or eleventh month, when they again descend to occupy the scrotal sac for the remainder of the animal's existence, unless man should determine to render him more docile and useful as a gelding, which we shall come to consider under the head of CASTRATION.

Puberty in both horse and mare arrives about the fifth year. The terms *colt* and *filly* are changed for *horse* and *mare* between the fourth and fifth years.

THE PRACTICE OF VETERINARY MEDICINE.

CHAPTER XXIII.

INTRODUCTION.—HORSE MEDICINES AND REMEDIES, DOSES, FORMULÆ, AND PREPARATION.

ABSORBENTS.—At the head of these stands chalk. It has a tendency to correct acidity of the stomach, and in some cases to check diarrhœa. A carbonated alkali is useful. Cows, calves, and sheep, being more subject to acidity than the horse, are more benefited by chalk.

ACETATED LIQUOR OF AMMONIA.—Pour Acetic Acid (which see), in the proportion of one ounce to seven of water, on carbonate of ammonia till effervescence ceases and a neutral solution is made. This is what is called in farriery books, *Mindererus's Spirit*. It is diaphoretic and mildly diuretic (*q. v.*). It is useful in the weak stage of fever after influenza. It is also advisable in the early stage of epizootic catarrh. Dose from five ounces upwards.

ACETATE OF COPPER. See COPPER.

ACIDS. See under their several heads as SULPHURIC ACID, &c.

ACETIC ACID (Pyroligneous Acid). The Acetic Acid distilled from wood has properly superseded the ordinary fermented vinegar in medicine and the arts. Diluted with water, it forms an excellent lotion for various skin diseases, and in its strong state is a remedy for warts. Impure pyroligneous acid, as it first comes over, impregnated with tar, we have found a valuable application in chronic inflammation of the eyes and edges of the eye-lids, and in promoting the digestion of ulcers. It is also a good injection into sinuses to produce healthy discharge or adhesive inflammation. It is powerfully antiseptic; and decomposing meat plunged into it has at once its putrefaction checked. The empyreumatic oil it contains is the cause of wood-smoke acting in the preservation of tongues, hams, herrings, &c.

ÆRUGO (Acetas Cupri). See VERDIGRIS, COPPER.

ÆTHER, SULPHURIC.—An antispasmodic (*q. v.*) of the first order in veterinary practice. It is valuable as a diffusible stimulant and narcotic. It rapidly evaporates, producing cold and dryness, and is therefore, when applied externally, an active refrigerant. If, however, it be so confined as to prevent its evaporation, its action is directly the opposite—stimulant, rubefacient, and on the human skin even blistering. Its drying qualities may be easily tested by rinsing a bottle with it, when drops of water obstinately adhere to the glass, and exposing it to a current of air; it will be completely dry in a few minutes. Sulphuric ether, mixed with ten times its quantity of water, is one of the safest of horse drinks. *Nitrous Spirit of Æther* (see NITRE), commonly called "Sweet Spirit of Nitre," is cheaper and more generally used as a febrifuge for the horse.

ÆTHIOPS MINERAL. See MERCURY.

ALOES.—As this well-known resin is the sheet-anchor of farriers, a few words on its qualities and action may be indulged in. There are three kinds of Aloes: 1. The *Socotrine* (Aloë Spicata), or Cape Aloes; 2. Common or Barbadoes Aloes (Aloë Vulgaris); 3. Fetid or Horse Aloes (Aloë Caballina). Of these, Socotrine (or Cape) Aloes seem to be the purest, obtained by draining only; Barbadoes are less pure, and prepared by boiling or slight pressure; while Horse Aloes (to be utterly banished) are the dregs of the last-mentioned. Aloes are frequently adulterated with common resin. This may be detected by dissolving a portion in hot water or alcohol, when the common resin will separate from the aloetic. Every veterinary practitioner should buy his aloes in the gourd in which they are cooled, and reduce them to powder under his own supervision. Aloes are prepared by boiling the leaves and inspissating the juice, then pouring it into gourds to harden. Socotrine Aloes are of a brown colour, inclining to red, and brittle. Barbadoes black, with a shade of brown, of a greasy feel, and a dull fracture.

The Barbadoes Aloes are best, being, with the horse, more certain in action. The Socotrine or Cape, which are the finest, are most approved in human practice. The Caballine or Horse Aloes (which Blaine and others confound under the name of Cape Aloes) we would banish from the dispensary. Aloes are a bitter stimulating purgative, emptying

the large intestines, without making the stools so thin as many other medicines of the class. It is likewise a quickener of the circulation, warms the system, and slightly promotes uterine and hæmorrhoidal discharge. Hence in irritable states its use may be unadvisable. Its general action as a purgative will be found under PURGATIVES. As an alterative, aloes are sometimes given in doses of a drachm to two drachms daily. Barbadoes aloes powder best in frosty weather, when enough may be pounded and enclosed in stoppered bottles for a year's supply. A pound of the powder, warmed for a couple of hours, mixed with one ounce of powdered ginger and eight ounces of palm oil, and divided as wanted into proper doses, will be found a capital purgative for general use.

Aloes are boiled by some practitioners, to render them more mild. The great difficulty of keeping aloes in an equal state of consistence, as a purgative mass, induced Mr. Bracy Clark to adopt the following method, by which, he informs us, these inconveniences are obviated. He places one vessel within another, exactly as carpenters melt glue, having water in the outer vessel, and aloes, with one-fifth of their weight of treacle, in the inner one, which is carefully covered with a lid. The apparatus being put on the fire, is suffered to remain for an hour or more, or until perfectly melted, the aloes and treacle being now and then, but not too often, stirred to combine them. The inner vessel being now taken from the outer, the contents are expeditiously cast in paper moulds or tubes of the usual diameter of a horse-ball. When cold, Mr. Clark finds these balls flexible, yet solid, and they remain so. He gives an ounce to a saddle or carriage horse, and six drachms to a cart horse: but there is reason to fear that they do not prove so soluble in the stomach as when their particles are divided by oil, lard, or even syrup; but the last is a more objectionable ingredient than either of the others. No diuretic, such as soap or carbonate of soda, should be added to this mass; and it is a curious fact that nut-galls will neutralise effectually the purgative action of aloes. We may note here a recorded instance of the different action of the same drug on different animals. A horse will, under ordinary circumstances, be purged by an ounce of aloes; an ox by two or more; a dog will vomit at the dose; for a man the dose is five to eleven grains. A large hog does not require so much; and lastly, according to the experiments of M. Gilbert, a sheep which took two ounces was not purged, although it died seventeen days afterwards. And see Art. PURGATIVES.

A WATERY SOLUTION OF ALOES should be kept by every veterinarian, which will be found, in many instances, a very convenient form, on account of its quicker action.

A SPIRITUOUS TINCTURE OF ALOES, made by digesting four ounces of the powder in a quart of proof spirit, forms a common stimulating application to recent wounds, &c. Half an ounce of powdered myrrh is a good addition.

ALTERATIVES.—This is a class of medicines much misunderstood by the farrier. They are supposed to act upon the system in a slow and nearly imperceptible manner. They form the excuse for that vile propensity of grooms to dose the unlucky horse on all occasions, to the injury of his health and often of his constitution. These medicines are indicated in diseases of the skin, defective secretions, and debility of stomach. The alteratives in most repute among farriers, are nitre, antimony, sulphur, mercurial preparations, resins, and spices; to these many add every drug and compound in the pharmacopœia. For ourselves, we would fain abolish the word alterative altogether, as a vague generality and mystifying term for any remedy for any disorder, and a cloak for ignorance; as, however, it is in constant use, we must retain it, confining it to medicines for the amendment of the state of the skin and general excretions. The leading formulæ for alteratives are:—

(A) IN DISORDERED STATES OF THE SKIN.

Emetic tartar	5 ounces.
Powdered ginger	3 ounces.
Opium	1 ounce.

Syrup enough to form 16 balls: one to be given every night.

(B) SIMPLY COOLING.

Barbadoes aloes	1 ounce.
Castile soap	1½ ounce.
Ginger	½ ounce.

Syrup enough to form 6 balls: one to be given every morning.

(C) IN STRANGLES.

Barbadoes aloes	1½ drachm.
Emetic tartar	2 drachms.
Castile soap	2 drachms. Mix.

(D) ALTERATIVE BALL FOR GENERAL USE.

Black sulphuret of antimony	2 to 4 drachms.
Sulphur	2 drachms.
Nitre	2 drachms.

Linseed meal and water enough to form a ball.

(E) FOR GENERALLY DEFECTIVE SECRETIONS.

Flowers of sulphur	6 ounces.
Emetic tartar	5 to 8 drachms.
Corrosive sublimate	10 grains.

Linseed meal mixed with hot water, enough to form 6 balls, one of which may be given two or three times a week.

(F) IN DEBILITY OF STOMACH.

Calomel	1 scruple.
Aloes	1 drachm.
Cascarilla, gentian, and ginger, of each, in powder	1 drachm.
Castile soap	3 drachms.

Syrup enough to make a ball, which may be given twice a week, or every other night.

ALUM (*Alumen*).—A well-known salt with a metallic base. It is in general use with veterinarians, internally and externally. It is used in cases of super-purgation in the form of alum-whey; two drachms of powdered alum in a pint of warm milk. In doses of one or two drachms, it is

employed as an astringent in diarrhœa, diabetes, and other fluxes. If alum be mixed with a vegetable astringent, such as oak bark, instead of increased power, the action of both is diminished. As a wash for cracked heels, two drachms to a pint of water and a scruple of white vitriol is useful. It is also a serviceable wash in grease generally; and also for those forms of swelled legs attended with exudation of moisture through the skin. Some add the Goulard lotion, forgetting the chemical decomposition that takes place; the result of which is, that the alumina, possessing little astringency, is detached, and two salts with no astringency at all, the sulphate of lead and the sulphate of potash, are formed. Externally it is by some used as a styptic to stop hæmorrhage, by sprinkling it on the bleed ing orifice, when its coagulating properties plug up the mouth of the vessel. It is also esteemed to be a useful escharotic to destroy fungus, and a detergent for foul ulcers.

Ammonia.—Crude Ammonia, or *Muriate of Ammonia*, is so called to distinguish it from the volatile or prepared ammonia which follows. It is, in general opinion, when diluted, one of our very best discutients; and, when in mixture with acetic acid or vinegar, to which camphor is added, it forms the favourite lotion of general practitioners in skin disorders. From it are prepared

Volatile Ammonia (Ammonia Subcarbonas). The gaseous ammonia, fixed into a solid form by combination with carbonic acid, forms the volatile ammoniacal salt of the druggists. It is a good stimulant in the latter stages of fever. United with acetic acid it forms the Spirit of Mindererus, an excellent preparation.

Ammonia Acetatis. See Acetated Liquor of Ammonia.

Carbonate of Ammonia is called salt of hartshorn; carbonated water of ammonia is the spirit of hartshorn of the shops. It is convenient in veterinary practice, from its peculiar property of uniting water and oil. Internally, it is an antispasmodic, in doses of six to eight drachms, administered in warm water. Externally, it is a rapid blistering agent.

Ammoniac.—A gum-resin; the inspissated juice of the *dorema armeniacum*, an oriental umbelliferous plant, common in Persia. This gum is sometimes given in obstinate coughs and in farcy. It is a useful expectorant, dissolved in the acetate of ammonia and rubbed with camphor, which is active in its effect on the horse.

Anise Seed.—The powder of these seeds was formerly much used by farriers; and the druggists who make horse powders find it a profitable article; for it is adulterated to one-third only of the genuine powder. It may be very properly united with other warm aromatics when cordials are admissible. It is also thought to possess some pectoral properties; but they are very trifling. The essential Oil is the most active preparation of it. See Oils.

Anodynes.—This class of medicine is given to soothe the general nervous system, or to relieve spasm, as in the case of tetanus. Opium may be said to be almost the only anodyne in routine veterinary practice, and may be safely administered to the horse in very large doses.

Its pervading use may be gathered from the following prescriptions; and a reference to Opium will show its general value and effects.

Anodyne medicines, compounded.

(A) in ordinary cases.

Opium	1 drachm.
Castile soap	4 drachms.
Ginger	2 drachms.
Oil of caraway	1 ounce.

Syrup to form a ball, dissolve in half a pint of warm ale, and administer as a drench.

(B) in colic.

Powdered opium	2 drachms.
Camphor	2 drachms.
Castile soap	2 drachms.
Ginger	2 drachms.

Mix with liquorice powder and treacle to the consistency of a ball, and give every hour during the agony.

(C) in diarrhœa or super-purgation.

Tincture of opium (laudanum)	1 ounce.
Gum Arabic (dissolved in 1 pint of boiling water)	2 ounces.

Add

Oil of peppermint	25 drops.

A drench. Give night and morning while indicated to be necessary

(D) in chronic diarrhœa.

Tincture of opium	½ ounce.
Powdered chalk	1 ounce.
Gum Arabic	1 ounce.
Peppermint water	8 ounces.

Night and morning.

Anthelmintics. See Worm-Medicines.

Antimony.—There are several medicinal preparations of this metal.

The Black Sulphuret of Antimony, a compound of sulphur and antimony, is a good alterative. It is given with sulphur and with nitre, in varying doses, according to the disease and the slow or rapid effect intended to be produced. The maximum dose, and especially if it is to be continued, should not exceed four drachms. It should never be bought in powder, whatever trouble there may be in levigating it, for it is often grossly adulterated with lead, manganese, forge-dust, and arsenic. The arsenic may be detected by placing a little of the powder on a red-hot iron plate. The pure sulphuret will evaporate without the slightest residue—so will the arsenic, but there will be an evident smell of garlic; a portion of the lead and the manganese will be left behind.

Tartarized Antimony (*Antimonium tartarizatum*). The tartrate of potash and antimony, or a combination of supertartrate of potash and oxide of antimony, called *Emetic*

Tartar, is a very useful nauseant, and has considerable effect on the skin. It is particularly valuable in inflammation of the lungs, and in every catarrhal affection. It is given in doses of one drachm, or one drachm and a half, and combined with nitre and digitalis. It is also beneficial in the expulsion of worms. Here it must be given in doses of two drachms, and with some mechanical vermifuge, as tin-filings, or ground-glass, and administered on an empty stomach for several successive days. Although it may sometimes fail to expel the worm, it materially improves the condition of the horse, and produces sleekness of the coat. To a slight degree the emetic tartar is decomposed by the action of light, and should be kept in a jar, or green bottle. It is sometimes adulterated with arsenic, which is detected by the garlic smell when it is placed on hot iron, and also by its not giving a beautiful gold-coloured precipitate when sulphuret of ammonia is added to it in solution.

Chloride of Antimony, formed by distilling corrosive sublimate with antimony, is called *Butter of Antimony* by farriers, on account of its butter-like (butyraceous) appearance. It, however, has a strong affinity for water, which it attracts from the atmosphere, and thus becomes fluid. The less water it is suffered to absorb, the more powerful its action, it should therefore be kept in close-stopped bottles. The test of its goodness is its density. It is the best liquid caustic we have; it is most manageable, and its effect can most readily be ascertained. As soon as it touches any muscular or living part, a change of colour is perceived on the part; and the effect of the caustic can be fairly judged of by the degree of change. For corns, canker, indisposition in the sole to secrete good horn, wounds in the foot not attended by healthy action, and for every case where the superficial application of a caustic is needed, the chloride of antimony is unrivalled.

Antimonial Powder—Powder of oxide of antimony, with phosphate of lime, is the factitious James's powder, and is used as a substitute for that medicine in many diseases of a febrile character. The dose is from one to two drachms. The late Mr. Bloxam used to trust to it alone in epidemic catarrh of the horse. It is decidedly inferior to the Emetic Tartar.

Antispasmodics.—This is not a large class of medicines in veterinary practice. We may refer to the chief anodyne—opium—as the chief. They, as their name imports, are intended to suppress or counteract the excessive muscular action called spasm, or cramp. These attacks are rather secondary to other irritating causes, and therefore remedies to attack the cause are more to be relied on than combating the effect. There are, however, two or three as palliatives, which may be administered with advantage. Camphor, hyoscyamus (henbane), belladonna, oil of turpentine, and asafætida have proved useful. Cold suddenly and continuously applied is a powerful antispasmodic, and has succeeded in subduing tetanus.

Antispasmodic Recipes.

(A) for colic.

Spirits of turpentine	3 ounces.
Tincture of opium	1 ounce.

Mix with a pint of warm ale, and give as a drench.

(B) another drench for colic.

Spirits of turpentine	3½ ounces.
Tincture of opium	1½ ounce.
Barbadoes aloes	1 ounce.

Powder the aloes, and dissolve in warm water; then add the other ingredients, and give as a drench.

(C) clyster in colic.

Spirits of turpentine	6 ounces.
Aloes	2 drachms.

Dissolve in 3 quarts of warm water, and stir the turpentine well into it.

(D) antispasmodic drench.

Gin	4 to 6 ounces.
Tincture of capsicum	2 drachms.
Tincture of opium	3 drachms.
Warm water	1½ pint.

Mix, and give as a drench, when there is no inflammation.

Aperients.—Aperients, laxatives, or purgatives, are degrees, quantities, or kinds of the same medicines. Laxatives may be classed as milder purgatives, and as acting with less irritation in inflammatory affections. In chronic cases, too, they can be administered more frequently, which is very desirable. Calomel, with small doses of aloes, ranks high among these. The laxatives proper in fever are Epsom, Glauber, or Cheltenham salts, 8 to 12 ounces, dissolved in thin gruel, and repeated every six hours until they operate. In some cases, the bowels being inflamed, 6 or 8 ounces of castor or linseed oil, with a few ounces of the watery tincture of aloes, will prove excellent; it is improved by half a drachm of chloroform. The action of these is much assisted by bran mashes, gruel, and diluent drinks. It, must, however, be confessed that most of these aperients are doubtful and irregular in their action upon the horse. When this inefficacy is apparent, a mild copious clyster, or "back-raking" (see *post*, in Veterinary Practice) should be resorted to.

Some Aperients act solely by exciting the muscular coat of the bowels to contract; others cause a copious watery discharge; whilst a third class combine the action of the two. The several purges also act upon different parts of the digestive canal; some stimulating the larger bowels, while others act upon the small intestines; and others, again, on the whole canal. There is yet another class, that combine with purging an influence on the liver, such as mercury and rhubarb; which is effected by absorption with the circulation. Drastic purges are the violent extreme of the scale, as laxatives are the mildest of aperients. As these medicines will receive full notice in the medical treatment of diseases, we shall spare space here by referring to the article specially bearing on the subject, where

it will be found fully considered. Some of the most useful aperient formulæ are subjoined :—

Aperient Recipes.

(A) ORDINARY APERIENT, OR "PHYSIC" BALL.

Barbadoes aloes	3 to 8 drachms.
Hard soap	4 drachms.
Ginger	1 drachm.

Dissolve in as small a quantity of boiling water as will suffice; then slowly evaporate to the proper consistence, by which means griping is avoided.

(B) A WARMER APERIENT BALL.

Barbadoes aloes	3 to 8 drachms.
Carbonate of soda	½ drachm.
Aromatic powder	1 drachm.
Oil of caraway	12 drops.

Dissolve as above, and then add the oil.

(C) GENTLY LAXATIVE BALL.

Barbadoes aloes	3 to 5 drachms.
Rhubarb powder	1 to 2 drachms.
Ginger	2 drachms.
Oil of caraway	15 drops.

Mix, and form into a ball as in letter (A).

(D) PURGING BALLS, WITH CALOMEL.

Barbadoes aloes	3 to 6 drachms.
Calomel	½ to 1 drachm.
Rhubarb	1 to 2 drachms.
Ginger	½ to 1 drachm.
Castile soap	2 drachms.

Mix as in first prescription (A).

(E) STOMACHIC LAXATIVE BALL.

Barbadoes aloes	3 drachms.
Rhubarb	2 drachms.
Ginger, and Cascarilla powder of each	1 drachm.
Oil of caraway	15 drops.
Carbonate of soda	1½ drachm.

Dissolve the aloes as in (A), and then add the other ingredients.

(F) LAXATIVE DRENCH.

Barbadoes aloes	3 to 4 drachms.
Canella alba	1 to 2 drachms.
Salt of tartar	1 drachm.
Mint water	8 ounces.

Mix.

(G) ANOTHER LAXATIVE DRENCH.

Castor oil	3 to 6 ounces.
Barbadoes aloes	3 to 5 drachms.
Carbonate of soda	2 drachms.
Mint water	8 ounces.

Mix, by dissolving the aloes in the mint water by the aid of heat, and then adding the other ingredients.

(H) A MILD OPENING DRENCH.

Castor oil	4 ounces.
Epsom salts	3 to 5 ounces.
Gruel	2 pints.

Mix.

(I) A VERY MILD LAXATIVE.

Castor oil, and Linseed oil of each	4 ounces.
Warm water, or Gruel	1 pint.

Mix.

(K) USED IN THE STAGGERS.

Barbadoes aloes	6 drachms.
Common salt	6 ounces.
Flour of mustard	1 ounce.
Water	2 pints.

Mix.

(L) A GENTLY COOLING DRENCH IN SLIGHT ATTACKS OF COLD.

Epsom salts	6 to 8 ounces.
Whey	2 pints.

Mix.

(M) PURGATIVE CLYSTER.

Common salt	4 to 8 ounces.
Warm water	8 to 16 pints.

ARNICA has for a time disappeared from our prescriptions and practice, to re-appear recently with good claim on our notice. It is the production of the *Arnica montana*, or Leopard's Bane, which grows plentifully on the Alps and other European high lands. In Germany all parts of the plant are used and esteemed,—leaves, stem, flowers, and root. It possesses through the whole plant an aromatic odour and a nauseous taste, arising from a volatile oil and an acrid resin. The roots contain a large amount of tannin; and "arnicine," as the chemists have called its extract, in small doses, accelerates the pulse, in large, irritates the alimentary canal, and causes faintness. It is diaphoretic and diuretic, and we have found the root in powder (20 grains 3 times a day), or the infusion (3 drachms of flowers and leaves and 1 pint of boiling water), given four ounces at a time, a good stimulant. In Germany they make a tincture and a vinegar of arnica, of which we would recommend trial to be made by the veterinarian. It is now applied by homœopathic doctors to wounds and bruises; with what effect it could be introduced in horse-practice we cannot at present with certainty say.

ARSENIC.—Were it not that some practitioners continue to use it as a tonic, in doses of from ten to twenty grains daily, and others use it to core out old ulcers, we would not include it in our list, for we have little faith in it. There are better and safer tonics, and far better and safer caustics. The best form in which it can be administered is, the liquor arsenicalis, made by boiling its own weight of potash with arsenic and water (one ounce of water to every four grains of arsenic), in some glass vessel. It has some power in staying the progress of glanders; and is pretended to cure farcy when watched and continued. It also appears to have some vermifuge properties; Blaine believed it to retard the march of the rabies, though not ultimately successful.

ASTRINGENTS.—These are supposed to act on the living fibres by producing increased contraction, in which point of

view they form a very numerous and important class; but in a more limited sense, they are considered as substances that restrain immoderate fluxes, as of the intestines and kidneys. Those that act by constringing the divided ends of bloodvessels are called styptics. Opium, chalk, alum, starch, and catechu, act favourably in restraining intestinal fluxes. Catechu, alum, and acetate of lead, operate as astringents on the urinary passages.

Astringent Recipes.

(A) FOR DIABETES.

Opium	½ drachm.
Powdered ginger	2 drachms.
Oak bark	1 ounce.
Camomile infusion	1 pint.

Mix for a drench; or, if powdered oak bark omitted, substitute alum, as much as the tea will dissolve.

(B) FOR BLOODY URINE.

Catechu, powdered	1 ounce.
Cascarilla bark	2 drachms.
Alum	1 ounce.

Liquorice powder and treacle to form a ball, administered twice a day.

(C) EXTERNAL POWDER FOR ULCERS.

Alum, powdered	4 ounces.
Bole Armenian	1 ounce.

Mix.

(D)

Or, white vitriol	4 ounces.
Oxide of zinc	1 ounce.

Mix.

(E) AN ASTRINGENT LOTION.

Goulard's Extract	3 drachms.
Water	½ pint.

(F) ASTRINGENT OINTMENT.

Super-acetate of lead	1 drachm.
Lard	1 ounce.

Mix.

(G) Or, for the same purpose:

Nitrate of silver, in powder	½ drachm.
Goulard's extract	1 drachm.
Lard	1 ounce.

Mix. (F) and (G) are good for sore heels.

BALLS.—This is the favourite and most convenient mode of administering horse-medicines.

There are some circumstances, in the preparation of this form of medicines, not in general sufficiently attended to by veterinarians. Substances that are volatile do not keep well in balls, and therefore should only be made when used. The same caution is also requisite with such as liquify by the absorption of air. All hard substances entering into balls should be finely powdered, and the moist matter that is to form them into an adhesive mass should be of a nature that will not soon ferment or become mouldy. Hence, they are better compounded with oil than with honey or syrup. A mass for balls should be pressed down in a jar, and covered with a bladder. Balls should not weigh more than an ounce and a half or two ounces, or they will pass down the gullet with difficulty; nor more than an inch in diameter, and three inches in length. The mode of "delivering a ball" is not difficult to acquire; and the balling iron, while it often wounds and permanently injures the bars, occasions the horse to struggle more than he otherwise would against the administration of the ball. The horse should be backed in the stall; the tongue should be drawn gently out with the left hand on the off-side of the mouth, and there fixed, not by continuing to pull at it, but by pressing the fingers against the side of the lower jaw. The ball, being now taken between the tips of the fingers of the right hand, is passed rapidly up the mouth, as near to the palate as possible, until it reaches the root of the tongue; it is then delivered with a slight jerk, and the hand being immediately withdrawn and the tongue liberated, the ball is forced through the pharynx into the œsophagus. Its passage should be watched down the left side of the throat; and if it is not seen going down, a slight tap or blow under the chin will generally cause the horse to swallow, or a few gulps of water will carry it down. If the gullet should be small, or strictured, and the ball should remain in some part of it, the tube used for "the hove" in cattle may be employed to remove it. If the case be urgent, tracheotomy must be resorted to. (See TRACHEOTOMY, *post.*)

BALSAMS are a kind of resinous juice, united with some of the extractive matter of the various plants they are obtained from, in combination with an essential oil. All the balsams are occasionally in use in veterinary medicine, and were formerly in very high estimation, for their supposed salutary action in chronic diseases. They were also considered as a sovereign vulnerary for abraded urinary passages. It is the modern doctrine to think their efficacy overrated, which is probably in some respects true, particularly as regards their expectorant qualities; nevertheless they are far from being inert. They appear to act very favourably in some instances, as a warm terebinthinated stimulant. There are balsams of Canada; of Copaiba; of Gilead; of Peru; and of Tolu. What is called balsam of sulphur is merely a compound preparation of sulphur in oil.

BARBADOES TAR. See TAR.

BARK.—Several of the barks enter into the veterinarian's list of medicaments, and all act by an astringent property on the animal fibre. Peruvian bark stands foremost in reputation; but as horses are little subject to intermittent fevers, we can therefore dispense with it. The elm and the oak barks, particularly the last, may be used in cases of debility, with advantage. Cascarilla bark proves also a valuable stomachic tonic.

BARYTES (*Murias Barytæ*) has been tried with some benefit in glanders. "It is," says Blaine, "a very powerful medicament, but few glandered horses are able to bear the quantity requisite for the cure."

Basilicon, commonly called "Yellow basilicon" (*Ceratum resinæ*), is a useful digestive ointment.

Beans, in a medical point of view, are sometimes used as a tonic, and the flour of them as an astringent.

Belladonna (*Nightshade*).—An excellent sedative. Its specific action, however, appears to be expended upon the throat. It is largely used in affections of the lungs, in all diseases where sore throat is a prominent symptom. Its full effect is shown by loss of appetite. Its effect upon the eye in horses is not at all correspondible to that in man.

Blisters.—The modus operandi and the application of Blisters will be found under Operations, hereafter. The leading substance is the *Cantharides* or Spanish fly, though various substances are used for the purpose of vesication. As a simple blister, none equals in certainty and mildness the Spanish fly. In acute inflammatory disorders, however, its action is too slow, and caustic liquor of ammonia is resorted to, Euphorbium (*q. v.*) is also introduced as a substitute for cantharides. The tincture of croton is also used as an economical substitute for the flies.

(A) blister for general use.

Powdered cantharides	1 pound.
Lard	8 pounds.

The liquid blister is made by substituting eight pints of oil for the eight pounds of lard, and allowing the flies to digest for a fortnight, or boiling them in a water bath. A pound of camphor is a good addition; it does not lessen the action of the blister, but diminishes its irritation.

(B) a powerful blister.

Spanish flies	1 pound.
Lard	3 pounds.
Resin	2 pounds.
Oil of turpentine	1 pound.

Melt the resin with the lard, after which add the turpentine. When beginning to cool, throw in the powdered flies.

(C) a mercurial blister, which may be used where dependence is placed on the action of mercurials and blisters.

Of the former blister	4 ounces.
Corrosive sublimate, powdered finely	1 scruple.

(D) or the following.

Strong mercurial ointment	2 ounces.
Oil of origanum	2 drachms.
Corrosive sublimate	2 drachms.
Cantharides, powdered	3 drachms.

Mix, and rub in with the hand.

(E) strong sweating blister, for splents, ring-bone, spavins, etc.

Of the liquid blister marked (F)	1 pint.
Biniodide of mercury	2 drachms.

To be well rubbed in the legs after cutting the hair short; and followed by the daily use of arnica, in the shape of a wash, as follows, which is to be painted on with a brush:—

Tincture of arnica	1 ounce.
Water	12 to 15 ounces.

Mix.

Major's British Remedy, which is supposed to be composed chiefly of sulphuric acid, but which sweats down bony matter very rapidly, though not without pain, and sometimes followed by a blemish.

(F) liquid blister, weak; sometimes called sweating blister.

Spanish flies, in gross powder	½ pound.
Olive oil	3 quarts.

Steep the flies in the oil three weeks; strain off, and bottle for use.

(G) liquid blister, very mild.

Of the above	1 pint.
Olive oil	1½ pint.

The farrier's *sweating blister* is only a strong stimulant; it occasions heat and swelling, without excoriation or loss of hair; consequently it is a very convenient application, when it is an object to avoid a temporary blemish, and when the case is not of a very desperate description. But there are also instances in which it is to be preferred to an actual blister, as in strains, where some remains of heat and inflammation are present, but without activity: in such cases the sweating blister is very often efficacious. The mode of application is to rub it in of sufficient strength to irritate in a mild degree only; repeating it every day, until considerable swelling is occasioned, when the application should cease and the enlargement be allowed to subside.

Blue Vitriol. See Copper, Sulphate of.

Bole Armenian, vulgarly, "bole ammoniac," is an argillaceous earth combined with iron, and is supposed to possess some astringent property. The propriety of its being administered inwardly, is doubtful; for it may remain in the intestinal canal, and become the nucleus of a stone. On account of its supposed astringency, it is occasionally employed to give consistency to ointments.

Borax. See Soda.

Bran. This valuable laxative is too well known to need description. As a poultice, it is objectionable, from becoming so soon dry. See Poultices.

Burgundy Pitch. See Resins.

Butter or Butyr of Antimony. See Antimony, Muriate of.

Calamine, prepared (*Lapis Calaminaris*). See Zinc.

Calomel. See Mercury, Submuriate of.

Camomile. The powder of the flower is a useful vegetable tonic, and the mildest in our list. It is given in doses of one or two drachms, and is exhibited in the early stage of convalescence, to ascertain whether the febrile stage of the disease is passed, and to prepare the way for a more powerful tonic—gentian. If no acceleration of pulse, or heat of mouth, or indication of return of fever, accompanies the cautious use of the camomile, the gentian, with carbonate of iron, may be safely ventured on; but if the gentian had been used first, and a little too soon, there might have been a considerable, and perhaps dangerous return of fever. Blaine

does not think so highly of camomiles as Youatt. He says, as an aid to the other medicines prescribed for fever, or in the weak state of influenza, it is inferior to good sound stout.

Camphor is extracted from the *Laurus camphora* and arrives here principally from India. It is in the form of a white brittle substance, greasy to the feel, but so tough as not to be easily pulverised, unless a few drops of spirit be added to it. Camphor burns brightly with much smoke, and melts at 288°. Water will not dissolve camphor, but an equal weight of spirit will; this must be remembered in compounding. If camphor is first worked up with a small quantity of oil, and then with a solution of gum arabic, it can be readily mixed with fluid medicines, and also with the resins. Its efforts are transient, and therefore small doses at short intervals are advisable where its use as a stimulant or sweating medicine (diaphoretic) is called for. Camphor is decidedly active as a horse-medicine. In large doses (say half an onuce) it has been known to produce convulsions. In moderate doses (a drachm) it is antispasmodic (*q. v.*), and sedative (*q. v.*). Its use in flatulent colic is undoubted, opium being conjoined. It has been recommended by good practitioners in fever: and in the later stages of febrile disorders we have found it a gentle stimulant where the irritability has indicated such a remedy. It is, however, uncertain in its action; and its want of permanency makes it difficult to estimate its amount of efficacy. Externally, camphor has a mild action in dispersing indurations and in rheumatic affections. Camphor may be mixed with advantage in the ordinary blister where there is a purulent tendency in the animal.

Canada Balsam is the purest of turpentines. It is a transparent white juice, extracted from the *Pinus balsamea*, a common Canadian tree. It is wrongly called a *balsam*, as it contains no *benzoic acid*. The old writers on medicine praised its virtues highly, as *Balm of Gilead, Opobalsamum, Balm of Mecca, Venice Turpentine, Cyprus Turpentine*, &c., &c. See Turpentine for its veterinary uses.

Cantharides. (*Cantharidis vesicatoria*), the Spanish Fly, is that well-known beautiful winged beetle abundant in Southern Europe. They are collected in June and July from the leaves of the trees whereon they delight to dwell (especially the ash), destroyed by the fumes of strong vinegar, and dried in the sun: when touched, the insect, like many beetles, shams death, and when injured emits a peculiar pungent odour. It is of a bright green colour, fine specimens are three-quarters of an inch in length, with the legs, antennæ, &c. of a bluish-black. As the leading ingredient in making blisters, we would recommend every veterinary practitioner to buy the beetles whole and powder them himself, to guard against adulteration. A muslin handkerchief should be placed over the face during the pounding, or an unpleasant vesication of nose and throat may follow. A little sweet oil will prevent the fine particles flying. Remember, the flies do not lose their virtue by being kept. It is remarkable that these acrid insects are preyed upon by others feeding upon them; but as these only select the bright hard crust of the insect, the powdered residue is active as a vesicatory, although the contrary has been asserted. Of their use as blisters we have already spoken. They have been much relied on in glanders as an injection, and Percivall recommends 5 drachms of cantharides in a ball with copaiba in nasal gleet. It is useful as an injection in sinuous sores.

Capsicum. The capsicum pod or berry may be taken as a synonym for cayenne pepper, which is merely the admixture of the dried and ground pods of several sorts of capsicum, especially the bird pepper (*capsicum baccatum*). Observe, salt and red lead are often used to adulterate cayenne. For red lead, add to it some acetic acid, then dropping in a little sulphuret of ammonia, down will go the lead in a dark precipitate. Or boil a little of the suspected pepper in vinegar, filter the extract, add to it a little sulphate of soda (Glauber's salts), when a white precipitate will be thrown down, which, when dried, mixed with a little charcoal and exposed to heat, will give a metallic globule of lead. In horse practice, the capsicum is a good remedy in flatulent colic. It is also a worm expellent. It is a convenient external stimulant; and lastly is a better stomachic in judicious compounding than most of the general peppers used. The tincture is the most convenient form, but not economical. It mixes with water freely.

Caraways (*Carum carui*). These well-known seeds act as a capital cordial and antispasmodic with the horse, in conjunction with ginger and gentian. The cardamom seeds alone are retained in the human pharmacopœia.

Carbon. See Charcoal and Poultices.

Carbonate of Ammonia and Carbonated Water of Ammonia (Hartshorn). See Ammonia.

Carbonate of Iron. See Iron.

Carrots.—This root, as an article of horse medicine, is too much neglected. It is excellent in cough, fattens without heating the animal, is slightly laxative, therefore good for the coat. In incipient grease, farcy, &c., we would substitute carrots for corn. In the "Pharmacologia" of Dr. Paris, carrots are recommended "as an antiseptic poultice, to allay the pain in cases of ulcerated cancer, and to correct the fœtor of ill-conditioned ulcers." Surely, we much overlook what is at hand and cheapest, to seek remedies more difficult to procure? The addition of hemlock leaves, 2 ounces, and a trace of opium, to the mashed carrot, makes an unsurpassable cataplasm whenever a poultice is desirable.

Cassia is the fruit of a West Indian tree. The pods are about an inch in diameter, rough rinded, and contain a black pulp, easily dissolvable in water, but more readily in spirits. It is of a faint sickly smell, and is said to form the basis of the semi-fluid sold by some dishonest grocers as "essence of coffee." It must not be given except in compounded medicines.

Castor Oil (*Oleum Ricini*). The name comes from the

seeds from which the oil is pressed resembling the insect called the *tick*, in Latin *ricinus*. It is by no means desirable as a purgative in horse practice. Youatt says, he names it "merely to warn the horse owner and practitioner against its use. If it must be used," he adds, "the expensive and enormous dose of a pound to a pound and a half must be administered." Its cathartic action on the horse is not only uncertain, but it often produces griping. Chloroform is said to have neutralised its evil effects; but why retain a doubtful and, to the idiosyncracy of the horse, an abhorrent purgative, when we have so many better and cheaper, without its drawbacks?

CATAPLASMS. See POULTICES.

CATHARTICS. See APERIENTS and PURGATIVES.

CATECHU, commonly called *Japan Earth* (*Terra Japonica*) is an extract from the Indian *Acacia Catechu*, common on the hilly parts of Bengal and Coromandel. There are two sorts, a light and a chocolate-coloured, the latter has more of the astringent principle. It is more active with the horse than with man, and is a useful and safe astringent. It is given in super-purgation, in doses of one or two drachms, with one or one and a half drachm of opium, as a yet more powerful astringent; four drachms of chalk, to neutralize any acid in the stomach or bowels, and two drachms of powdered gum, being also added, to sheathe the over-irritated mucous coat of the intestines. It is not often adulterated in this country, but grossly so abroad—fine sand and aluminous earth being mixed with the extract. It should not be given with any alkali, yet the prescription just recommended contains chalk. But although the chalk, being a kali, weakens the astringency of the catechu, it probably neutralizes some acid in the stomach or bowels, which would have diminished the power of the catechu to a greater degree. It must not be given in conjunction with any metallic salt, for the tannin or gallic acid, on which its power chiefly or entirely depends, has an affinity for all metals, and will unite with them, and form a gallate of them, possessing little astringent energy. Writing ink is the union of this tannin principle with iron.

A tincture of catechu is sometimes made by macerating three ounces of the powder in a quart of spirit for a fortnight. It is very excellent for wounds; and, with the aloes, constitutes a remedy of a balsamic nature for the purpose of hastening the healing process of wounds.

CAUSTICS. Called in medicine *escharotics*, are external remedies applied by cloth, brush, or sponge to the part where fungous excrescence is to be destroyed, or indolent ulceration stimulated to granulation. They are of two kinds—viz., first, the actual cautery, consisting in the application of the hot iron, and called firing, which will come under notice elsewhere; and, secondly, the potential cautery, by means of the powers of mineral caustics, such as potass, lunar caustic, &c.

The *Mineral Acids* are active caustics. Sulphuric acid, or "oil of vitriol," is now seldom used. Nitrous acid (*Aqua Fortis*) may be applied by means of a camel's-hair pencil to fungus on the foot.

The *Chloride* or *Muriate of Antimony*, commonly called the *butter of antimony*, is a caustic in very general use in veterinary practice. Applied to a raw surface it instantly changes it white, destroying a thin layer of substance; hence it is a very convenient application in cankered feet, as, by means of a small camel's-hair brush, it can be spread over as much or as little a portion of parts as is necessary. In sandcrack, when the sensitive substance protrudes, it may be applied in a similar way. In obstinate cases of grease, the buds are sometimes beneficially touched with it: but in quittor, poll-evil, and other sinuses, it is not so proper as some other escharotics.

Nitrate of Silver (*Argenti Nitras*), popularly called "Lunar caustic," is a preparation from silver, which renders it expensive: it is, however, essentially necessary to the veterinarian's dispensary, from its being so completely under command in its action; not extending its effects beyond the immediate part it is applied to. It proves the most convenient caustic for destroying the edges of a contaminated wound, when not too extensive, as the bite of a rabid animal. Dissolved in five, six, or eight times its own weight of water, it forms an excellent liquid caustic, peculiarly useful as a dressing for the foot-rot in sheep, and also to touch the protruded portions in sandcrack. Dissolved in twenty times its weight of water, it makes a useful detergent wash for foul ulcers, and to keep down too luxuriant growths.

Lunar caustic consists of seventy parts of oxide of silver and thirty of nitric acid, when fused and cooled it is in small cylinders of a dark grey colour, and of a crystalline fracture when broken across. The sticks should be kept in a stoppered bottle covered with soft dry paper.

Caustic Potass, called *Fluid Potass* (*Potassa Fusa*), is powerful but difficult to manage, as it runs about where it is not wanted. Mixed with soap it has been injected in the pipes of quittor.

Blue Vitriol, the sulphate of copper, is a much milder caustic than several others, and is used in powder, to destroy fungus, especially in cases of broken knee. A solution of one drachm to six ounces of water is a detergent wash for ulcers, grease, &c.

White Vitriol (Sulphate of Zinc), is also a good escharotic in a saturated solution. See ZINC.

Corrosive Sublimate (*Oxymuriate of Mercury*). See MERCURY. In powder it acts most energetically upon warty growths, but should be used with great care and discretion. It may safely be applied to small surfaces, but not without a regular practitioner to large ones. It should be washed off after remaining on a few minutes.

The *Nitrous Oxide of Mercury*, called "red precipitate," is also generally used for similar purposes.

Yellow Orpiment, not so strong as the corrosive sublimate, and may be used with more freedom. It will gene-

rally remove warty growths by picking off their heads and rubbing it in.

Caustic Preparations.

(A) IN CANKER OF THE FOOT.

Quicksilver	1 ounce.
Nitric acid	2 ounces.

Mix in an earthen vessel, and when cold put into a wide glass bottle, and cork it. It may be mixed with lard, in the proportion of 1 to 3.

(B) A SIMILAR APPLICATION, WHICH MAY BE USED ALTERNATELY WITH THE LAST.

Copper filings	½ ounce.
Nitric acid	1 ounce.

Mix and use in the same way.

Mild Solid Caustics. Verdigris, either in powder or mixed with lard as an ointment, in the proportion of 1 to 3. Burnt alum, used dry. Powdered white sugar.

Mild Liquid Caustics. Solution of nitrate of silver, 5 to 15 grains to the ounce of distilled water. Solution of blue vitriol, of about double the above strength. Chloride of zinc, 3 grains to the ounce of water.

Quicklime sprinkled over ulcerated surfaces, is a convenient escharotic.

CERATES. Ointments of a drying, healing nature. Calamine ointment (Turner's Cerate). See ZINC.

CHALK (*Creta*). Carbonate of Lime. It is used as "prepared chalk," being levigated and purified by washing and drying. It is antacid and absorbent, and good in diarrhœa. With neat cattle it is more efficacious than the horse. It may be sprinkled over cracks and ulcers. The internal dose is half an ounce to two ounces in superpurgation.

CHARCOAL (*Carbo ligni*), when well-prepared, is black, inodorous, insipid, and brittle; having the quality of absorbing various gases, and of destroying the smell and taste of a number of vegetable and animal substances—especially mucilages, oils, and matters in which extracted and fermented principles abound. Hence its value. No fluid dissolves charcoal. Its antiseptic qualities are indisputable, and it is the real secret base of several "infallible" styptics. It is not duly appreciated (but it must be freshly prepared) for its excellent effects, when impalpably powdered, in correcting the discharge from ill-conditioned ulcers, or mingled in a poultice for general application in fœtid discharges.

CHARGES are thick adhesive plasters spread over parts that have been strained or weakened; they are applied warm, and left on while adherent. Charges are not much used by modern veterinarians. A more extensive acquaintance with the animal economy teaching us that there is but little activity in what are considered as external bracers. Nevertheless, there are some other points of view in which we may place this matter, to prove that "charges" may be of much service in some cases, if it is merely to act as a bandage, or to protect from cold. In this way a "charge" becomes a useful application to the loins in rheumatism; not only as it protects the affected part from cold, but also because of the resin proving a useful stimulant. Any strong adhesive, as resin, pitch, &c., melted with wax or oil sufficient to keep it from being too brittle, may be formed into a "charge," and applied warm on the part; and as it cools it should be covered with flocks of wool or short tow. Another favourite and effective "charge" in ligamentary lamenesses, consists of common salt with the white of egg.

The following mixture makes a good charge—

Burgundy or common pitch	5 ounces.
Tar	6 ounces.
Yellow wax	1 ounce.

Melted together, and when they are becoming cool, half a drachm of powdered cantharides well stirred in. This must be partially melted afresh when applied, and put on the part with a large spatula, as hot as it can be without giving the animal too much pain. Flocks of tow should be scattered over it while it is warm, and thus a thick and adhesive covering will be formed, which cannot be separated from the skin for many months. This is applied for old sprains of the loins, and also strains of the back sinews.

A newly-introduced charge is called the *Arnica charge.* It is formed of two ounces of Canada Balsam, and half an ounce of Arnica leaves, melted and worked together with a little spirits of turpentine. This to be applied over the whole by thinly spreading, and then the first-named charge placed outside and over it.

CHLORIDE OF ZINC. See ZINC.

CHLOROFORM is a peculiar compound limpid fluid, miscible with both alcohol and æther, and precipitated from them by water. It will dissolve iodine, phosphorus, and sulphur. The vapour of chloroform and of æther have wonderful narcotising powers over the lower animals as well as man. Chloroform has the advantage over æther that a far less quantity will produce insensibility to pain, and the expense is much less; 20 drops on a sponge will have the desired effect. Chloroform may be thus obtained:—To 4 pounds of chloride of lime in powder, add 12 ounces of rectified spirit, mixed with 12 pounds (pints) of water. Its applicability in cases of extensive and severe operations is proven. It is an excellent remedy in spasmodic colic, in doses of a drachm or two drachms in a pint of oil. It is also serviceable in guarding oil, intended as a laxative, from producing griping effects.

CINCHONA. See BARKS.

CLYSTERS (Lat., *clysterum*, from Gr., *clyso*, to lave),—in many farming books *glysters*,—are useful aids in veterinary practice, being always safe and easy to administer. The principal art is to avoid alarming the horse. The syringe known as "Read's," with valves and a flexible tube, is the best apparatus; but failing this, a large hog's bladder, or, better, that of an ox, with a smooth wooden pipe an inch in diameter and sixteen inches long, may serve the occasion. The pipe must be well oiled, and the process conducted

gently. We may notice here that BACK-RAKING (see *post*), is an operation often necessary before throwing up a clyster. The clyster must not be suddenly forced up, but gradually; and its heat 96° Fahrenheit. Subjoined are several of the compounds ordinarily used as clysters, from which it will be seen that the clyster may be made, not only laxative, but nutritious and astringent. From the urgency with which relief of the bowels is required, and the length of time taken by purgatives given by the mouth, this class of remedy is invaluable.

(A) A LAXATIVE CLYSTER.

Thin gruel or broth . . .	5 quarts.
Epsom salts, ½ lb.; or common salt .	1½ pound.

(B) A CLYSTER FOR GRIPES.

Oil of turpentine	½ pint.
Thin gruel	4 quarts.

(C) ANODYNE CLYSTER IN DIARRHŒA.

Starch, made as for household purposes .	1 quart.
Powdered opium . . .	2 drachms.

The opium to be boiled in water, and added to the starch.

(D) A NOURISHING CLYSTER.

Thick gruel	3 quarts.
Strong ale	1 quart.

Mix. Or,

Strong ale	1 quart.
Thick milk	2 quarts.

Mix.

(E) ASTRINGENT CLYSTERS.

Boiled milk	3 pints.
Thin starch	2 pints.
Laudanum	1 ounce.

(F) ANOTHER.

Alum whey	1 quart.
Boiled starch	1 quart

COLCHICUM (*Colchicum autumnalis*) the meadow saffron. This celebrated remedy for human gout and dropsy does not bear out its character for activity in horse complaints. Its flower is known as poisonous to cattle. It is diuretic with the horse, and is said to act upon the liver. In large doses, it is a dangerous purgative. The powder and tincture are the two preparations in use. It is said to be advantageous in ophthalmia.

COLLYRIUMS are washes commonly in use for the eyes.—See LOTIONS.

CONSERVE.—The conserve of red roses is a most convenient medium for forming balls, as it is adhesive, and, when properly made, keeps well.

COPAIBA (*Capivi Balsam*).—This fragant and peculiar liquid resin is improperly called a balsam. It contains no benzoic acid, but consists of resin and an essential oil. It forms a white soapy compound, soluble in water. Stimulant, diuretic, and laxative. It may be given in twice its weight of water and starch, and is active in its effects, though apt to disturb the digestion.

COPPER furnishes two combinations to veterinary practice. 1. *Verdigris* (Subacetate of Copper). 2. *Blue Vitriol*, or Sulphate.

Verdigris (*Ærugo*), the common rust of copper; produced by vinegar, or anything sour, or even common salt. It is given internally by some practitioners, in doses of two or three drachms daily, as a tonic, and particularly for the cure of farcy. It is, however, an uncertain and dangerous medicine. The corrosive sublimate, with vegetable tonics, as recommended under MERCURY, is preferable. Verdigris is, however, usefully applied externally as a mild caustic. Either alone, in the form of fine powder, or mixed with an equal quantity of the sugar (superacetate) of lead, it eats down proud flesh, or stimulates old ulcers to healthy action. When boiled with honey and vinegar it constitutes the farriers' "Egyptiacum," certainly of benefit in cankered or ulcerated mouth, and no bad application for thrushes; but yielding, as regards both, to better remedies, which have been mentioned under the proper heads. Some practitioners use alum and oil of vitriol in making their Egyptiacum, forgetting the decomposition which is produced.

Blue Vitriol (*Cupri Sulphas*), is the union of sulphuric acid and copper. It is a very favourite tonic with many, and has been vaunted as a specific for glanders; while others, and we think properly, have no very good opinion of it in either respect. As a cure for glanders its reputation has passed by; as a tonic, when the horse is slowly recovering from severe illness, it is dangerous, and its internal use should be confined to cases of long-continued discharge from the nose, when catarrh or fever have ceased. It may then be given with benefit in doses of from one to two drachms twice in the day, but it should be combined with gentian and ginger. It is principally valuable as an external application, dissolved in water in the proportion of two drachms to a pint, and acts as a gentle stimulant; but when an ounce is dissolved in the same quantity of water it becomes a mild caustic. In the former proportion, it rouses old ulcers to a healthy action, and disposes even recent wounds to heal more quickly than they otherwise would do; and in the latter it removes fungous granulations or proud flesh. The blue vitriol is sometimes reduced to powder and sprinkled upon the wound for this purpose, and is a good application for canker in the foot.

COPPERAS (*Green Vitriol*). See IRON, SULPHATE OF.

CORDIALS (and see STIMULANTS), are mixtures or simples that invigorate by their stimulating property, usually through the medium of the stomach. Cordials have been so long the very stronghold of the ignorant and presuming that the very term sounds ill in the ear of the well-informed veterinarian. A horse, unlike a gin-drinking groom, has an undebauched stomach, and does not require a cordial ball twice a week; nor on every evening after hunting; nor on every morning his coat stares with the altered

temperature. To the animal, a cordial, as being unnatural, must be hurtful, unless required by some very extraordinary exertion; which, by calling forth too much of the constitutional powers, has expended the vital resources whence the stomach draws its tone. Thus, after a very hard run with hounds, this may happen; and then a gentle stimulant may excite the digestive sympathy artificially. Here a cordial may be proper and even necessary. A good one can, under such circumstances, be administered as follows:—

(A) CORDIAL DRENCH.

Sulphuric ether	1 ounce.
Laudanum	½ ounce.
Cold water	1 pint.

Mix.

To recall the appetite of the horse slowly recovering from illness, a cordial may sometimes be allowed; or, to old horses that have been worked hard and used to these excitements when young; or, to draught horses that have exhibited slight symptoms of staggers, when their labour has been unusually protracted and their stomachs left too long empty; or, mixed with diuretic medicine, to fine the legs of the overworked and debilitated animal; otherwise they should never find a place in the stable, or be used at the discretion of the carter or the groom. The common cordial ball may be thus compounded:—

(B) CORDIAL BALL.

Pounded caraway seeds	3 drachms.
Ginger	2 drachms.
Oil of cloves	20 drops.

Treacle to make a ball.

(C) ANOTHER CORDIAL BALL.

Powdered aniseed	6 drachms.
Caraways	6 drachms.
Cassia	2 drachms.

Mix with treacle for a ball. Should catarrh be present, add powdered squills, 2 drachms, and use balsam of tolu with the treacle.

A quart of good sound ale, with some grated ginger, almost everywhere procurable, is often the best available drench in an emergency.

CORIANDER SEEDS are a well-known stimulant, smelling, when fresh, like a bug; whence their Greek name *corianon*, from *coris*, a bug.

CORROSIVE SUBLIMATE. See MERCURY.

COWHAGE, or COW-ITCH, the hairs upon the pods of this climbing bean-like plant (*dolichos pruriens*) have been used (mixed with treacle, &c.) to expel worms from the horse. We do not believe in their utility as a mechanical vermifuge. Many Indian plants of the *mucuna* tribe produce these irritating vegetable hairs, often employed in malicious practical jokes on newly-imported Europeans.

CREAM OF TARTAR. See POTASH.

CREOSOTE, or KREASOTE, is a fluid compound found in crude pyroligneous acid. It is nearly colourless and transparent, with a powerful odour, resembling smoked meat. It is highly antiseptic, and therefore valuable in many diseases of the horse. Creosote coagulates albumen, even when much diluted, and also the serum or watery part of the blood. It is decomposed and rendered useless if mixed or applied with sulphuric or nitric acid. It is a valuable medicine externally, or a formidable poison introduced into the body. Dropped upon the tongue it occasions intense pain, and if swallowed coagulates the albumen of the fluids and membranes it comes in contact with. In skin disorders and bleedings its usefulness is undoubted. It is administered in external ulcers, and, applied strong, produces an artificial skin by coagulating the albumen. It will also act as a powerful styptic in cases of external hemorrhage. Its use as an ointment in grease, thrush, sallenders, &c., is evident.

CROTON OIL. The extract of the seeds of the *Croton Tiglium*, a tree of Ceylon, China, Malabar, &c. The *Croton Cascarilla* furnishes the cascarilla bark. It is a violent purgative. All parts of the plant, leaves, root, &c., are cathartic. In veterinary practice the meal, which possesses similar properties, is often used; but, unfortunately, by the arts of the druggist, it is often so adulterated as to deceive the expectations of the practitioner. When it is pure, it may be given in doses from a scruple to half a drachm, with linseed meal, in the form of a ball, to shield its acrid nature. It is equally, indeed somewhat more, drastic than aloes, producing profuse liquid watery stools, often much griping, and it occasionally takes as much time to excite purgation. It is also somewhat uncertain in its action, but, under a favourable operation, it is quicker than aloes, although our first accounts of it denied this. It may, therefore, when immediate purgation is necessary, be very properly applied to; and also in tetanus its diminished bulk and great activity make it valuable. Dissolved in turpentine it forms a blister, only inferior to cantharides.

CUBEBS, or JAVA PEPPER.—The effects of the powdered cubeb are very similar to that of the Copaiba Balsam. With a mucilage of gum acacia it is good to promote urine and allay inflammation of the kidneys. Cooling purgatives must be used during the time of its administration.

DEMULCENTS are medicines that act mechanically, by surrounding acrid matter, and sheathing it from hurting sensitive and irritable parts. For this purpose oily preparations are used, also honey, gums, mucilages, &c. Diluents, as warm fluids, mashes, &c., are also demulcents, because they dilute acrimonious matter and render it less active.

(A) DEMULCENT DRENCH.

Linseed	4 ounces.
Water	1 quart.

(B) ANOTHER.

Gum arabic	1 ounce.
Water	1 quart.

(C) ANOTHER.

Marshmallows	2 handfuls.
Water	1 quart.

Simmer the first and third of these until a mucilaginous decoction is made, and administer when nearly cold.

DIAPHORETICS are medicines which increase the insensible perspiration, and open the exhalant pores of the skin. These remedies require smart exercise in clothing, to promote their action. The horse afterwards to be carefully wiped dry. Sudorifics (*q. v.*) are intended to do it more actively, and to occasion actual sweating. Vinegar will often produce a violent perspiration, but it is not a salutary one; yet the same liquid, neutralized by ammoniacal salts into Mindererus's spirit, will often excite a favourable but mild diaphoretic effect. Antimonials in repeated doses, assisted by diluting liquors and warm clothing, will likewise commonly produce some diaphoresis. Camphor, in considerable doses, will also occasion a determination to the skin. Aloes, guaiacum, white hellebore, digitalis, &c., are diaphoretics.

(A) DIAPHORETIC BALL IN "HIDE-BOUND."

Emetic tartar	2 drachms.
Camphor	½ drachm.
Ginger	2 drachms.
Opium	1 drachm.
Oil of caraways	20 drops.

Linseed meal and boiling water to form a ball.

(B) ANOTHER.

Antimonial powder	2 drachms.
Ginger	2 drachms.
Caraway seeds	1 ounce.
Oil of aniseed	20 drops.

Mix with linseed meal and boiling water for a ball.

DIGESTIVES, in veterinary practice, are stimulant applications, producing a tendency to suppuration. The gum resins are at the head of this class, and the turpentines. Myrrh, aloes, resin, tar, &c., are digestives.

(A) COMMON DIGESTIVE OINTMENT.

Red precipitate	2 ounces.
Venice turpentine	3 ounces.
Beeswax	1 ounce.
Hog's lard	4 ounces.

Melt the three last ingredients over a slow fire, and when nearly cold stir in the powder.

DIGITALIS. The leaves of the purple foxglove (*Digitalis purpurea*) are directly sedative, diaphoretic, and diuretic to the horse. When properly dried they have a slight narcotic odour, and powder a beautiful green. The leaves should be gathered just as the plant is coming into flower, and from plants exposed to the sun. They should not be hung up to dry, as is commonly done, but separately dried till crisp, and the powder preserved in opaque or very dark glass bottles in a dry place. Damp and light are fatal to its active properties. It acts upon the heart, and diminishes the frequency of the circulation and the general irritability of the system. The infusion is made by pouring a pint of boiling water on an ounce of the powder; the tincture by digesting three ounces in a quart of proof spirit. One drachm of the powder, one and a half drachm of emetic tartar, and three of nitre, every four hours, will be found to reduce the heart's action remarkably. This is not done regularly, by lengthening the intervals between the beats, but by a number of pauses very alarming to the uninitiated. This is the proof that the digitalis is combating the disease. The action of this medicine requires watching; but an overdose is not so dangerous to the horse as has been pretended. When the administration of digitalis is pushed too far, laudanum or ether may take the place of the emetic tartar and nitre, as a tonic. The infusion is a good application in inflammation of the eyes, alternately with any of the eye-waters. It has also been extolled in mange; but it is inferior to other remedies in that complaint.

DISINFECTANTS have, of late years, come prominently into notice. The foremost of these are the Chloride of Lime and the Chloride of Zinc. They are most important in cases of glanders in stables. An ounce of the chloride of zinc in two gallons of water is a sufficient strength; and of the chloride of lime, one-tenth of powder to nine times its bulk of water is a fair solution.

DIURETICS are medicines which increase the secretion of urine from the blood, thus depriving it of a large proportion of its watery particles, and enabling the absorbents to take up more water from the system. Some diuretics act directly upon the kidneys by sympathy with the stomach, while others are taken up by the blood-vessels, and in their elimination from the blood cause an extra secretion of the urine. In either case their effect is to diminish the watery part of the blood, and thus promote the absorption of fluid effused into any of the cavities, or into the cellular membrane, in the various forms of dropsy. They are a much-abused class of medicines, from their indiscriminate administration by the groom and farrier. Turpentine and nitre, which see, are the leading diuretics in horse medicine.

(A) STIMULATING DIURETIC BALL.

Powdered resin	3 drachms.
Fused nitre (sal prunella)	3 drachms.
Castile soap	3 drachms.
Oil of juniper	1 drachm.

Mix.

(B) COMMON DIURETIC BALL.

Powdered nitre	1 ounce.
Camphor	1 drachm.
Oil of juniper	1 drachm.

Linseed meal to form a mass.

(C) DIURETIC POWDER FOR A MASH.

Fused nitre (sal prunella)	½ to ¾ ounce.
Resin	½ to ¾ ounce.

Mix.

(D) ANOTHER MORE ACTIVE POWDER.

Fused nitre	6 drachms.
Camphor	1½ drachm.

Mix.

DRINKS OR DRENCHES.—Many practitioners and horse proprietors have a great objection to the administration of medicine in the form of drinks. A drink is not so portable as a ball, it is more troublesome to give, and a portion of it is usually wasted. If the drink contains any acrid substance, it is apt to excoriate the mouth or to irritate the throat already sore from disease, or the unpleasant taste of the drug may unnecessarily nauseate the horse. There are some medicines, however, which must be given in the form of drink, as in colic; and the time, perhaps, is not distant when purgatives will be thus administered, as more speedy and safer in their operation. In cases of much debility and entire loss of appetite, all medicine should be given in solution, for the stomach may not have sufficient power to dissolve the paper in which the ball is wrapped, or the substance of the ball.

An ox's horn, the larger end being cut slantingly, is the usual and best instrument for administering drinks. The common method is thus described by Blaine:—"The noose of a halter is introduced into the mouth, and then, by means of a stable fork, the head is elevated by an assistant considerably higher than for the delivery of a ball. The operator stands on a pail or stool on the off-side of the horse, and draws out the tongue with the left hand; he then with the right hand introduces the horn gently into the mouth, and over the tongue, and by a dexterous turn of the horn empties the whole of the drink into the back part of the mouth; the horn is now quickly withdrawn, and the tongue loosened, when the greater portion of the fluid must be swallowed. A portion of it, however, will often be obstinately held in the mouth for a long time, and the head must be kept up until the whole is swallowed, which a quick, but not violent slap in the muzzle will generally compel the horse to do. The art of giving a drink consists in not putting too much into the horn at once; introducing the horn far enough into the mouth, and quickly turning and withdrawing it, without bruising or wounding the mouth, the tongue being loosened at the same moment. A bottle is a disgraceful and dangerous instrument to use."

ELDER.—The elder leaf, boiled in lard, forms an emollient ointment, usefully applied to inflamed and irritated parts.

EMBROCATIONS.—External remedies applied by hand, friction, cloth, or brush. The following are the leading formulæ. We may as well note that the various oils are retained: there is none of them, however, which may not be dispensed with, if the turpentine and olive oil are retained and proportionally increased in quantity. The "oils" are mere traditions of a superstitious and ignorant period.

Embrocations.

(A) STIMULATING EMBROCATION.

Camphor	½ ounce.
Oil of turpentine	1½ ounce.
Spirit of wine	1½ ounce.

Mix.

(B) SWEATING EMBROCATION FOR WINDGALLS, ETC.

Strong mercurial ointment	2 ounces.
Camphor	½ ounce.
Oil of rosemary	2 drachms.
Oil of turpentine	1 ounce.

Mix.

(C) ANOTHER, STRONGER.

Strong mercurial ointment	2 ounces.
Oil of bay	1 ounce.
Oil of origanum	½ ounce.
Powdered cantharides	½ ounce.

Mix.

(D) STRONG SWEATING EMBROCATION.

Biniodide of mercury	½ to 1 drachm.
Powdered arnica leaves	1 drachm.
Soap liniment	2 ounces.

Mix.

(E) MUSTARD EMBROCATION.

Best flour of mustard	6 ounces.
Liquor of ammonia	1½ ounce.
Oil of turpentine	1½ ounce.

Mix with sufficient water to form a thin paste.

EMETIC TARTAR. See ANTIMONY.

EMETICS are not used in horse medicine, for reasons explained in the anatomical part of this work.

EMULSIONS are serviceable in chronic cough. The following is a

(A) SIMPLE EMULSION.

Honey	3 ounces.
Linseed oil	3 ounces.
Subcarbonate of potass	1 drachm.
Boiled water	1 pint.

Melt the potass and honey in the water; then add the linseed oil gradually, working it well in till a smooth milky mixture is obtained. A fourth part thrice a day.

(B) ANOTHER, MORE ACTIVE.

Of the former emulsion	1 pint.
Camphor and opium, in powder, each	½ drachm.
Oil of aniseed	20 drops.

Mix the camphor and opium with some white sugar in a mortar, dropping in the oil, then add the emulsion gradually, beating up as before.

EPSOM SALTS. See MAGNESIA, SULPHATE OF.

ERGOT OF RYE (*Secale cornutum*).—"Spurred rye," presents a long black diseased growth, possessing remarkable properties. It is a long blackish horn or spur, from an inch to two inches in length. When fresh it is tough and flexible,

but soon becomes brittle and easily powdered. It will give its active principle to spirit or to water, but a little starch or treacle is the best thing to mix with it. Its power in strengthening and maintaining the uterine contractions in mares, is unquestionable. But it must never be administered except in desperate cases. Indeed, though parturition proceed ever so slowly, it should only be resorted to by the advice of a skilful practitioner. Nevertheless, as cases do arise where it may be serviceable, we have included it here. It may be given in solution by infusing one drachm in half a pint of boiling water for a quarter of an hour; or in substance, in doses of one scruple every fifteen minutes till its action is apparent.

ESCHAROTICS. See CAUSTICS.

EUPHORBIUM. This acrid gum-resin is used for blistering purposes by farriers, to save cantharides. A plaster of six ounces of pitch, and half a drachm of powdered euphorbium, with enough turpentine to soften it, has been recommended as a stimulant and counter-irritant in internal inflammation; we do not approve of it. When powdering euphorbium, the dispenser should wet the mass with vinegar, or it may rise and excoriate his face and nostrils. See BLISTERS.

EXPECTORANTS. These are medicines which assist the removal of irritating mucus, formed in the windpipe and bronchial tubes. Squills, with honey and vinegar, are the leading articles in this class. True, the horse does not expectorate, as we understand it, but the secretion can be increased by these medicines, and he will cough out the mucus; this is relief.

(A) EXPECTORANT BALL.

Powdered squill	1 drachm.
Gum acacia	1 ounce.
Castile soap	½ ounce.

Honey or treacle to form a ball.

(B) ANOTHER.

Gum asafœtida	2 drachms.
Carbonate of ammonia	½ drachm.
Gum acacia	1 drachm.
Ginger	1 drachm.

Honey to form a ball.

(C) A POWERFUL EXPECTORANT BALL.

Calomel	10 grains.
Digitalis	½ drachm.
Emetic tartar	½ drachm.
Powdered squills	1 drachm.

Linseed meal and treacle to form a ball. The result to be watched carefully before giving another dose.

EXTRACT OF LEAD. See LEAD.

FEBRIFUGES, fever medicines, act by increasing the secretion of urine and perspiration, and by moderating the action of the heart and the irritability of the circulatory system.

(A) FEVER BALL.

Nitre	4 drachms.
Camphor	1½ drachm.
Calomel and Opium, of each	1 scruple.

Linseed meal and water enough to form a ball.

(B) ANOTHER FEVER BALL

Emetic tartar	1½ to 2 drachms.
Powdered acacia gum	2 drachms.

Linseed meal as above.

(C) COOLING DRENCH.

Nitre	1 ounce.
Sweet spirits of nitre	2 ounces.
Tincture of digitalis	2 drachms.
Whey	1 pint.

(D) COOLING MASH

Nitre	1 ounce.

May be given in a bran mash.

FOMENTATIONS open the pores of the skin and promote perspiration in the part, and so abate the local swelling, and relieve pain and lessen inflammation. They are often used, and with more effect, when the inflammation is somewhat deeply seated, than when it is superficial. The effect depends on the warmth of the water, and not on any herb which may have been boiled in it. They are best applied by means of flannel frequently dipped in the hot water, or on which the water is poured, and the heat should be as great as the hand will bear. The benefit that might be derived from them is much impaired by the absurd method in which the fomentations are conducted. They are rarely continued long enough, and when they are removed the part is left exposed and wet, so that the cold of evaporation often does more harm than the warmth of the fomentation does good. Blaine says, and we think the hint valuable, he, in many cases, fomented first and then applied a poultice or liniment.

GENTIAN is, in our opinion, the best tonic bitter for the horse. It should be combined with ginger, and is then valuable as preventing the griping of aloes. See STIMULANTS.

GINGER is the most grateful spice to the horse. It is the basis of the cordial ball and indispensable in the tonic ball. It may be occasionally given in doses of 2 or 3 drachms, and in flatulent colic, in doses of 4 to 6 drachms; it will also form a valuable assistant to saline and other cold remedies, given to tender stomachs and bowels. For horses, for cattle, and sheep, it is an excellent carminative, and should be always employed when a warm stimulant is wanting. It is, indeed, one of the most valuable cordials to invigorate the intestinal surfaces we know of. See CORDIALS.

GLAUBER'S SALT (*Sodæ sulphas*). See SODA, SULPHATE OF.

GLYSTERS. See CLYSTERS.

GOULARD'S EXTRACT, GOULARD WATER. See LEAD.

GRAINS OF PARADISE.—The seeds of the *Amomum Grana*

Paradisi, a plant common on the coast of Guinea, near Sierra Leone. It is called Melligatta pepper in commerce. The properties are the same as cardamoms. They are a favourite nostrum with grooms, to produce a fine coat, and the animal is often injured in his digestive organs by their injudicious administration. As an addition to other stomachics they are useful in veterinary prescribing.

Gruel is an article of great importance in veterinary practice; care should, therefore, be paid to its preparation. It must be thick when intended as a cordial or for nourishment; if as a diluent, it can hardly be too thin. Above all things let it be prepared in scrupulously clean vessels, and never smoked. A horse that has had smoky gruel offered to him will with difficulty again be induced to taste it. Bran with boiling water poured upon it (*bran tea*), allowed to get cold and strained, is an excellent diluent.

Guaiacum, Gum, is the product of a West Indian tree, the stem of which produces that heavy, hard, black-green wood called lignum vitæ. The resin is a good stimulant, promoting secretions of the lungs and skin. It is combined with ammonia and other stimulants. See Stimulants. As it will not dissolve in water, and even a solution in spirit is precipitated by adding water, it is best in emulsions or pills. With potass water made hot, it forms a soap which may be worked into balls.

Gums and Gum-Resins:—

Gum Ammoniacum is soluble in water, spirit, and vinegar; water is its proper solvent. It is in the form of tears or fragments, yellow outside and white within. There is a cheaper sort of gum ammoniac in the market, called *lapis ammoniaci*, in lumps, adulterated largely with common resin, and therefore to be avoided. It is a stimulant, and sometimes diuretic, and, dissolved in nitric acid, is a good expectorant. See Ammoniac.

Gum Guaiacum. See Guaiacum.

Gum Myrrh. See Myrrh.

Gum Tragacanth. The inspissated juice of the *Astragalus tragacanthus*, a plant common in Greece and Persia. It is cordial, stomachic, and tonic, like most of its class.

Hartshorn. See Ammonia, Carbonate of.

Hellebore, White. The root of the *Veratrum album* is the part used. Its active principle can be extracted by water or alcohol. A new alkaline principle, called *veratria*, has been extracted by modern chemists from this acrid and poisonous plant. Those great veterinary authorities, Mr. Percivall, Mr. Blaine, and Mr. Youatt, hold white hellebore in high esteem, while Professor Sewell has little faith in its efficacy, and doubts its medicinal action. As the horse was not intended to vomit, nausea is difficult to excite. Blaine says, "the powdered root of the white hellebore is the most certain nauseant with which we are acquainted; but it is only safe under very watchful eyes and quick perceptions. It may be given to a certain point, and nothing but moderate nausea is observed: if pushed beyond this, the head droops in the manger, the mouth slavers, the pulse sinks, the horse reels to and fro, and purging comes on, which commonly proves a fatal symptom. It may be given in doses of a scruple every six hours, which may be increased to half a drachm; but the horse must be carefully looked to, and as soon as the pulse sinks and the mouth slavers, or any trembling appears, desist from its further exhibition, directly combating its debilitating and sedative effects by active stimulants." Hellebore lowers the system more speedily than digitalis, but digitalis more safely, when there is time for its operation; at least so we have found: it is for the observant veterinarian to select the proper cases for both. It ranks high also with some veterinarians when used with setons, by smearing them with the powder, but black hellebore is superior for this purpose. An ointment of powdered hellebore, muriate of ammonia, and lard, has been found a good application in mangy affections.

Hellebore, Black (*Melampodium. Christmas Rose*). The fibres of the root are the parts used: they are about the thickness of a straw, rough, of a deep dark colour, hence called "black," white or yellowish inside; taste bitter and burning. Choose the darkest, as the roots of the aconite (monkshood) are often substituted for them, though much lighter in colour. An ointment of black hellebore has been successfully used in fistulous withers and poll-evil. When the tumour has burst and been allowed to discharge two or three days—being dressed with an ordinary digestive, and the discharge being of the nature termed laudable—then take a few portions of the fibrous part of the root, sew in the seton passed into the sinuses, and allow them to remain a fortnight or more. Under this treatment Mr. Morton assures us he has observed its salutary action in several cases.

Hemlock (*Conium maculatum*). This handsome poisonous wild plant so much resembles several of its tribe which are destitute either of deadly or of medicinal qualities as to have led to very varied opinions of its activity in the treatment of disease. The efficacy of the plant, too, depends upon its place of growth, the season when collected, and the means taken to dry it or to make the extract; and lastly, on the temperature and dryness of the place in which it is kept, and the time since it has been gathered. The principle (*conia*) upon which its activity depends, is volatilised by time or heat, and the residue becomes inert. The recent leaves are the most active part of the plant. As hellebore or digitalis are its equals in affections of the lungs, acute or chronic, it is not desirable in a veterinary dispensary. A drachm of the dried leaves, in powder, is a dose.

Infusions. These are watery solutions of vegetable matters, obtained by macerating the substance either in hot or cold water, without boiling on the fire. Where volatile oil is the active principle, cold infusion is necessary; where mucilage, or astringent principle, warmth is requisite.

The active matter of some vegetable substances is partly or entirely extracted by water. Dried vegetables yield

their properties more readily and perfectly than when in their green state. Boiling water is poured on the substance to be infused, which has been previously grossly pounded or powdered, the vessel is then covered and placed by a fire. In five or six hours the transparent part may be poured off, and is ready for use. In a few days, however, all infusions become thick and lose their virtue, from the decomposition of the vegetable matter.

The infusion of camomile is used instead of water in mild tonic drenches; the infusion of gentian is a fine stomachic; so is the infusion of catechu in astringent mixtures; the infusion of linseed for catarrh; and in some injections tobacco-water—the infusion of tobacco.

Iodine. This non-metallic elementary body is a remarkable constituent in sea-water, sea-weeds, and marine molluscs, and may be obtained from *kelp*, or sea-weed which has been burnt for the purpose of making potash. Iodine is soft, opaque, solid, and of a bluish-black colour and metallic lustre. When moderately heated it rises in a violet-coloured vapour, hence its name, from the Greek *iōdos*, violet-tinted. It has a strong odour and taste, and stains the skin brown, but not permanently. It readily dissolves in spirit, but with difficulty in water. Iodine, long before its separate discovery, was used empirically in "burnt sponge" and many mineral waters. It is a valuable remedy in glandular swellings, especially of the throat. It is reported, too, to be an antidote to poisoning with strychnine and veratria; but we do not know practically its claims in this respect. Its power over glandular enlargements in the horse is well proved. Its administration in doses of half a drachm to a drachm daily has overcome profuse discharges of urine in a marked manner. The *iodide of potass* is a valuable medicine, and acts on the absorbents when taken internally. The dose is from one to two drachms. The ointment called *unguentum potassæ iodidi* is an excellent disperser of glandular enlargements, in cases where the use of the knife may be dangerous.

Iron.—The preparations of iron are tonic to the horse; and, of these, two are adopted by veterinarians. The rust (*ferri carbonas*) is a mild and useful tonic in doses from two to four drachms.

Iron, sulphate of, also called *Green Vitriol*, or *Copperas*, is more powerful, but should never be given in early stages of recovery, and always with caution. The dose should be the same as that of the carbonate. Youatt says:—The sulphate has been recommended for the cure of that deceitful stage or form of glanders, in which there is nothing to characterise the disease but a very slight discharge from the nostrils. It is to be dissolved in the common drink of the horse. It is worth a trial; but too sanguine expectations must not be encouraged of the power of any drug over this intractable malady. Iron should be given in combination with gentian and ginger; but never with any alkali, or nitre, or soap, or catechu, or astringent vegetable.

Forge water used to be a favourite tonic with farriers, and also a lotion for canker and ulcers in the mouth. It owes its power, if it have any, to the iron with which it is impregnated.

Jalap. This famous human purgative is utterly useless in horse medicine.

Japan Earth (*Terra Japonica*). See Catechu.

Jesuit's Bark (*Peruvian Bark*). See Bark.

Juniper, Oil of. The essential oil of the berry is a stomachic and diuretic. It is a pleasant aromatic to the horse, and enters into the composition of the diuretic ball. Hollands owes its flavour and diuretic quality to this essential oil. English gin is flavoured with oil of turpentine.

Kali. See Potass and Soda.

Lard. We prefer palm oil to lard as a basis for making up balls, simply because an animal substance is abhorrent to the horse as one of the graminivoræ. Yet lard or palm oil is preferable to honey, treacle, or syrups, for making up balls, because the ball more readily dissolves in the stomach. It likewise renders a purgative less liable to gripe. It is the principal basis of all ointments.

Laudanum, the tincture of Opium, which see.

Laxatives. See Aperients.

Lead.—There are three products of lead admitted to the veterinary materia medica.

1. The *Acetate of Lead* (*Acetas Plumbi*), is known popularly as *Sugar of Lead*, on account of its sweet taste. Dissolved in water, it makes a turbid solution, unless a little acetic acid is first added. Two drachms of the salt to a pint of water makes Goulard's Lotion. It is in doses of 1 gr., guarded by opium, a remedy for internal hemorrhage.

2. The *Subacetate of Lead*, called also *Extract of Lead*, or *Goulard's Extract*, and *Solution of Subacetate of Lead*. A drachm in a pint of water is a good eye-wash in early stages of inflammation. It is not so good, however, as opium or digitalis, and must not be used with them. It is useful in poultices in superficial inflammation, but is of no use in sprain or deep-seated injury. Alum has been added to increase its astringency, but the result is that it is rendered a totally inert sulphate of lead by the addition. Sulphate of magnesia (Epsom salts), and white vitriol also decompose it.

3. *Carbonate of Lead, Ceruse*, or *White Lead*. This may be used as a drier of ulcers by sprinkling it upon the sore, but the safety of the practice is questionable. Dry colic may be superinduced.

Lime. *Lime Water* (*Liquor Calcis*) is a solution of lime in cold water. It being a curious fact that lime dissolves more completely in cold than in hot water. Thus, one gallon of water at 212° (boiling point) will take up little more than half the quantity of lime that a gallon of water at 32° (freezing point) will hold in solution. Six pounds of lime infused in two gallons of water may, after standing three hours, be strained off, it must then be closely *stoppered up*, otherwise the lime will take up carbonic acid from the air, and become an insoluble carbonate. Lime water is a

wholesome discutient wash. It is considered by many as a remedy for stone in the bladder, and it appears likely to be beneficial, as it may loosen the cohesion in the mass occasioned by lithic acid in the bladder. Lime water externally is applied for mange, and internally has valuable antacid qualities.

Chloride of Lime was known formerly as *bleaching powder*, and was merely used to deprive various substances of their colouring principle. Its value in veterinary medicine is now found not only as a valuable disinfectant (*q. v.*), but as an external application to putrid ulcers, though inferior to chloride of zinc. It is purchased in the form of a dry white powder, having an odour of chlorine. Blaine gives the following case, which bears immediately on its effects as an antiseptic. "In a retention of the placenta, called 'not having cleansed,' in a cow, where the putridity had become so great as to produce larvæ or maggots and intolerable fœtor, there was injected a wine-glassfull of chloride of lime, diluted with a pint of warm water, into the vagina; which itself brought away, in two hours' time, several quarts of putrid matter, by which the cow was greatly relieved; but some fœtor returning, a second injection was passed the next day, which again sweetened the cleansing, and prevented further putrefaction. But as the placenta was not yet ejected, two ounces of the chloride of soda was now given in a pint of gruel every hour; the consequence of which was, that after the sixth dose the placenta came away, much decomposed, but without fœtor; and the cow was evidently saved by these means, though apparently before in a dying condition."

Liniments are preparations of intermediate consistency between ointments and oils. They are intended either to soothe an inflamed surface, or, by gently stimulating the skin, to remove deeper-seated pain or inflammation. As an emollient liniment, one composed of half an ounce of extract of lead and four ounces of olive oil will be useful. For sprains, old swellings, or rheumatism, two ounces of hartshorn, the same quantity of camphorated spirit, an ounce of oil of turpentine, half an ounce of laudanum, and a drachm of oil of origanum, may be mixed together; or an ounce of camphor may be dissolved in four ounces of sweet oil, to which an ounce of oil of turpentine and a drachm of oil of origanum should be afterwards added. A little powdered cantharides, or tincture of cantharides, or mustard powder, will render either of these more powerful, or convert it into a liquid blister.

Soap Liniment, commonly known under the name of *Opodeldoc*, consists of hard soap, 1 ounce; camphor, 3 drachms; oil of rosemary, 20 drops; oil of origanum, 10 drops; solution of ammonia, 6 drachms. This is the renowned Steer's Opodeldoc. A cheaper and simpler liniment will do as well.

Linseed.—The seeds of the common flax contain a large proportion of mucilage and one-sixth of their weight of fixed oil. By infusion in boiling water, a clear, colourless, and nearly tasteless mucilage is obtained. Cold water will not extract mucilage from the unbruised seeds. A thin infusion is a good substitute for water in cold and sore throat; a pail being slung in the stable or loose box. We prefer, however, thin gruel of oatmeal. The *meal of linseed* is the best and smoothest of poultices.

Oil of linseed is a safe purgative, in doses of a pint to a pint and a half; but is uncertain in its action

Liquorice (*Glycyrrhiza Glabra*).—The juice of the liquorice root, or *Stick Liquorice*, enters into the composition of many horse-medicines. It is a demulcent, soothing to the mucous membrane, thickens and gives cohesion to powders or balls, and covers the taste of some nauseous medicines better than any other substance.

Lotions, which are synonymous with washes, are noticed under the several ingredients which go to their formation, as copper, zinc, lead, ammonia, acetic acid, &c. The common lotions in use are:—

(A) Lotion for External Inflammation.

Goulard's extract	1 ounce.
Acetic acid (Vinegar)	2 ounces.
Spirits of wine, or Gin	4 ounces.
Water	1 quart.

Mix, and apply with a calico bandage.

(B) Lotion for Inflamed Legs, or Galled Back.

Sal ammoniac	1 ounce.
Vinegar	4 ounces.
Spirits of wine	2 ounces.
Tincture of arnica	2 drachms.
Water	½ pint.

Mix.

(C) Lotion for Foul Ulcers.

Sulphate of copper	1 ounce.
Nitric acid	½ ounce.
Water	8 to 12 ounces.

Mix.

Lunar Caustic. See Caustics.

Magnesia, Sulphate of (*Magnesiæ Sulphas*). *Epsom Salts.* A valuable medicine to the veterinarian. In early fever, in doses of six to eight ounces, it is preferable to aloes, unless disease of the lungs or primæ viæ are present. The dose often requires repeating before it operates. It is not, therefore, a certain laxative, but its operation should be assisted by bran mashes. It is also an adjunct to laxative clysters. The cathartic powers of Epsom salts are increased by dilution in abundance of fluid, and a little common salt (muriate of soda) quickens its action. There is no such good and ready test as the taste in cases of doubt between the crystals of Epsom salts and those of oxalic acid, which so closely resemble them. The bitterness of the one and the intense sourness of the other can leave no doubt.

Malt. Blaine has a high opinion of malt, in which we coincide. He says: "It forms an excellent cordial in cases of debility, and, when continued, becomes a permanent

tonic: it has also some pectoral qualities; but in active inflammation of the chest it is too stimulating for use. Malt is an excellent alterative: in farcy, in grease, and in mange also, when accompanied with emaciation, it has been used with efficacy; but, in such cases, it should be given in considerable quantities without other corn, and with as little hay as possible, so that almost all the nutriment received may be malt. This practice is not generally known, but it has proved, in some cases, singularly efficacious: the best mode of giving malt is by mashes."

Marshmallow (*Althea officinalis*), is at the head of demulcents in horse-practice. Its leaves contain a bland mucilage and starch (*amylum*), which can be extracted by both hot and cold water. The root is carrot-shaped, white and fleshy, about as thick as the thumb, and a foot or more long. Its leaves are soft-stalked and heart-shaped, its stems two or three feet high, and covered with soft down, as are the leaves. The flowers are of the pale rose colour lately known as *mauve*, and appear in short clusters from the bosom of the leaves. The demulcent lozenges sold in the shops for colds and coughs, and called *Pâte de Guimauve*, are an inspissated syrup of marshmallow.

Mashes are a leading article in stable economy, and justly so. A mash given occasionally to a horse that is otherwise fed on dry meat, prevents him from becoming dangerously costive. To the overworked and tired horse nothing is so refreshing as a warm mash with his usual allowance of corn in it. The art of getting a horse into apparent condition for sale, or giving him a round and plump appearance, consists principally in the frequent repetition of mashes; and from their easiness of digestion and the mild nutriment which they afford, as well as their laxative effect, they form the principal diet of the sick horse.

Mashes are made by pouring boiling water on bran, and stirring it well, and then covering it over until it is sufficiently cool for the horse to eat. If in the heat of summer a cold mash is preferred, it should, nevertheless, be made with hot water, and then suffered to remain until it is cold. This is not always sufficiently attended to by the groom, who is not aware that the efficacy of the mash depends principally on the change which is effected in the bran and the other ingredients by the boiling water rendering them more easy of digestion, as well as aperient. If the horse refuses the mash, a few oats may be sprinkled over it, in order to tempt him to eat it; but if it is previously designed that corn should be given in the mash, it should be scalded with the bran, to soften it and render it more digestible. Bran mashes are very useful preparatives for physic, and they are necessary during the operation of the physic. They very soon become sour, and the manger of the horse of whose diet they form a principal part, should be daily and carefully cleaned out.

When horses are weakly and much reduced, *malt mashes* will often be palatable to them, and very nutritive: but the water that is poured on a malt mash should be considerably below the boiling heat, or the malt will be set, or clogged together. If owners were aware of the value of a malt mash, there would be much physic saved. *Speared corn mash*, often talked of, is nothing more than a malt mash.

Mercury, or Quicksilver (*Hydrargyrum*). This peculiar metal, fluid at ordinary temperatures, solid, ductile, and malleable at 40° below zero of Fahrenheit, furnishes some valuable items to the veterinary pharmacopœia. It boils at 656°, and throws off a volatile vapour, which, condensed by cold, is purified mercury. Mercury, in its metallic state, is not employed in veterinary medicine. It has, however, been employed in human practice to force a passage through the intestines by its specific gravity. Mercury is sadly adulterated by lead, bismuth, zinc, and tin: the methods of detecting these will be found in Dr. Paris's *Pharmacologia*, article Hydrargyrum, but would take up too much space to detail here. Three forms of mercury will suffice for this compendium of Horse Medicines.

1. *Calomel* (*Hydrargyri Submurias*), the mildest preparation, is in truth *proto-chloride of mercury*. It may be given, combined with aloes, in mange, surfeit, or worms; yet better alteratives and more efficient vermifuges have been described. It is admissible in some cases of chronic cough, in farcy, and in jaundice, but it is not a medicine that seems to agree with the horse. Alone, it has little purgative effect, but it assists the action of other aperients. It is given in doses from a scruple to a drachm, but must not be too often or too long repeated. As soon as the gums or bars become red, or the horse is seen to "quid" or drop his hay, the calomel must be discontinued. The name *calomel* is compounded of two Greek words, *kalos*, good, fair, *melas*, black—*i. e.*, say the old writers, because it is *good* for *black* (bile); but, as its colour changes from *black* to *white* in the process of preparing it, is there not a less fanciful derivation?

2. *Corrosive Sublimate* (*Hydrargyri Oxymurias*). This is the *bichloride of mercury* according to the latest chemists. Its form is a crystalline mass, easily pounded, and becoming opaque on its surface when exposed to the air. Light has no effect upon it. Its fumes when thrown on burning coals are highly dangerous to those who breathe them. It is one of the most acrid and active of metallic preparations, yet numerous quack medicines are based on corrosive sublimate. As an alterative it may be given to the horse in doses of from ten to twenty grains daily. In glanders and farcy the quantity may be increased as far as can be borne. As an external application, the perchloride of mercury has good effects. As a caustic, it has been noticed under that head. As a wash for mange, it has adherents; we are not of the number. It appears to be taken by neat cattle in large doses with impunity, while a small quantity sprinkled on a wound has killed the animal.

3. *Red Precipitate* (*Hydrargyri Oxydum rubrum*). An active mercurial, employed only as an external remedy. It is a good caustic, sprinkled on old sores.

Mercurial Ointment (*Hydrargyri Unguentum fortius*). Blue ointment. The strength of this varies materially, from 30 grains of mercury in the drachm of ointment, down to 10 grains in the same quantity. Triturate the black oxide of mercury with lard (taking care there is no *salt* in it), in a cold place. It is employed with considerable advantage in preparing splents, spavins, or other bony or callous tumours for blistering or firing. One or two drachms, according to the nature and size of the swelling, may be daily well rubbed in; but it should be watched, for it sometimes salivates the horse very speedily. The tumours more readily disperse, on the application of the stronger stimulant, when they have been thus prepared. Mercurial ointment in a more diluted form is sometimes necessary for the cure of mallenders and sallenders; and in very obstinate cases of mange, one-eighth part of mercurial ointment may be added to an ounce of flower of sulphur, half an ounce of turpentine, and an ounce of train oil, and well rubbed down together.

Ethiop's Mineral (*Black Sulphuret of Mercury, Hydrargyri Sulphuretum nigrum*) is a well-known black, tasteless, inodorous powder. It is an alterative. Blaine says, "it is less frequently given in horse practice than it deserves. There is too much fashion in our pharmacy, and too little experiment." In all skin affections we have found this a valuable alterative, and also vermifuge, in daily doses of two or three drachms.

Mint, as an infusion or decoction, is not worth retention in horse-medicines. See Oils.

Muriate of Antimony. See Antimony.

Muriate of Barytes. See Barytes.

Muriate of Soda. See Salts.

Myrrh. This gum resin is used as a tonic in the form of tincture, combined with a warm bitter, as gentian. There are two tinctures of it; one simple, and one compounded with aloes; both of which are much used externally, as warm digestives, in wounds and sinuous sores, and the application is frequently attended with striking benefit: the aloetic tincture is by much the more stimulant. To cattle also it proves a stimulating tonic and antiseptic in doses of from one to two ounces.

Naphtha, Petroleum, Rock-Oil. See Tar.

Narcotics. See Antispasmodics and Anodynes.

Nitrate of Silver. See Caustics.

Nitre (*Potassæ Nitras*). See Potass.

Sweet Spirit of Nitre (*Spiritus Ætheris Nitrici*), is a fragrant, colourless, volatile and inflammable fluid, which will mix with either water or spirit. It is cooling, yet cordial, and mildly diuretic. Four ounces twice a day, or divided into three doses, is a valuable medicine in the more advanced stages of fever. An ounce in the cold fit of coming fever is to be recommended.

Nitric Acid (*Aquafortis*). See Caustics.

Oak Bark. See Astringents.

Oils. The following list contains the few which survive of the multitude of useless "oils" in which the ignorant farrier and groom of the olden days placed their faith.

Oil of Almonds, of Amber, of Anise, of Bay, of Camomile, of Caraway, of Fennel-seed, of Juniper, of Lavender, of Peppermint, of Green Mint, of Origanum, of Pimento, of Savine, of Rosemary, of Rue, of Tar, of Turpentine, of Styrax, (benzoin), &c., &c. To these might be added a dozen of filthy animal oils, with names as ridiculous and extravagant as their imputed virtues.

Oils are *fixed* or *volatile*.

The *fixed* oils are so called because they are not liable to be vaporised under moderate temperature. They are mostly obtained by expression from seeds, or by melting from animal substances.

The *volatile oils* are procured by distillation, and evaporate by moderate heat.

The *fixed oils* used by the veterinarian are:—

Castor Oil (which see).

Oil of Olives.—The best olive oil may be substituted for castor oil, when the latter cannot be obtained. It is the principal medium in the composition of liniments, and enters into many ointments.

Oil of Linseed.—It is a pretty certain laxative, and is more to be depended on than olive oil; and in many instances more than castor oil.

Oil of Palm.—This has the consistence of lard; with the addition of a fragrant smell. As it does not become rancid, it is to be preferred: it is also less noxious to the stomach of the horse than the animal oils. It is the produce of the kernels of the fruit of the *Cocos butyracea*, Mackau-tree, or Brazilian palm.

The *essential* or *volatile* oils are:—

Oil of Amber.—An antispasmodic not much in use. It is said to have a peculiar property of hastening the action of aloes.

Oil of Anise Seeds.—This is an excellent warm aromatic, and may very properly be added to cordial balls.

Oil of Caraways may be used in the same way, and considered in a similar point of view.

Oil of Juniper.—This is often added to diuretic balls, to increase their effect: it acts, however, principally as a warm aromatic. It is now mingled with mange applications.

Oil of Tar is a cheap penetrating distillation from tar. It may be employed in a mixture with whale oil, as a suppling matter for the hoofs. See Creosote.

Oil of Turpentine.—See Turpentine.

Oil of Origanum.—This warm penetrating oil was formerly much used as an external stimulant; but it is inferior to the purest turpentine (*Canada Balsam*), and need not be retained.

Oil of Vitriol (*Sulphuric Acid*). See Acid, Sulphuric.

Ointments are greasy applications, consisting of a powerful drug mixed with lard, or some similar compound, and thus

applied to the sore; they are described under the several heads ASTRINGENTS, ANODYNES, &c. Their number is much reduced in modern practice.

OPIUM (the inspissated extract of the *Papaver somniferum*), is imported in solid flat pieces of compact texture, covered with the leaves of the poppy. It is opaque, of a reddish-brown or fawn colour, with a peculiar heavy narcotic smell. It is dissolvable in water, spirit, wine, and vinegar. By boiling, its soporific powers are impaired, and if continued, they are destroyed. The tincture, which is *Lauaanum*, is better made with spirit; the watery solution is much less efficacious, though spirit below proof is better as a solvent than that above. The narcotic principle of opium is an alkaloid called *morphia*, which is easily dissolved in olive oil.

Opium is a valuable drug in veterinary practice, though there have not been wanting practitioners who have maintained it to be inert! True, it does not act as a narcotic, except in very large doses; yet it is powerfully antispasmodic, sedative, and astringent. As an antispasmodic it enters into the colic drink, and it is the sheet-anchor of the veterinarian in the treatment of tetanus or locked jaw. Youatt says:—"As a sedative, it relaxes that universal spasm of the muscular system which is the characteristic of tetanus; and perhaps it is only as a sedative that it has such admirable effect as an astringent; for when the irritation about the mouths of the vessels of the intestines and kidneys is allayed by the opium, undue purging and profuse staling are necessarily arrested. It should, however, be given with caution. It is its secondary effect which is sedative, and, if given in cases of fever, its primary effect in increasing the excitement of the system is marked and injurious. In the early and acute stage of fever, it would be bad practice to give it in the smallest quantity; but when the fever has passed, or is passing, there is nothing which so rapidly subdues the irritability that accompanies extreme weakness, and it becomes an excellent tonic, because it is a sedative.

If the blue or green vitriol, or cantharides, have been pushed too far, opium soonest allays the disorder they have occasioned. It is given in doses of one or two drachms, either the powdered opium being made into a ball, or the crude opium dissolved in hot water, and given with its sediment. Other medicines are usually combined with it, according to the circumstances of the case.

Externally, it is useful in ophthalmia. In the form of decoction of the poppy-head it may constitute the basis of an anodyne poultice; but it must not be given in union with any alkali—with the exception of chalk, in over-purging: nor with the superacetate of lead, by which its powers are materially impaired: nor with sulphate of zinc, or copper, or iron.

From its high price it is much adulterated, and it is rare to meet with it in a state of purity. The best tests are its smell, its taste, its toughness and pliancy, its fawn or brown colour, and its weight; for it is the heaviest of all the vegetable extracts, except gum arabic. Yet its weight is often fraudulently increased by bits of stone, and even lead. English opium is blacker and softer than Turkish, but not less efficacious in practice.

OXYMEL, SIMPLE. Is made by simmering two pounds of honey in a pint of vinegar. It is good in composition with nitre, digitalis, &c., in pneumonia and catarrh; dose, from four to six ounces.

PALM OIL. See OILS.

PEPPERS.—Various kinds of peppers are sometimes used, particularly in colic. Mr. B. Clark has written a treatise expressly on the virtue of the pimento berry. As a general remedy, any of them may be properly given in doses of three drachms to six; except the cayenne, which, as being very strong, admits of only a drachm as a dose. Peppers are sometimes used as stomachics, or to warm other more permanent tonics, such as steel, bitters, &c.

PITCH is used to give a consistence and adhesiveness to plasters and ointments, and is also the basis of charges. It has a strong medicinal quality, as its relationship with terebinthinated substances shows. Ordinary pitch is as good as the more expensive Burgundy pitch; a pound melted with an ounce of yellow beeswax is a good plaster for sand-crack.

PHYSIC. See CORDIAL, APERIENT, and DIURETIC.

POTASS (*Potassa*), is called the *vegetable kali*, to distinguish it from *Soda*, the *mineral kali*. In its pure state it is a powerful caustic, and enters as a base into the composition of salt. Two compounds of potass are used in horse practice.

Nitrate of Potass (*Potassæ Nitras*) or *Nitre*, is a very common product, and is as useful as it is general. It is compounded of nitric acid and vegetable kali, whence its chemical name *nitrate of potass*. It is the most useful, powerful cooling medicine; greatly diminishes febrile action, and determines its depletory action more certainly to the kidneys than any of the saline articles. It is also antiseptic and diaphoretic, and therefore of great consequence in active fever, given two or three times a day, in doses of three or four drachms. As an alterative it is also well known; but it is not a good plan, as practised by some grooms, to infuse it into the water which horses are to drink; it is apt to disgust them with all liquids. Nitre, while dissolving, materially lowers the temperature of water, and furnishes a cold lotion for sprain of the back sinews, and local inflammations. The lotion should be used as soon as the salt is dissolved, for it quickly becomes as warm as the surrounding air. *Fused Nitre* is sold solid under the name of *Sal Prunella*.

The Supertartrate of Potass (*Potassæ Supertartras*), or *Cream of Tartar*, is not a very active medicament in horse practice. It is, however, slightly febrifuge and mildly diuretic. It has some alterative powers, and unites with those medicines which are generally employed when horses are labouring under cutaneous affections.

Poultices, or Cataplasms.—As bread would be expensive, bran is generally used in veterinary practice; which a little linseed meal improves in consistence. This is important, as otherwise the poultice runs through the cloth. Yet it must not be too thick, lest it dry too quickly; and its action is due greatly to its keeping moist. It should therefore be frequently wetted from without. In applying poultices to the legs, care should be taken not to tie them too tight, as is frequently done, and whereby the mischief is aggravated instead of relieved: a piece of broad list is, for this reason, very proper to fasten them on with. A poultice should never be applied too hot; very little good can be derived from it, and much pain may be occasioned. A hot poultice soon sinks to the heat of the part. Poultices are likewise, in many cases, applied cold. A convenient mode of applying a poultice to the extremities, is by means of an old stocking cut off at the ankle. The leg of it, being slipped over the hoof, is brought around the part, and secured below by means of broad list. The poultice is then put into the stocking by means of the hand, and afterwards secured above by another piece of broad list. In cases where it is found difficult to keep a poultice on any part of the extremities, from its inclination to slip down, still by no means tighten the supporting bandage; but, instead, pass a long tape from it over the withers, if in front, or back, if behind, and attach it to the other side of the bandage; it will then be effectually secured from slipping. If too tight, it will prevent the return of blood from the foot; if too hot, it will inflict unnecessary pain.

(A) common poultice.

Bran, any quantity; pour on it boiling water, to form a thick paste; add linseed meal sufficient to make it adhesive. After this, stir in one or two ounces of sweet oil.

(B) cooling poultice.

Bran, any quantity; pour on it a sufficient quantity of cold water to form a poultice; and, as it dries, moisten with more water.

(C) cleansing poultices in general use for grease and ulcerous wounds.

Oatmeal	½ pint.
Linseed meal	½ pint.
Powdered charcoal . . .	4 ounces.

Stale beer and bran sufficient to make a poultice.

(D) or,

Carrots, scraped, sufficient to make a poultice.

(E) or,

Turnips, boiled and mashed, sufficient to make a poultice.

To either of these last two, four ounces of charcoal may be added, if thought proper. Or,

(F)

Linseed meal, or oatmeal, any quantity; mix with boiling water, and ferment with a table-spoonful of yeast: as it rises, apply to the part.

Powders.—Powdered medicines that have not much taste may be given in a mash. Emetic tartar and digitalis in fever; or calomel or the meal of the nut of croton tiglium as "physic." The horse, however, often refuses them, and then the mash is wasted. A careful and competent groom will prefer the more certain method of ball or drench.

Quassia.—The wood of the tree (*Quassia excelsa*) owes its properties to a peculiar bitter principle of wonderful durability. It is solid, and of a light yellow colour. It is a useful tonic: dose from six to ten drachms.

Quinine.—This celebrated essential principle of the cinchona, or bark of the *Cinchona lancifolia* (Jesuit's bark), is too expensive for veterinary practice. It may be joined (as disulphate of *Kina*), in doses of a drachm, with camphor, where its cost is not regarded.

Raking.—This method of emptying the bowels by hand will be noticed under Operations, &c. Blaine thus directs its performance:—"The right arm being stripped and oiled, with the left hand, the tail is drawn aside, when the right, being made as small as possible, should be gently introduced up the fundament, and any hardened excrement it may meet be removed carefully." From this it will be seen that *back-raking* must be useful in a vast variety of cases. It should always precede a clyster (see Clysters), lest the fluid should be obstructed and thrown out again. It is useful in colic and costiveness.

Red Precipitate. See Mercury.

Repellents.—Medicines whose action was supposed to consist in driving back humours from one part to another. They are exploded by modern science: tonic action alone can apply to the theory of repellents.

Resin.—The several resins are noticed under their kinds. Yellow resin is that used in Charges (*q. v.*) It is a useful diuretic in doses of 5 or 6 drachms, made into a ball with soft soap.

Rowels. See Operations, *post.*

Salts.—Common salt (muriate of soda) is useful in veterinary practice. See Soda.

Salt of Tartar. See Potass.

Salts, Epsom. See Magnesia.

Sal Prunella. See Nitre.

Salt of Steel. See Iron.

Savine.—The leaves of the *juniperus sabina*, or savine in veterinary practice, have had very opposite appreciation as an internal remedy. This has arisen from faulty preparation of the medicine, not that we consider it worth retaining, except as an outward application. It is almost impossible to so dry and pulverise savine leaves as not to lose the essential oil on which their activity depends. If, then, they are to be administered, an infusion of two ounces of the leaves in a pint of water, with a few drops of opium and some syrup, or a tincture in proof spirit, should be used. They are highly stimulant, hot, and acrimonious; they act on the nervous system, and especially on the uterus. The ignorant still believe that infusion of savine leaves

will procure abortion in women; in an overdose it will certainly kill the mother. The infusion is an excellent lotion for gangrenous sores, and the dried leaves are good for warts, soft ulcers, and caries. With lard or wax it is a good ointment to keep open rowels or setons; and the leaves in a poultice stimulate foul sores to granulation.

Sedatives.—This class of medicines is calculated to diminish the irritability of the system, to repress spasmodic action, and to deaden pain. Some sedatives act at first as stimulants, but this stage soon passes off. In some cases they act by enabling the system to resist irritation, in others they numb the nerves and lower the animal system by a narcotic or sleepy effect. In the horse we do not find these medicines act as positive narcotics, as in man: they merely lessen irritability and check spasmodic action. Digitalis, opium, hellebore, hemlock, opium, belladonna, camphor, and turpentine, act as sedatives with the horse: so also, in injuries and consequent fever, does the cold bath. Some irritative states are best met by tonics, as the mineral acids, &c. The sedative medicines will be found under their several titles in this alphabetical list.

Silver gives us that excellent escharotic known as *Lunar Caustic*. See Caustics.

Soap.—The soap used in prescriptions is the hard or Spanish soap, and soft soap, a compound of olive oil and potass. The latter is transparent, yellowish, with small seed-like lumps of tallow dispersed through it. Its application is noticed under the several heads. In large doses, soap is purgative; in small doses, it determines to the kidneys. The use of hard soap in forming diuretic and other balls is well known.

Soda is the mineral kali, as potass is the vegetable. Its base is the mineral called *sodium*. Soda is now generally procured by the decomposition of sea salt (chloride of sodium). The salt is first converted into sulphate of soda (Glauber's salts), then into crude carbonate of soda, and then by making it into a lye (lixiviating), and evaporating, becomes the crystallized carbonate commonly known as soda. Of its various salts we may note the carbonate, the sulphate, the tartrate, and the muriate (chloride).

Carbonate of Soda (*Sodæ Carbonas*), is a white gritty powder, alkaline in taste. Its most familiar use is in the composition of soda-water powders, where half a drachm of the carbonate of soda is placed in a blue paper, and 25 grains of tartaric acid in a white one. Its medicinal uses are the same as the subcarbonate of potass, but it is milder and less nauseous. It is easily soluble in water at 60°, and in less than its own weight of boiling water.

Sulphate of Soda.—The well-known Glauber's salts. A most useful purgative. It is soluble in water, but totally insoluble in spirits. Muriate of ammonia and lime, nitrate of silver, and acetate of lead, all decompose the sulphate of soda. We would recommend it to be mixed in equal quantities with the sulphate of magnesia (Epsom salts) where one is prescribed. The compound is more active and more diffusible in water. *Cheltenham salts* consist of sulphate of soda, 120 grains; sulphate of magnesia, 66 grains; muriate of soda, 10 grains; sulphate of iron, ¼ grain.

Muriate of Soda (*Chloride of Sodium*), Common Salt. While in a state of solution, common salt is *muriate of soda*, when it is dried, it becomes *chloride of sodium*: "thus the same salt is chloride of sodium in the hand, and muriate of soda in the mouth!" The effect of salt upon the animal system is striking and important, and has furnished the most interesting inquiries to the physiologist, the chemist, the physician, and the agriculturist. These, however, would lead us into digression here. Salt, in moderate quantities, promotes digestion in the horse; an excess destroys it. It is tonic, and corrects that disordered state of the bowels which produces worms. Its use is corrective of the bad food which encourages the multiplication of bots. The value of salt to all herbivorous animals is fully indicated by their natural craving for it in cases of disorder of the system. The "salt licks" of North America and of the Pampas show the greed of the horse, elk, moose-deer, &c., for this mineral. Salt does not act diuretically, but passes undecomposed into the kidneys. It is purgative in solution in tepid water, and forms the ordinary clyster. It is the natural stimulant of the digestive organs. The doses are a drink of eight ounces of salt in solution, for a tonic. One ounce of salt and one ounce of water is a healthy antiseptic embrocation for sore back. Sprinkled on the hay, or in a mash, it is palatable to the sick horse. Indeed, the value of salt in veterinary practice can hardly be over-rated.

Tartrate of Soda (*Soda Tartarizata*) is a triple salt, formed of an acid, soda, and potass. It does not differ in its effects from tartrate of potass, and need not be further described.

Spanish Flies. See Cantharides.

Spurred Rye. See Ergot of Rye.

Squills.—The bulb of the *scilla maritima*, or wild onion, is expectorant, diuretic, and very slightly laxative. It is excellent in disorders of the bronchial tubes, in conjunction with demulcents. The bulb loses about four-fifths of its weight in drying, but this does not seem to lessen its powers unless heat has been applied. Its bitter principle (called *Scillitin*) is carried, by the circulation, to the secretory vessels of the kidneys, and thus stimulates them. The syrup, tincture, or dried root, is to be adapted to the form of the medicine, whether solid or fluid.

Starch (*Amylum*), is given internally, mixed with chalk and opium, and is used to guard acrid medicines. Starch clysters in diarrhœa are to be advised in preference to the ordinary gruel.

Stimulants (see Cordials). Medicines that exert an influence on the system by increasing the power and action of a part; hence they may be considered as very numerous, and the term as of very extensive signification. The following article from Blaine contains a summary of the classification of doses of these medicines. *Local Stimuli* are all

such matters as either promote the vascular, the nervous, or the absorbing energies; as friction, rubefacients, blisters, &c. *General stimuli* act on the sensorium at once, through the medium of the senses: the voice of the hounds stimulates the horse; the exertions of a rival racer will likewise stimulate; and the stallion's fire is drawn forth by the scent of the mare. *Absorbing stimulants* are heat, cold, friction, depletion, mercury, &c.

Stomachic stimulants.—Such may be called cordials as are intended to have a temporary effect on the stomach; and those may be noted as stomachics whose action is more permanent. Both the one and the other appear to act by a sympathetic effect they excite between the stomach and the brain. Warm spicy matters possess some efficacy; but, as might be supposed, such cordials (*i. e.* stomachics) appear to act best when they are received into the system at large, as generous food, malt, gruel, ale, &c.

(A)

Gentian, powdered	8 ounces.
Ginger, powdered	4 ounces.
Oil of anise seed	½ ounce.

Make into a mass with lard, honey, treacle, or conserve of roses, and give one ounce for a dose.

(B)

Of the preceding mass	1 ounce.
Gum myrrh	1 drachm.
Balsam of Tolu	1 drachm.

(C)

Of the first mass	1 ounce.
Camphor	1 drachm.
Opium	1 drachm.

Either of these may be given as a drink also, by infusing the powders in a pint of ale.

As *stimulants*, Mr. Vines, in his "Treatise on Glanders," enumerates the following articles:—Cantharides, Canella bark (*Canellæ cortex*), Capsicum berries (*Capsici baccæ*), Cubebs, or Java pepper (*Cubeba*), Ginger root (*Zingiberis radix*). Grains of Paradise (*Grana Paradisi*), Pellitory of Spain (*Pyrethri radix*); all the different sorts of Peppers, as the common black, Cayenne, Chili, long, and white; Pimento, or Allspice (*Pimentæ baccæ*), Sweet Flag-root (*Calami aromat. radix*), Winter's bark (*Winteræ cortex*).

More permanent stomachic stimulants are such as act not only by determining a greater quantity of blood to the stomach, but also by strengthening the muscular tone of that organ, enabling it to act with more energy in its digestive movements. The following formulæ are inserted, and are proper in cases of convalescence, or recovery from debilitating diseases which have impaired the appetite:—

(D)

Powdered canella bark (cinnamon)	4 drachms.
Ginger	1 drachm.
Sulphate of copper (blue vitriol)	1 drachm.

Make into a ball with conserve of roses.

(E)

Decoction of camomile	3 pints.
Watery tincture of aloes	1 ounce.
Ginger, in powder	½ ounce.
Sulphate of iron (green vitriol)	½ ounce.

Mix and divide into four drinks.

(F)

Gum myrrh	2 drachms.
Mustard flour	1 drachm.
Cantharides	5 grains.
Gentian powder	4 drachms.

Make into a ball with thin Venice turpentine.

(G)

Powdered gentian	3 drachms.
Powdered quassia	3 drachms.
Powdered grains of Paradise	3 drachms.

Make into a ball with Venice turpentine.

Tonic stimulants are supposed to exert their influence on the muscular fibre, and to improve its tone: this they do, in some instances, through the medium of the stomach, and are then called stomachics; or they are received into the blood. Tonics are, therefore, stimulants of permanent action; from which we may learn that this class is numerous, and is, in fact, diffused through the whole materia medica. A complete knowledge of their number and effect can only be gained by an intimate acquaintance with the animal economy and the nature of the various agents employed in acting upon it. Either of the subjoined may be given daily:—

(H)

Gum myrrh	2 drachms.
Sulphate of iron (green vitriol)	2 drachms.
Gentian powder	3 drachms.
Ginger powder	1 drachm.

Mix into a ball with turpentine or palm oil; or into a drink with a pint of mild ale.

(I)

Arsenic	4 grains.
Gentian, powdered	3 drachms.
Cascarilla, powdered	3 drachms.

Mix into a ball with conserve of roses; or, like the above, into a drink.

(K)

Gum myrrh	3 drachms.
Powdered gentian	3 drachms.
Carbonate of iron	2 drachms.

Make into a ball.

As Tonics, Mr. Vines also enumerates Angostura bark (*Cusparia cortex*), Buckbean (*Menyanthes trifoliata*), Cascarilla bark (*Cascarillæ cortex*), Camomile flowers (*Anthemidis flores*), Gentian root (*Gentianæ radix*), Quassia wood (*Quassiæ lignum*).

Stoppings are an important point in stable management. When a horse's work is irregular and he stands in stable too

long, his feet are deprived of moisture, and the hoofs become hard and brittle, and have a tendency to corns, contraction, and founder. In cases of wounds or bruises on the sole, stoppings are yet more necessary. Clay is a bad stopping. It dries soon and adds to the evil it is intended to remedy; the addition of three parts of cow-dung to the clay will correct this. In wounds, a little tar is a good addition: but tar, as a general stopping, is too stimulant and drying. Oil of turpentine, one part; firm grease, two parts; and pledgets of tow dipped in it, bound on with withy strips and list, make an extemporaneous stopping. There are now, however, easily procurable, thick felt pads made for the purpose, which fit to the sole of the foot; these being passed within the shoe, and well wetted with water or cold lotion, swell, and thus are kept in their place by the shoe itself, and will retain their moisture throughout the night. Or, in case of prick of the foot, wet the pad liberally with chloride of zinc lotion to keep down inflammation. A good general stopping for keeping down fever of the feet, suppling the hoof, and rendering it tough, may be made of,—

Linseed meal	4 parts.
Tar	1 part.
Sulphate of zinc (white vitriol) . .	½ ounce.

Styptics.—Such remedies as check bleeding internally or externally. Those used internally are—acetate of lead, sulphate of zinc, catechu (terra Japonica), alum; externally, pressure, ligature, division of the blood-vessel, cold, the actual cautery, cobweb, felt, down, oak-galls, powdered alum, or any substance or fluid that has the property of rapidly coagulating the serum.

Dr. Paris ("Pharmacologia," p. 117) has some judicious observations on Styptics, especially as regards the horse and ass. He says: "The manner in which styptics act (on the human subject) is sufficiently shown by the pallor they at once produce on the lips, in consequence of the blood-vessels becoming diminished in diameter, and their coats increased in opacity. Great popular error, however, still exists, as regards these local agents, which has arisen from deductions drawn from their effects upon lower animals. Thus several substances have obtained the reputation of Styptics from the marked result which has followed their application to the wounded and bleeding vessels in the extremities of the horse and ass; whereas the fact is, that to these animals nature has supplied an inherent power of contraction which does not exist in man. Hence Styptics are of powerful action on the horse." Several Styptics have, at times, been held in high esteem, but galls, dissolved in spirit, or simple gallic acid, will be found as good as any. Filings of iron, tartar, and a little brandy, form the favourite Styptic of French and German practitioners, under the name of Helvetius's Styptic. Eaton's Styptic, well-known here, is merely sulphate of iron and brandy, and Ruspini's Styptic is gallic acid, brandy, and rose water. The application of a hot iron, not quite so hot as to utterly destroy the animal tissues, will be found, by coagulating the serous portions of the blood, and exciting the peculiar contractility of the blood-vessels of the horse, to check and eventually stop the loss of blood from severe wounds, and allow time for further remedial measures.

Sublimate, Corrosive. See Mercury.

Sudorifics. See Diaphoretics. A relaxation of the skin is produced in the horse by warmth, diluents, and diaphoretic medicines. A real sweat, however, is seldom excited without violent nauseants, and these are very uncertain in their action. Vinegar in half-pint doses will act as a sudorific, but is dangerous. A greater amount of clothing is preferable, but is very debilitating. Antimonials, as the acetated liquor of ammonia, will act as sudorifics in many cases.

Styrax, Storax.—*Benzoin*, commonly called *Gum Benjamin*. It is the product of a shrubby tree, the *Styrax benzoin*, common in Italy and the Levant. Its name is from the Greek word *styrax*, signifying a reed, the *gum styrax* being preserved in reeds. It is a fragrant balsam, containing resin, and the peculiar principle called *benzoic acid*. It dissolves readily in spirits and æther, and is separated from them by the addition of water. It is good as a stimulant in lung disorders, and has been recommended in fevers. Its dose will be found in the compounds where used. It is an ingredient in fumigating pastilles.

Sulphates.—A salt formed by the union of sulphuric acid and a salifiable base.

Sulphate of Copper. See Copper.

Sulphate of Soda. See Soda.

Sulphate of Zinc. See Zinc.

Sulphate of Magnesia. See Magnesia.

Sulphur. Brimstone.—A well-known simple combustible substance found in the neighbourhood of volcanoes, in sublimed incrustations. It is extracted from *pyrites*, or firestones, by roasting them; these pyrites are in vast variety and are compounds of sulphur with various metals. When brimstone is melted at 228° Fahrenheit, and cast in cylindrical moulds, it is called *rough* or *roll sulphur*; when this is purified by sublimation, it is *sublimed sulphur*, called *flowers of sulphur*, a bright yellow powder. When melted sulphur cools in the air, it is yellow and very brittle; when poured into water, white and tough.

Flowers of Sulphur (*sulphur sublimatum*) is a common remedy in veterinary practice. Internally, it is alterative, externally, a cure for eruptions of the skin. It is the basis of our applications in mange, and, combined with antimony and nitre, in surfeit, grease, hidebound, or want of condition. In doses of six or eight ounces, uncombined, it will open the bowels: but is not at all advisable as a purgative. When sulphur is internally administered, it exudes through the skin in the state of sulphureted hydrogen, and will blacken silver which is rubbed on the skin in a remarkable manner. *Sulphur ointment* is invaluable in mange. Observe, the *black sulphur* of the shops should never be used, as it often contains arsenic or mercury. Sulphur will not dissolve in

water or spirit, but is soluble easily in linseed oil, which is an excellent solvent of all the sulphurous substances. Boiling oil of turpentine also dissolves sulphur. Sulphur, when kept in drawers or places where the air has access to it, becomes acidified and is supposed to produce a griping effect; we believe this to be a mere fancy. However, we are directed to *wash* the flowers of sulphur "to get rid of any sulphurous acid;" this the practitioner may adopt or not, as he pleases. Despite its disgusting smell, sulphur deserves yet more general use in horse-practice.

Sulphuret of Mercury (*Ethiop's Mineral*). See Mercury.

Supertartrate of Potass (*Cream of Tartar*). See Potass.

Tar is an article in much use by the veterinarian. Melted with fish-oil, it makes a good external application, being brushed on the hoofs of the working horse when brittle or liable to exfoliate. Tar is also (see Stoppings), mixed with an equal quantity of grease, a slightly stimulant dressing for bruised or wounded feet, preventing the access of air, dirt, or water to the wounded part. From its drying properties it is the chief ingredient in thrush ointments. Alone, or mixed with oil of turpentine to increase its activity, it is used with advantage in pricks and bruises of the sole. Tar is advantageously mixed, in doses of two and three drachms, with cough medicines. The *Spirit of Tar* of the farriers is the rectified oil; but oil of turpentine is best substituted for it. *Barbadoes Tar*, called also *Green Naphtha*, has been employed as an internal remedy for coughs.

Tannin is the astringent principle of oak bark. It is prepared from oak-galls by powder and infusion. It is our most powerful astringent. The watery infusion possesses all the powers of the gall-nut. As an astringent in diarrhœa and a tonic in cases of fever, combined with aromatics and bitters, it is excellent. Also in washes. A gall ointment is specific in cases of protrusion of the rectum; when, also, a fomentation of infusion of gall-nuts with some opium is excellent. Those nuts which are bluish, small, and heavy, are the best; and they should be gathered before the larvæ have changed to flies, and have eaten their way out. Aleppo gall-nuts are best and most astringent, but the cheaper must serve for horse medicines.

Tartarized Antimony. See Antimony.

Terra Japonica, See Catechu.

Tents are substances such as lint or tow, introduced into wounds to prevent their closing too early.

Tin is used to expel worms from horses. It has, however, proved utterly inefficacious in bots. It must be used as a mechanical remedy, in fine filings, and not levigated. Pewter filings are substituted, but their softness makes them useless. Dose, three ounces, in balls with honey or the like, daily. It may be superseded by oil of turpentine.

Tinctures.—Many substances yield readily their medicinal properties to alcohol or spirit of wine. The tinctures, however, frequently require so much spirit to contain the dose necessary for the horse, as to make them impossible to be administered in this form, to say nothing of the great expense. The spirit necessary as a vehicle for the drug, has destroyed many a horse. Watery solutions, or infusions, or powder, are therefore more available. As lotions, tinctures of cantharides, benzoin, myrrh, digitalis, aloes, and opium, are properly used. Tincture of catechu is an ingredient in astringent drinks.

A few of the tinctures kept ready compounded in the shops, or sold as patent medicines, may be mentioned here. *Friar's Balsam*—this is composed of gum benzoin, styrax, and tolu, with aloes. It is a moderately good internal remedy, diluted with water, to effect which it must be beaten up with starch or the yolk of an egg. As a styptic, or as a healing application to cuts and wounds, we consider it a mistaken remedy. It injures fresh wounds by its stimulant properties, and from the separation of the resins which follow the mixture of them with the blood. These combining form a solid mass between the lips of the wound, which mechanically prevents them coming together, and so setting up the healing process from the *first intention*. The *Tincture of Gum Guaiac* is a solution of that gum in aromatic spirit of ammonia. See Diaphoretics, Stimulants, &c. *Tincture of Myrrh*, diluted, is a good lotion for spongy gums and sore palate, and a wash after reducing lampas by bleeding. *Solomon's Balm of Gilead* is a tincture compounded of cardamom seeds, brandy, and a trace of cantharides. A *Tincture of Gentian* and another of *Ginger* may be kept handy for the purposes of dilution, but the roots themselves and the infusion, as we have said before, are the cheaper and more potent remedies. *Tincture of Muriate of Iron* is a styptic, and an active preparation. In warm water it is advisable in strangury, given every quarter of an hour in doses of twenty drops.

Tobacco is a remedy in costiveness and colic. It is most dangerous to the horse. "Two ounces," says Mr. White, "was given by a groom, and occasioned almost instant death." In the hands of the skilful it is a powerful remedy. We have seen it commended in farriery books as an ingredient in clysters. It would be as well to use a poleaxe or a pistol, on the score of humanity. The energetic action of tobacco, in solution, on the mucous membrane, the tremor, and the deadly action, through the nervous system, on the heart, will warn from a repetition of the practice on a second animal.

Tonics. See Stimulants and Cordials. They are valuable medicines when judiciously employed; but, like cordials, they have been fatally abused. Many a horse recovering from severe disease has been destroyed by their too early or too free use. The veterinary surgeon occasionally administers them injuriously, in his anxiety to gratify the impatience of his employer. The mild vegetable tonics, camomile, gentian, and ginger, and perhaps the carbonate of iron, may sometimes be given with benefit, and may hasten the perfect recovery of the patient; but there are few principles more truly founded on reason and experience

of the horse, than that, disease once removed, the powers of nature are sufficient to re-establish health. Against the more powerful mineral tonics, except for the particular purposes that have been pointed out under the proper heads, the horse proprietor and the veterinarian should be on his guard.

(A) TONIC BALL.

Powdered bark	1 ounce.
Ginger	2 drachms.
Carbonate of soda	½ drachm.

Form into a ball with linseed meal and water.

(B) ANOTHER.

Sulphate of iron	½ ounce.
Extract of camomile	1 ounce.

Mix, and form into a ball.

(C) ANOTHER, MORE POWERFUL.

Arsenic	10 grains.
Ginger	1 drachm.
Powdered aniseed	1 ounce.
Compound powder of tragacanth	2 drachms.

Syrup enough to form a ball.

TRAGACANTH GUM. See GUMS.

TURPENTINE forms a leading article in the veterinary materia medica. The Venice and common turpentine are those most in use. Almost every tree of the genus *Pinus* yields some sort of turpentine, the distinctions of which may be seen in botanical works and medical dispensatories. The best of turpentines is the *Canada Balsam*, produced by the *Pina balsamea;* the *commoner*, or *Horse Turpentine*, (*Terebinthina vulgaris*), is the juice of the Scotch fir (*Pinus sylvestris*). It contains more of the active oil, and is in our opinion preferable, at any rate for outward applications. Common turpentine is one of the best diuretics, in doses of half an ounce, and made into a ball with linseed meal and half a drachm of ginger. It is added to the calamine or any other mild ointment, to render it stimulating and digestive, and, from its adhesiveness and slight stimulating power, it is an ingredient in mange ointments.

The Oil of Turpentine is an excellent antispasmodic. For the removal of colic it stands unrivalled. Forming a tincture with cantharides, it is the basis of the "sweating blister," used for old strains and swellings. As a blister, it is far inferior to the savine ointment; as a stimulant frequently applied, it must be sufficiently lowered, or it may blemish. It also makes, in a diluted form, a gently stimulant liniment for old sores and bruises.

UNGUENTS. See OINTMENTS.

VERDIGRIS. See COPPER.

VERJUICE is merely apple vinegar. See ACETIC ACID.

VERMIFUGES, or WORM MEDICINES. Tin or iron filings, not levigated, or powdered glass, are the mechanical remedies for worms in the horse. This class of remedy is called *anthelmintic*. The other remedies are—common salt, six to eight ounces; savine leaves, one ounce; cowhage, half a drachm; calomel, one scruple; arsenic, ten grains; aloes, till they purge; tartar emetic, a drachm for six successive mornings, and then a cathartic ball; and, last and best, oil of turpentine, two or three ounces. All worm medicines should be given fasting. The best-known and most certain symptom of worms is a dry yellow matter under the tail; worms, however, are often present without this appearance presenting itself. A proper attention to a supply of salt in the manger or food, is the best preventive of these annoying parasites; and we need hardly repeat that prevention is better than cure. Clysters, with preliminary back-raking, will get rid of some sorts, such as *ascarides* (thread worms), *tænia* (tape worms), seldom found in the horse, and *lumbrici* (round worms), the special parasite of this animal The *bots* are not affected by our general vermifuges, and defy their action. The following clyster will often effect an ejectment of ascarides, tænia, or round worms: solution of aloes, 4 ounces; tepid water, 1 quart; common salt, 1 ounce. And give the horse at the same time 1 drachm of tartar emetic every morning in a ball, and after six of these doses of the tartar, a moderate dose of aloes, to expel the parasites, already enfeebled by the previous medicine.

A WORM BALL.

Calomel	1 drachm.
Barbadoes aloes	3 drachms.
Oil of turpentine	1 ounce.
Soap	3 drachms.

Mix.

WORM DRENCH.

Linseed oil	1 pint.
Oil of turpentine	1 ounce.

VESICATORIES. See BLISTERS.

VITRIOL, WHITE. See ZINC.

VITRIOL, BLUE. See COPPER.

VITRIOL, GREEN. See IRON.

VITRIOL, OIL OF. See SULPHURIC ACID.

VINEGAR. See ACETIC ACID.—The ordinary acetous acid is often used by the veterinary practitioner. Its purity is therefore of the first importance. It is, however, very liable to be adulterated with, or wholly made of, sulphuric acid, and then becomes very unfit for use as an internal remedy, being changed into an active stimulant instead of a refrigerant. Vinegar, not neutralized by salt or sugar, is capable of proving very noxious to the horse. We have instances on record of a pint of strong vinegar destroying life; but, neutralized with carbonate of ammonia, it forms a most excellent febrifuge, under the old name of Mindererus's Spirit. Neutralized with sugar or honey, it forms a valuable expectorant, called oxymel. As an external application, the acetous acid is likewise valuable. In strains, bruises, and other local injuries, it is the base of the best remedies; either in combination with acetate of lead when active inflammation exists, or mixed with crude

sal ammoniac, or bay salt, to counteract the effects of distension. Distilled vinegar is merely ordinary vinegar deprived of its fecula and water.

Washes. See Lotions.—Of washes for the eye (*Collyriums*), Mr. Percivall observes: "A good deal of change of opinion has taken place among medical men concerning the strength and proportionate efficacy of topical applications to mucous membranes: at one time mere astriction or slight stimulation was considered to be all the effect that was requisite or safe to be produced; nowadays, however, stimulation in the highest degree, verging even on an escharotic effect, is found to be, in most cases, both warrantable and beneficial. Now, a surgeon will order a lotion for the eye, composed of five grains of lunar caustic to the ounce of water, and an ointment of double that strength, when, formerly, he would hardly have ventured to use such a potent preparation at all, or certainly not in above half that strength. In veterinary treatment we shall find it to be good practice to produce a highly stimulant, even an escharotic, effect on the conjunctival membrane, with a view of relieving the internal ophthalmia by derivation or revulsion. The eye, even in a state of ophthalmia, will endure and derive advantage from applications of much more potent nature than are commonly ventured upon in practice. My favourite collyrium is a scruple of nitrate of silver to the ounce of distilled water." Mr. Cherry, Principal Veterinary Surgeon to the Cavalry, uses bichloride of mercury as a collyrium in the potent form of solution in spirits of wine—one drachm to the ounce—and touches eyes with the sublimate itself; his note, in regard to their effects, is—"It is of importance to remark how soon the very considerable effect excited by the injection of corrosive sublimate in solution has subsided; even the application of it in substance to the surface of the eye producing a scarcely perceptible effect. We learn, both from practice and experiment, that our eye-washes, to do good, have been in general applied in too weak a form; we have not dared to do even what farriers before us did, and this is one reason why our practice, in many cases, has not turned out so successful as theirs."

Wax, White and Yellow.—The yellow is used to thicken ointments and stiffen plasters.

Worm Medicines. See Vermifuges.

Zinc, the *Spelter* of commerce. This well-known bluish-white granular metal furnishes three remedies to the horse.

1. *Oxide of Zinc.* This has been occasionally added to a ball as a tonic; but its great utility is as an astringent ointment, known as *Calamine Ointment.* Three parts of palm-oil and one of resin are melted together, and when these are cool, two parts of the oxide in powder are stirred in. Calamine powder is a good application, dusted on cracked heels and superficial sores. It is well-known, too, as the ointment called *calamine cerate* (formerly *Turner's Cerate*) as a human remedy for scalds and burns.

2. *Chloride of Zinc* is valuable as a disinfectant, and also as promoting healing in suppurating or sloughing wounds. It has the peculiar property of suppressing luxuriant granulations. It acts admirably also in the closing of open joints: preventing fetor, coagulating the synovia, and at the same time promoting the healing beneath or the stopping of the orifice. It is beneficial in thrush and canker. It is used as a solution of various strengths,—a scruple to the pint, and a drachm to a pint and a half of water,—in grease, in thrushes or cracked heels with exudation.

3. *Sulphate of Zinc* (*White Vitriol*). In the proportion of three grains to an ounce of water, this is an excellent application in ophthalmia, when the inflammatory stage is passing over. Quittor is successfully treated by a saturated solution of white vitriol injected into the sinuses. A solution of white vitriol of less strength forms a wash for grease that is occasionally useful, when the alum or blue vitriol does not appear to succeed. It is also used, in conjunction with opium, internally in diarrhœa and griping. It must always be dissolved in water, as spirit renders it insoluble.

CONCLUSION.

The above list, though far less extensive than the druggist's bulky *Dispensatory*, will, it is believed be found to contain all the needful articles of a well-regulated veterinary surgeon's dispensary. We need hardly say how important order, cleanliness, and care are to the proper preservation and availability of the various drugs and chemicals; and how necessary it is that proper bottles, jars, and drawers adapted to each should be provided. Above all, let the practitioner test for himself, or prepare, a few of the leading articles he prescribes. We need hardly say that he should deal with a respectable druggist, and let him be aware that *his customer knows what he is buying.* The weights and measures throughout are Troy and Apothecaries' Weight and Measure.

Weights and Measures

WEIGHTS.

20 grains	1 scruple.
3 scruples	1 drachm.
8 drachms	1 ounce.
12 ounces	1 pound.

FLUID MEASURE

60 minims or drops	1 fluid drachm.
8 fluid drachms	1 fluid ounce.
16 fluid ounces	1 pint.
8 pints	1 gallon.

ABBREVIATIONS.

Gut. or Min.	Drop.	ʒ	Drachm.
Gr.	Grain.	℥	Ounce.
℈	Scruple.	℔	Pound.

CHAPTER XXIV.

INTRODUCTORY.—SYSTEMS OF NOSOLOGY REJECTED.—ARRANGEMENT OF SUBJECTS.—REVIVAL OF THE VETERINARY ART.—SPECIFIC DISORDERS: FEVER, INFLAMMATION, INFLUENZA, GLANDERS.

In a treatise like the present, any attempt at the systematic classification of diseases, after the manner of many veterinary works, which themselves merely imitate the learned nosologies of Sauvages, Cullen, Darwin, Copland, and other human physicians, would, in our opinion, tend to perplex both the reader and the subject in a medical and practical view. A scientific classification of horse-diseases may well be abandoned when we see the failure of the greatest men in a science of which this is but a collateral branch of modern growth—human pathology having claimed the exercise of the highest intellects in its study for 2,000 years. The arrangement, then, will be such as recommends itself for simplicity and convenience. We first say a few words on equine pathology; thence pass to a general consideration of the symptoms of the transition from a state of health to disease; review the subjects of specific diseases—as fever, inflammation, and glanders; and proceed to a *local* system of referring the several diseases to the region or set of organs which are, or seem to be, most immediately affected by or involved in the disease. The appended table will afford an idea of this:—

ARRANGEMENT OF DISEASES AND THEIR TREATMENT.

Chapter II.

Introductory.—Systems of Nosology Rejected.—Arrangement of Subjects.—Revival of the Veterinary Art.—Specific Diseases: Fever, Inflammation, Influenza, Glanders.

Chapter III.

Diseases and Injuries of the Brain, Skull, Eye, Teeth, Tongue, Palate, Pharynx.

Chapter IV.

Diseases of the Air Passages, Trachea, Bronchiæ, Lungs, Pleura, and Diaphragm.

Chapter V.

Diseases of the Heart, Pericardium, and Great Blood Vessels.

Chapter VI.

Diseases of the Œsophagus, Stomach, Peritoneum, and Intestines.

Chapter VII.

Diseases of the Liver, Spleen, Glands, &c.

Chapter VIII.

Diseases of the Urinary Organs.—Of the Organs of Generation in the Male and Female.

Chapter IX.

Diseases of the Skin.

Chapter X.

Lamenesses and Diseases of the Forelegs and Feet.

Chapter XI.

Lamenesses and Diseases of the Hock, Legs, and Hinder Feet.

The several diseases form sections under these headings; thus presenting a convenient system, while the remaining chapters are devoted to Surgical Operations, Instruments, Implements, and Shoeing.

In the early history of the horse, in the former part of this volume, we have noted the ancient writers on the animal.

The ancient name *Veterinarius*, found in the classics of the Augustan age, degenerated in the dark ages into that of *Farrier* (ferrarius, *ferrier*) from the iron (*ferrum*) in which he worked. About the period of the revival of learning in the sixteenth century we find also the old veterinary learning following the awakening of the general human mind. After the fashion of the ancients, in the early periods of our own history, all published directions relative to the treatment of the horse were mixed up with agricultural matters in general. We see this instanced in "The Boke of Husbandry," by Sir A. Fitzherbert, a judge of the Common Pleas, which appeared in the reign of Henry VIII. In later times the sanative code became incorporated with the arts of the *manège*, and farriery was either practised and taught by the professor of equitation, or it descended to the forger of shoes. Of these additamentary arts we shall say little; nor will our limits allow us to do more than to specify the most popular of the works dedicated to the medical treatment of the horse particularly, and to his non-

medical treatment generally. One of the first and oldest works on farriery was printed in 4to. by Wynkin de Worde about the year 1500, under the title of "The Propertys and Medycines for an Horse." The next was published in 1609, during the reign of Elizabeth, in small 4to. black letter, entitled, "The four chiefest offices of Horsemanship: that is to say, the office of the breeder, of the rider, of the keeper, and the *farrier*, by Master Blundevill." Leonard Pascal, Gervase Markham, and other writers, followed them.

Francis I. of France ordered the Collections of Constantine to be translated from the original Greek into Latin, whence it was soon after translated into Italian, German, and French, and dispersed all over Europe. The works of Vegetius, too, were translated about the same period. In the seventeenth century, Italian writers open the period. Foremost among these are "Cæsar Fiarchi's Treatise on Horsemanship and Shoeing;" and the great work of Carlo Ruini, entitled, "Infirmita è suoi Remedi." In 1654 appeared the great French work, by Solleysel and others, "Le Parfait Mareschal." This was afterwards translated into English, *temp.* George I., by Sir Wm. Hope, and formed the basis of numerous books on horsemanship and farriery. Shortly after Solleysel's great work, appeared a folio, dedicated to Charles II., by Andrew Snape, jun., farrier to his Majesty, called, "The Anatomy of an Horse," with forty copper plates, copied from Ruini and Saunier.* The works of Michael Barret (Hippodomia), Gibson's "Farriers' Guide," Bartlett's "Farriery."

It was in France, however, in the eighteenth century, that the Veterinary Art made the most important advances. During this period, Bourgelat and La Fosse wrote well on horse diseases and shoeing. In 1761, France set the notable example of founding, under royal patronage, a public veterinary school at Lyons, having the celebrated Bourgelat as its professor. In 1766, a second was opened at Alfort, near Charenton, and others subsequently at Montpelier, Strasburg, &c. Similar establishments have since been founded at Vienna, Berlin, St. Petersburg, Dresden, Leipsic, Munich, Hanover, Naples, and indeed throughout Europe. In Egypt, at Abou Zembal, in Australia, and the East Indies. Among English writers of the period were Osmer "On Lameness," followed by Morecroft, Clarke (of Edinburgh), Bracy Clark, White, Delabere Blaine, the Turners, Percivall, Castley, Youatt, Stewart, Spooner, and Mayhew, all of whom have written treatises, or systematic works, upon Veterinary Science and Practice.

Notwithstanding the labours of the earlier of the writers here enumerated, the veterinary art, as distinguished from the lowest empiricism, is but of comparatively modern introduction into this country. Sixty years since, its practice was wholly in the hands of a set of men who, from their want of education, and the mechanical nature of their occupation, were unfitted for anything that required science or art, save the handicraft which they practised at the anvil, of making horseshoes and nailing them upon the feet. Like the barber-surgeons of old, from the circumstance of their operative services being required, and so frequently in one way, on the body, they were called (there being either a total want or great paucity of medical practitioners) to exercise an art of which they possessed no other knowledge than such traditionary lore as might have been handed down to them by their forefathers. In such hands as these, it was not to be expected that the art could thrive—that it ever could sufficiently develope its utility and importance, to assert those claims on society in general, to which every year in the present age is adding some fresh ones.

Such was the uncultivated state of the veterinary art when M. Vial St. Bel, a French gentleman from the veterinary school at Lyons, arrived in this country. He it was that prompted the first effort to redeem this art from the abyss of ignorance and superstition into which it had long and lowly fallen, and once more to set it on those pedestals of science and research upon which it had already rested during the ages of the Greeks and Romans. Such a strong hold, however, had the children of Vulcan got of the art (or rather, so unknown and undervalued were the advantages it held out in practice for skilful or qualified hands), that when St. Bel arrived in this country, in 1788, and made public proposals to teach an improved practice of it on the principles of science, his offers met with no encouragement, and he was compelled to retrace his steps to France. Undaunted, however, by this one unsuccessful attempt, he made another visit to England two years afterwards; and this proved more fortunate; for, on this occasion, an agricultural society, "The Odiham," in proof of their good sense, and very much to their credit, gave ear to what Monsieur St. Bel had to propose; and finally resolved themselves into a body, called the Veterinary College of London, with a view to the erection of a public school, over which St. Bel was to preside. That St. Bel was a man who possessed some considerable store of medical knowledge, all who knew him agreed: at the same time, every one who stood beside him at the time he was at the College, and who themselves had any knowledge of veterinary matters, were of opinion that, so far as a veterinary professor was wanted, he was not, to the degree that might have been expected or desired, qualified to undertake such an office. However, he held it but a short time; for hardly was the erection of the college at St. Pancras (which was intended but as temporary, and preliminary to something better) completed, when St. Bel died, leaving the art in little better condition than that in which he had found it.

That St. Bel, however, had he lived, would have placed

* The office of farrier is boasted of in the dedication of this curious book as being hereditary in the Snapes. "Being a son of that family that hath served the Crown of this kingdom in the quality of Farriers for these two hundred years, and myself honoured in that capacity." We may add that a really clever book by another Snape appeared subsequently.

the art upon a scientific basis, may be augured from a passage in his commendable work, entitled, "Observations on the Art of Veterinary Medicine." The passage runs as follows:—"The object of this art is therefore not only congenial with that of human medicine, but the very same paths which lead to a knowledge of the diseases of man, lead equally to those of brutes. An accurate examination of the interior parts of their bodies; a studious survey of the arrangement, structure, form, connection, use, and relation of these parts, and of the laws by which they are intended to act; as also of the nature and property of the various foods, and other agents, which the earth so liberally provides for their support and cure: these form, in a great measure, the sound and sure foundation of all medical science, whatever living individual animal is the subject of our consideration." Whatever, therefore, may be said of the deficiencies of St. Bel in practical matters, his name must stand high in veterinary annals, not only from the fact of his having been the founder of the systematic teaching of the art in this country, but from having left behind him a series of observations (with a plan, grounded upon them, for the education of students), which at the present day are perused with admiration.

On the death of St. Bel, Mr. Coleman was appointed his successor in the Professorship. During the many years (from 1793 to 1840) Professor Coleman held this office, Veterinary Science progressed far more outside of the college walls than within. He was succeeded by Mr. Sewell, who again has been succeeded by the present Professor, Mr. Charles Spooner, with Mr. Morton (since retired) as Professor of Chemistry and Materia Medica; Mr. Simonds, as Professor of Pathology of Cattle; and Mr. Varnell, as Demonstrator. In the capital of Scotland there are two veterinary colleges. One for many years presided by Mr. Dick; the other, of more recent foundation, having for its head a talented veterinarian, Mr. John Gamgee.

It is not intended in this general work on the horse to supply a purely technical book for the special veterinary student; such volumes are properly confined to the school and college: the object in view is to furnish a treatise of ready reference, and of such a character as will render a gentleman, or man of average education, independent of the dictation of the groom or horsekeeper; and further, so qualify him that he may be able to judge of the competence and acquirements of the veterinary practitioner, and may himself understand the rationale and principles of the medical treatment of his most valuable servant, whose dumb sufferings should plead stronger than speech to his humanity and higher intelligence for their relief and cure.

As a groundwork for this knowledge, which we hope every lover of the horse will soon be ashamed not to possess, we have already sketched out the structure and anatomy of the animal; its physiology, organs, textures, fluids, and their functions—knowledge no more to be learned at the anvil of the forge than the practice of human surgery in the barber's shop, which for centuries was its theatre or university. The groundwork of the Veterinary Art is set in scientific study; and he who would understand it, must possess himself of that science. Much has been said and written on the importance of the respectability of the veterinary profession. Its *utility* should command a proper respect and position; and it deserves esteem as an art which involves the study of what have been styled the liberal sciences.

The respectability or social status of the practitioner will at all times and in all situations depend upon his qualifications and his character. When the connection of Veterinary Science with general medicine—with the pleasures, and habits, and pursuits of the superior classes of society—with the interests of agriculture, and even the well-being of our country — comes to be better understood than it is at present; when the Veterinary Art shall be taught and cultivated with advantages equivalent to those under which medicine has so rapidly progressed, and due encouragement shall be given to its improvement; then will those who practise it assert claims on society, and assume the position to which by intrinsic merit they are entitled.

Specific Diseases of the Horse.

§ I. FEVER.

Fever in the Horse has been a subject of dispute in the veterinary profession; the late Professor Coleman and his disciples roundly denying its existence. Enlarged experience and observations have, however, disposed of the question, and the existence of simple or idiopathic fever is no longer controverted. Upon this point too much stress has been laid upon the discoveries and researches in human surgery. The signs and appearances of health or disease vary in many important points in every animal. Hence the knowledge and theories of Sydenham, Boerhaave, Cullen, Bell, Copland, and others, are of little applicability to horse-practice. The several stages of fever, so marked in the human subject, do not appear in the horse, whose fever seems to be what Dr. Cullen calls *synocha* (Gr. synekō, to continue), or persistent inflammatory fever.

Fever in the horse assumes hardly ever any other than a mild, inoffensive form; and is no less insidious in its approach than (at least until it has made some advance) indeterminate its character. Now and then a cold and even a shivering fit is manifest: a sweating stage is rare, but not uninstanced. To assume that either one or both these paroxysms is requisite to constitute a fever, is not only to show ignorance of the pathological nature of horse-fever, but to argue in opposition to established practical evidence.

Inflammatory fever may be of two kinds; one idiopathic

(Gr. *idios*, peculiar, *pathos*, affection), arising without any manifest cause, or at least not dependant on any other disease; the other symptomatic, because it is the consequence of some manifest disease.

Whether fever, however, arise from any local and evident cause, or be self-creative, the phenomena observable seem in nowise to differ; from which we are led to the conclusion that in either case we may consider it the same disease.

The horse is at first observed to have become spiritless and heavy. In the stall he stands with his head hanging down, and manifests unusual disinclination to turn or move: out of the stable, he has evidently lost much of his natural vivacity, and is found to sweat on comparatively trivial exercise. The extremities (the ears and legs) and the surface of the body grow cold; the coat becomes roughened; actual shivering, or an approach to it, may or may not occur. He refuses the next feed put before him; or, should he pick at all, he prefers the hay, or even the new straw. By degrees the sense of coldness leaves the body: at length both the extremities and it grow warm—perceptibly warmer than usual. The mouth, likewise, which was livid and cold before, now becomes hot and dry; the pulse rises with the accession of heat: in all cases it becomes quick; in most, also full; in others, also hard. Respiration is visibly disturbed: the animal draws his breath, though perhaps still but slowly, with a sign of labour or weight evidently unusual. By this time, the early dejection is often succeeded by an unnatural watchfulness: the horse will have his head raised and his ears erect, as if he were in the act of listening, when he proves still, in reality, listless of all around him. He has now no appetite. His dung, if he should have lately voided any, is high-coloured, and in small rolls. He stales but little at a time, oftener than usual, and perhaps not without some groan, grunt, or extraordinary effort.

We find that debility is one of the first changes which takes place; and in all the varieties and changes of appearance, debility is always a leading feature.

Causes.—Debility, over-exertion, customary evacuations suddenly suppressed, cold applied to the body while hot. Horses that are kept in very warm stables, highly fed, and have very little exercise are peculiarly liable to febrile attacks.

Like most other disorders, however, and oftener, indeed, than most others, fever makes its appearance without any evident or determinate cause, unless we choose to ascribe it to those vicissitudes which are so common at the seasons when fever most prevails. Occasionally it assumes an epizootic (Gr. *epi* upon, *zoon* an animal) form, blended with catarrhal and suffocative (anginal) symptoms: under which type it has obtained various appellations, as "catarrhal, epidemic fever." Catarrh will be treated of under Diseases of the Air-passages.

The only disease liable to be confounded with fever, is pneumonia.

That disordered or deranged state which assumes the form of fever in the incipient stage, may continue and develope itself into a more perfect and decided form of fever; or it may prove only to have been the precursor of some other disease.

The disturbed breathing in fever never amounts to the hurried, laborious, and painful heaving of the flanks we find in inflammation of the lungs. It may be said the same symptoms are present in symptomatic fever, or fever arising from local injury, or where pus is forming. But then there are always some other concomitant symptoms to guide us, such as cold, clammy sweats, indicative of pain; or the pointing of a foot, if that be the seat of injury. Fever arising from external injury, or from local disease, is commonly more violent and active than any spontaneous febrile attack. It assumes more the form of painful or distressing irritation than mild and progressive disease; and is altogether such as the experienced observer refers directly to its proper source; ever keeping in view the previous history of the case.

The most unfavourable and frequent termination of fever is inflammation of the lungs.

Treatment.—In speaking of the treatment of fever, we confine ourselves to it in its simple form, every thoughtful practitioner being fully aware, that when it is the consequence of local inflammation, that is the primary object to be attended to.

We must be guided in the use of the lancet by the state of the pulse; for, though blood-letting is indicated under all circumstances that have reference to inflammation, still here it must be done with circumspection. Older practitioners, in every case and indiscriminately, let the disease be what it might, bled and physicked.* In the milder forms of fever the less we do the better, and allow Nature to act for us; at least, our measures should be more palliative than active. In the more violent forms, bleeding, regulated by the state of the pulse; physicking in mild doses, so as to keep the bowels thoroughly open, without amounting to purging; acting upon the skin by the use of hellebore and digitalis; abstinence, green food, cool drinks, and cool air, appear to be the essential parts of the treatment.

When bleeding is resolved on, take at least three quarts, and give the horse a mash before any purgative, lest the

* Sufficient attention is not paid to the state of the pulse of the horse by the veterinarian; the quantity of knowledge to be ascertained by it being limited to the quickness or slowness of the pulsations, this being his chief guide in the use of the lancet; but the experienced practitioner well knows that the quality of the pulse will frequently inform him of the nature of the case, and be to him what the tongue of the human patient would be—his director.

We may elucidate this by referring to the state of the pulse in enteritis, where it has the quick wiry feel which it is impossible to mistake.

And again, the full hard pulse we always find when inflammation attacks membranous parts, as in inflammation of the membrane of the brain.

colon be impacted with hardened fæces. If not time for this, give a warm clyster of simple gruel. Then, when the bowels are moved, a fever ball (A, FEBRIFUGES, p. 379), and all corn taken away; the water should have the chill taken off; warm clothing applied; the stable kept cool; and an abundance of litter given. In severe cold weather, the stable should kept about 55° F. When the coat is staring, give—sweet nitre four ounces, acetate of ammonia eight ounces, water one pint; repeat at a quarter of an hour's interval.

Diseases, no doubt, are often cured by obviating their remote causes; and in this way strict attention to the state of the stomach, from its close sympathy with the brain, is a matter of great importance, and to be attended to here. Though we may not be able so readily to apply this to veterinary practice, still we may do a great deal; and conjoining this with our practical knowledge of the pulse, it is here our medical knowledge will assist us.

Under every form of disease, simplicity of prescription is desirable, more particularly while our resources and powers are abridged by the limited pharmacopœia of the veterinarian.

In the incipient treatment, one precaution is to be especially attended to, and that is, that active purges must not be administered; for, in the early stage, it is quite impossible to say that the case may not be one of approaching pneumonia; and should this happen, and active purgation have been established, we shall but too certainly have cause to rue a practice which has induced so much irritation of the mucous surfaces of the bowels in combination with disorder in the lungs: the two, when present together, being found, invariably, highly prejudicial to the subject of their attack.

SYMPTOMATIC FEVER being the result rather than the cause of inflammation, can scarcely be considered by itself. The simple fever often arises from exposure to cold, just as in the dog or in man; but this species generally arises from over-stimulation in some form, either by extra warmth or more food than usual, or by over-riding or driving. Whatever the precise cause, the effect is always to produce a congestion in some internal organ, generally followed by an inflammation, and accompanied by symptomatic fever. Thus, a horse is brought up from grass, and suddenly placed in a hot stable, with a liberal allowance of corn. In a short time his eyes become inflamed, his appetite fails, he has a violent cough, and he is what the trainers call "all to pieces." Now, this arises entirely from over-stimulation at all points, for not only is he kept in a state of increased heat, but the fire is fanned by feeding him with corn, and often by giving him an amount of work to which he is unaccustomed. The symptoms are quick and laborious breathing, stony coldness of the legs and ears, if inflammation of the lungs is present; yellowness of the eyes and mouth, if inflammation of the liver.

TREATMENT.—This, as before said, is merged in the treatment of its complication till that is got under, as will be found when treating of the lungs, liver, &c. The debility which follows is now met by a boldly stimulant plan, a generous diet, and the administration of bark and ammonia in a manner that would have been thought by practitioners of twenty years ago mere horse-murder. We now know better; hundreds of cures are effected by supporting the animal; by the early abandonment of the antiphlogistic measures borrowed from the Sangrado school of human practice, and preventing him from sinking into that state of exhaustion in which the poor animal dies of a disease closely allied to putrid or typhus fever.

MALIGNANT EPIDEMIC, PUTRID, OR TYPHUS FEVER commences either as simple fever, or as common catarrhal fever; but this soon goes on to produce great prostration of strength, together with fetid breath, and discharge from the nostrils, and entire loss of appetite. Its course is much more rapid than in man. A congestive state of the vessels comes on, and they rapidly give way, by which life is soon destroyed. It is contagious, and few horses seized with it recover; indeed, its nature is such that most proprietors determine to destroy the infected animal, in order to prevent its spreading. See GLANDERS and INFLUENZA.

TREATMENT.—This should be stimulating and strengthening. Either (H) or (K), p. 388, will be found serviceable. And if the bowels become relaxed, a little powdered oak-galls (see TANNIN, p. 390), chalk, or opium, may be added, with half a drachm of carbonate of ammonia, three times a day.

Fever in the Feet will be found under LAMINITIS; and so of other local complaints to which the term is improperly applied.

§ II. INFLAMMATION.

Inflammation may be defined as a disorder of the capillary blood vessels, that being its most visible symptom; this, however, goes no further than enabling us to recognize its presence by the heat, distension, redness, and pain which are so called. The blood passing through the capillaries, gives forth an abnormal amount of caloric, hence the part is hot; the increased quantity of fluid distends them, hence the swelling; and from pressure on the nerves the tenderness; lastly, to the red globules of the blood, which, in health and its accompanying contractile power, are not admitted to the smaller vessels, but now enter them, the redness is ascribed. Although in the horse, his thick skin and hairy covering prevent the last sign from being so perceptible, it is nevertheless always present. The pain is the more acute in proportion as the part is supplied with nervous fibres: *e.g.* the brain, eye, internal ear, &c.

Inflammation is divided into diffused and local, external and internal. The first class,—diffused inflammation,—we shall pass over. It is, in fact, general fever, indicated by an excessive irritability, carrying the constitutional disturbance of a severe local inflammation to the brain, and thence

pervading the system. It therefore comes under consideration of diseases of the brain, nervous system, and heart, or circulation. *Nil est in corpore vivente planè sincerum:* "Nothing in the living body," said Galen, "is ruled by invariable laws;" in other words, can be subjected to the same exact calculation as an inanimate machine; and this is particularly true of inflammation. In inflammation of the eye, function is impaired or suspended, and the sight affected; in the ear, deafness or preternatural and painful sensibility to sound; when of the liver, the fæces are clay-coloured, indicating absence of bile; in the kidneys, inflammation impairs or stops the secretion of the urine; in the limbs, inflammation prevents motion or induces lameness.

Although inflammation appears simple in the symptoms, we have almost copied the quaint description of Celsus, two thousand years since, who gives us its concomitants rythmically, as—

"Rubor et tumor, cum calore et dolore."

"Redness and swelling, with heat and pain." Yet these four points have furnished matter, for endless hypotheses and disputations: a summary of which may be found, with an especial view to veterinary science, in Mr. Percevall's "Hippopathology (Vol. I, section 2, pp. 53—63).

Causes and various Results of Inflammation.—These subjects involve a vast proportion of the facts of veterinary and surgical knowledge, and deserve the deepest study and consideration.

Inflammation may arise from a variety of causes, some obvious, others veiled from our view, and only discoverable by reasoning, experience, and investigation. Their origin may be conveniently divided into—1. Accidental; 2. Spontaneous; 3. Sympathetic.

1. Accidental.—In this case the exciting cause is generally evident enough, and usually a foreign body, which produces mechanical or chemical irritation.

Mechanical injuries comprise wounds and contusions and abrasions of all sorts; sprains, dislocations, and fractures; undue exertion of any part or organ, or the body altogether, which, in hunter's phrase, is called being "overmarked."

Chemical excitants comprise all such substances as possess properties of an acrid, or corrosive, or poisonous nature; these are the mineral acids, the caustic alkalies, the metallic salts, and every caustic or irritant which we are in the habit of using in practice.

The state of the atmosphere, heat and cold, moisture and dryness, all in their turn become excitants of inflammation; their mischievous agency residing more in the vicissitudes from one state to its opposite, than in any obnoxiousness in our climate from their excess or continuance. Generally speaking, horses turned out from warm stables and exposed at once to the open air, even during the inclement seasons of the year, seldom "take cold," or experience any direct inflammation from the change; though the reverse of this vicissitude cannot be practised without such danger, and especially with young horses. Cold, without wet, even though alternated with heat, is not found to be nearly so prejudicial as when moisture is present too. Hence we are in the habit of viewing frosty weather as a season of health among horses; and hence it is that the spring and autumnal months are the most unhealthy, the weather then being moist and variable, and the wind generally in a cold quarter. Independently of these changes, there are conditions of the atmosphere not understood, which, when they prevail, are apt to produce an epizootic fever among horses, which has been called "influenza."

Animal Poisons, as well as natural ones, are found to be occasionally suspended in the atmosphere, and through its medium produce their effects. The air of a hot and ill-ventilated stable may prove an excitant of inflammation, not only from its high temperature, but also from the noxious effluviæ with which it has become impregnated by the dung, urine, and breath of many horses stabled together. These poisons may also be conveyed through the medium of the secretions. Rabies and other diseases produced by the bites of venomous creatures, are transmitted through the saliva. Farcy and glanders may be transferred by inoculation with the matter of either disease; and mange is probably conveyed in some peculiar exudation from the skin.

2. Spontaneous Inflammations are such as arise without any assignable cause. That there are many of that description, we have daily proofs. Were our knowledge of structure and function perfect, and had we a thorough comprehension of the relations subsisting between the body and the various agents and influences naturally or necessarily connected with it, we should probably be enabled, in every instance, to link disease with its cause, and thus frame a full and satisfactory system of nosology. But at present we are much in the dark concerning internal causes, and even lack knowledge about those that are external; and, in particular, in respect to atmospheric influence on the body.

3. Sympathetic Inflammations are such as owe their origin to disease or disorder already existing in the body. We know, in human pathology, how apt is one set of parts to take on disease through what we call "sympathy," at the time that another is suffering. In man, the digestive organs oftener than any other evince disorder; in the horse, the respiratory apparatus is the most common seat of disease: both which sets of organs, when disordered, may, in their turn, become the cause of disease in other parts of the body. The skin sympathizes readily both with the digestive and pulmonary organs; and so do the urinary apparatus and the brain. Sympathy is also evinced in a remarkable manner between fellow organs on opposite sides of the body: one eye is no sooner affected with ophthalmia, than we begin to entertain apprehensions for the opposite one.

The Progress and Termination of Inflammation may be

rapid or may be slow, depending on its violence, its nature, the part it is affecting, its exciting cause, the condition of the animal, and other collateral circumstances. In the horse it generally assumes the violent form, and runs its course rapidly; or, in technical language, is of the *acute* character. At times, however, it appears in altogether a mild, or sluggish, or indolent form, taking then the epithet of *chronic*.

It too often happens in veterinary practice, that, in consequence of but trifling illness or lameness being manifested by the animal, his master does not imagine it worth while to call in medical aid: the consequence is, that mischief is present, and by the time the "vet" is consulted, is out of the range and power of medicine altogether.

No sooner does inflammation become established, than we begin to look forward with more or less concern and apprehension to its consequences, effects, or *terminations*. John Hunter affixed the name of *terminations*, from the circumstance of the inflammatory action subsiding as soon as they had taken place. The terminations of inflammation are—1, *Resolution;* 2, *Suppuration;* 3, *Ulceration;* 4, *Deposition; and* 5, *Mortification*.

Resolution is the term medical men employ to signify that inflammation has declined and disappeared in a part without occasioning any breach or material derangement in its organisation. A horse is brought to us with what is vulgarly called "a sprain of the back sinews:" we examine the leg, and find it puffed or swollen at one particular part, which at the same time manifests heat and tenderness on pressure. We apply a bandage wet with refrigerant lotion round the leg, and, perhaps, at the same time bleed and purge. The swelling, pain, and heat gradually subside: in other words, inflammation is arrested by the timely employment of remedies, before it has effected any change of structure. The leg recovers its natural size or fineness, and then goes sound again. This constitutes *termination by resolution*. But another horse, we will suppose, in reaching his hay out of a high rack directly over his head, happens to have a hay-seed fall into his eye. Instantly the eye becomes closed, a flood of tears is discharged, and the animal twists his head about in every direction, to get rid of the annoyance and pain created by so irritative a body sticking in a part so highly sensitive. Some hours afterwards, the groom, not knowing what has occurred, or being unable to give relief, brings the horse to a veterinary surgeon, who, on raising and everting the upper eyelid, discovers the hay-seed sticking fast to the conjunctive membrane, which by this time has become as red as a piece of scarlet cloth from inflammation. However the hay-seed is removed, and by the following day the eye is seen to have recovered its natural colour and brightness. Here is another instance of termination by resolution. There is, however, an evident difference between this and the case of the sprained leg, inasmuch as in the one instance resolution was accomplished within the space of twenty-four hours, while in the other it required a week—perhaps a month—to bring it about.

Metastasis (Gr. *metastasis*, translation, moving from one place to another) implies the sudden shifting or translation of inflammation from one part of the body to another. This is very remarkably the case in *pneumonia*. When inflammation in its acute form suddenly declines and quits the lungs, we may almost to a certainty predict that it will attack the feet—in the groom's phrase, "fall into the feet." In like manner, we find it often suddenly leaving one eye to invade the other. There are also instances of metastasis between the internal organs of the body—between the alimentary canal and brain, the liver and lungs, the stomach, and kidneys, &c.

Suppuration denotes the production of *pus*, or matter, in the inflamed part. It is the mode of termination we in general naturally look forward to when inflammation, resisting all we may do, runs higher, or even continues longer than the circumstances of the case permit us to calculate on resolution; or where there is breach of surface or any sort of wound: suppuration in this latter case becoming the natural and almost inevitable consequence. This is fully instanced in the case of a horse having that tumour under the jaw which we call *strangles*. We apply our remedies; but the swelling, instead of diminishing, increases in size, grows daily more prominent and tense, and tender on pressure, and then gradually changes to a soft, impressible, fluctuating tumour. At this stage it contains pus; which, unless vent be given to it, will augment and accumulate in such quantity as to distend the tumour and burst it, leaving behind a vacuity or cavity in which the matter has been lodged. All unnaturally exposed parts—wounds and abrasions of all descriptions—readily run into suppuration: to them pus seems to form a sort of natural shield from injury, and, at the same time, a salve highly conducive to their healing operations. Mucous membranes—the linings of the air-passages and alimentary canal—promptly under disease assume the suppurative action. In common catarrh we see pus mingled with mucus ejected from the nostrils; and in inflammation of the bowels we may occasionally detect it coating the dung-balls.

In *abscess*, there needs, however, preparation, and seemingly a higher degree of elaboration, before suppuration becomes established; although it is apparently, from the very first, the end for which the local inflammation was set up. The cells of the cellular membrane in the beginning become filled and blocked up with solid matter, identical in appearance and nature with the coagulable lymph of the blood; in the very centre of which solid mass, or at the point where the inflammation runs highest, is deposited at first a drop of purulent matter. This drop gradually augments, the surrounding solid substance being as gradually absorbed, until, at length, a cavity containing a collection of pus is formed; in other words, an *abscess* makes its appearance.

Ulceration may be defined to be a loss of substance apparent externally, or a consumption of substance internally, occasioned by the removal of parts by the absorbents. It

is an effect of inflammation. External ulcerations are not common in horses, although we have instances of them. We see them upon the membrane of the nose in glanders; and upon the skin in farcy. One of the best examples we have of ulcerative inflammation is afforded by the skin of the heels; a part which, in consequence of its remoteness, from the source of circulation, and from the vicissitudes of heat and cold, moisture and dryness, to which, in the winter season in particular, it is exposed, becomes very subject to inflammation, and in that state very prone to run into ulceration: hence the origin of the foul troublesome ulcers we so often meet with in the heels in wet and cold weather. Some parts are more disposed to ulceration than others; a circumstance ascribable, apparently, to their relative degrees of vascularity. The skin seems to stand first on this list; the mucous membranes certainly rank next; then come cellular membrane and bones; and, lastly, cartilaginous, ligamentous, and tendinous textures. Though comparatively but rare diseases, yet, when they do occur, *poll-evil* and *fistula* too often afford us dreadful examples of the ravages ulceration may make among bones and cartilages. Spavin likewise, and also disease of the navicular joint, furnish us with specimens of ulcerative action in the same structures.

Granulation is the process by which cavities occasioned by ulceration or by external injury are filled up again with fleshy matter, out of which parts similar to those lost are reproduced: it being commonly flesh that is wanted to fill the wound. As soon as the ulcerative process becomes arrested, and the parts remaining recover their healthy action, we perceive springing up from the innermost recesses of the chasm little red pointed eminences, which, from their grain-like shape, have received the name of *granulations*. In the first instance, they consist purely of coagulable lymph; soon after, blood-vessels, and nerves, and absorbents shoot into them, and they then obtain the power of secreting purulent matter, which becomes very serviceable in defending them from external irritation of any sort. When they grow beyond the level of the skin, which they are very apt in their exuberance to do, they constitute what is called proud flesh, and require caustic applications to eat them away.

Cicatrization is the last stage of the healing process—the skinning over of the wound or ulcer. As soon as the work of flesh-making, or granulation is completed, and the chasm is become uniformly filled, the raw surface acquires a level, smoothness, and dryness—changes which, on close examination, we shall find to arise from a filmy covering of glutinous matter deposited upon the granulations, and the consequent cessation of the secretion of pus. Skin is one of those parts it is in the power of the constitution to reproduce. The surrounding old skin contracts over the sore, so as to leave as little as possible of the surface remaining to be covered with new skin, which contraction it is that occasions the puckered appearance we may observe the scar or *cicatrix* of all old sores to have: the middle of the scar, the part made up of the new skin, being commonly bare, or at least possessing but a few scattered hairs, and those mostly grey or white ones. Hair is speedily regenerated so long as the skin continues whole, and the bulbs that produce it (which are lodged within the substance of the skin) consequently remain uninjured. Indeed, so long as this is the case, hairs will be reproduced even though they be plucked out by the roots. Where new skin, however, exists,—or where the injury to the old is such as to destroy or disorganize the pilous bulbs,—no hair at all will grow over the place, or, at least, not for a considerable time; for I believe, in the course of years, even the bulbs themselves are regenerated, though, if we may reason from their produce, but in an imperfect manner. When we perceive weak, scattered grey hairs growing over the spot as soon as the part is healed up, we may conclude that the bulbs have not altogether been deprived of their organization. Attention to these circumstances will enable us to answer a question so frequently put to us in cases of broken knees:—"Will there be any scar left?"

4. *Deposition* includes adhesion, induration, scirrhus, hepatization, ossification, softening, and changes of structure.

Adhesion is the mode of healing which the constitution, in case of wounds, adopts in preference to the tedious one we have just described. It is a direct union of the divided surfaces. Whenever a clean-cut wound is made through the skin (as in operations with the knife), and the sides of the wound are shortly afterwards brought together and maintained in apposition by plaister, suture, bandage, or other artificial means, the result, in ordinary circumstances, is what John Hunter called union by the *first* intention, in contradistinction to the process of granulation, which he designated union by the *second* intention. The blood answers an important purpose in the case of the fresh wound; for it keeps the divided parts glued together until such time as the blood-vessels ooze forth the real and permanent agglutinating medium, which is coagulable lymph—the same material as is thrown out in the form of granulations, and which forms the swelling in strangles and other tumours by being effused into the interstices of the cellular membrane. The process of union by adhesion is not completed until such time as this intermediate uniting substance is organized—is furnished with blood-vessels and nerves; an end which is brought about by the vessels and nerves belonging to the parts divided shooting through the uniting material, and joining with one another. From the surface of a fresh wound, not more than four hours are required to produce the coagulable lymph; and, in a few hours after, it will be found to possess vessels capable of receiving injection.

The granulating process in horses is carried on with a rapidity and healthiness hardly known in human surgery.

Induration, Scirrhus, Hepatization, Ossification. These surgical terms express changes in the structure and organi-

zation of parts, one of which we may look for whenever inflammation is of long continuance, and so low in character as not to rise into suppuration. On some occasions, inflammation of an acute kind will run to a certain height, and then, abating gradually, will leave the part swelled and hard, with diminished heat and sensibility; in which condition it may continue for some considerable time, and then, by a process of absorption, recover its natural state. Glands are especially subject, under long-continued or often recurring inflammation, to what is called *scirrhus*, which means consolidation, induration, and conversion of cellular and secreting textures. *Hepatization* denotes something of the same sort of change, only that the solidified and converted part has a liver-like aspect: oftenest found in pulmonary cases. In regard to bony formations, the horse is especially prone to them. He possesses hardly any structure but what, at one time or another, has been found partially or entirely changed into bone; and where bone itself, or even cartilage, is concerned in the inflammation, we look for it as a sort of natural consequence: hence the production of splints, spavins, ringbones, ossified cartilages, stiff joints, &c.

Softening denotes a change the reverse of induration, which has been occasionally observed to take place in certain parts that have laboured under inflammation. In the horse, nervous or medullary substance, the glands and the liver, frequently exhibit softening, in which the finger may be pushed into the substance with the same ease that it would penetrate a rotten apple or pear. The farriers have caught at this similarity. Nothing is more common for them to find in the course of their *post-mortem* examinations, that the liver was as "rotten as a pear."

Mortification expresses the death of the inflamed part. It is comparatively rare in horses. The inflammation that gives rise to it is of the acutest kind; we meet with it the oftenest in the lungs; though now and then mortification occurs in the bowels. Wounds, also, of a violent nature, in horses with bad constitutions, now and then turn to mortification. A part in which inflammation is running to this fatal issue, turns from red to purple, and from purple to black in hue, losing at the same time its heat, as well as its manifestation of sensibility and power of motion. We may know that circulation and vital action have ceased in it by its deathy coldness; its blackness; its soft and flabby feel; its crackling sensation under the finger, produced by the air extricated within it; and, finally, by its putrid odour. Should it be an internal organ that is affected, the signs of mortification having taken place in general observed are, a sudden and almost total cessation of the symptoms of pain, so that, to a common observer, the animal would appear at first to have experienced a change for the better.

We have spoken of the dangers of inflammation, yet, under certain circumstances, inflammation is not only to be endured, but even encouraged. Were it not for inflammation and its concomitant effects, no wound could be healed, no bone united, no breach repaired. A puncture into a joint, a lacerated intestine, is alike repaired by inflammation—the same process by which the joint is anchylosed and the bowel mortified. Inflammation works good or harm, depending on the nature and circumstances of the case—on its degree, its duration, the cause that gave rise to it, the part affected, its character and tendency, &c., &c.; and the exercise of a sound discriminative judgment in these several particulars it is that constitutes a scientific and experienced practitioner. We often excite inflammation on the principle of counter-irritation, to remove inflammation from some internal and more important part: blisters, rowels, setons, and artificial irritations of all kinds are practised in cases of sickness with this view; and the practice is found not only highly beneficial in relieving the patient, but also proves a safe one, inasmuch as the fresh inflammation, artificially excited, commonly exists in a harmless and manageable form, although we have no reason for believing that it at all differs in its nature from that which it is designed to counteract. We frequently, too, excite inflammation by similar means, with a view altogether different; namely, to produce absorption of some deposition, such as spavins, windgalls, curbs, &c. Now and then we use means to stir up a fresh and more active inflammation in parts in which it already exists, but in too sluggish or unhealthy a form to accomplish the desired end. We act on this principle when we pour boiling dressings, or inject caustics, or introduce a red-hot iron into fistulas, poll-evil, quittor, or sinuses.

Treatment.—In the treatment of inflammation obtain the clearest insight possible into its seat, its kind, its causes, and its present and probable effects, both as regards the part immediately affected and the constitution at large.

The degree and kind of inflammation must be taken into account in the treatment. The more active or acute the one, the more prompt and bold should be the other; though, where inflammation is of what is called a specific kind, experience teaches us that we do but little good in our treatment unless we can meet the case with specific remedies, such as are found peculiarly adapted for such anomalies. In specific ophthalmia, in mange, in farcy, and in glanders, we bleed and purge with but little comparative benefit. To be of real service to our patient, we must have recourse to something in the shape of a specific remedy.

The first thing to be done in the treatment of inflammation, is, to remove the cause, supposing it to be still operating. In some cases, such as that of a hay-seed in a horse's eye, this is all that is required to be done. The cause being removed, the inflammation subsides, and ceases altogether. Should a horse pick up a nail in his foot, and that be found penetrating the hoof, and simply wounding the quick, its speedy extraction, with a little subsequent attention to the cleanliness of the wound, will be all that is commonly necessary to effect a cure. On the other hand, when, from the depth of the puncture, or from the irritability of the animal's constitution at the time, violent inflammation may ensue, the case will call for every attention we can give it.

When the eye is inflamed, the lids and the haw are drawn over its surface to shield it from the light; which, though under ordinary circumstances a natural and healthy stimulus, now that the sensibility of the organ is augmented, becomes an annoyance to it: this teaches us to take care in cases of ophthalmia to exclude the light.

It is important to put the diseased part, as far as lies in our power, into a state of repose. And in no way can we better accomplish this than by placing the animal in "a loose box," with his head at liberty, in a pure and cool atmosphere, so as to lie down upon a comfortable bed whenever he feels disposed, and place himself in any posture that may afford him most ease.

Inflamed muscles, and tendons, and joints, should always be placed in a state of repose, if possible, and at the same time in that relaxed condition which leaves every fibre most at ease. We may commonly do much towards the attainment of this end in the limbs, by raising or lowering the heel or toe of the foot, as the case may require. Should the head or any part of the neck be the seat of inflammation, it may be found beneficial to keep the head elevated and confined: much mischief is done by suffering the animal to hang it down upon the ground. The principle by which we are to be guided in this respect is, to endeavour to maintain the part inflamed in that position which is most favourable to the return of blood from it back to the heart.

The next step in a general way, is attention to clothing. There are but few diseases in which it is not desirable to keep the surface of the body warm, for which purpose we employ woollen clothing. The quantity or thickness of the clothes must of course be regulated by the season of the year, by the previous habits of the animal, as well as by reference to the disease under which he may at the time be labouring. In hot weather, clothing is commonly required rather for the purpose of protecting the animal from the annoyance of flies than for warmth, and, consequently, linen clothing is mostly to be preferred. Where warmth becomes the object, rugs or blankets are preferable to cloths; when both are used, the former should be placed next the skin. In no case should their quantity be such as to become burthensome.

The common food of a stabled horse consists of oats and hay. During the existence of inflammation or fever in the system, discontinue the oats, and substitute bran, in the form of mashes, which are laxative in their tendency, and good, as you cannot use purgatives. On this last account, green meat (whenever it can be procured) is to be preferred. Vetches, lucerne, green clover, and also the various esculent roots,—carrots, turnips, potatoes, &c.,—are all suited for the sick stable, because they are more grateful to the palate of the invalid than his ordinary stable diet. During the height of inflammatory disorder, however, food is not only not required, but would by its presence in the stomach be apt rather to irritate than benefit; and as the disorder declines, the appetite commonly returns.

It is of great importance, particularly in cases of inflammation of the lungs, that the air of the box of the sick horse be cool, free from impurities, and frequently renewed.

The *medical treatment of inflammation* consists in the employment of constitutional and local means. The constitutional are, bleeding and purging, with the assistance of sedatives and diuretics and alteratives. The local means are, bleeding, cold and warm applications, and counter-irritation.

Bleeding.—When we consider the increased action maintained by the blood flowing with greater rapidity and in greater quantity through the vessels of the inflamed part, it seems that abstraction of blood must be one of the most direct means of subduing inflammation. In veterinary practice, in many cases, it is the only remedy we have it in our power to employ. In the acute stages of inflammation of the lungs, and even other organs of importance, neither internal nor external medicaments will take effect until we have succeeded in abating the inflammatory action by bleeding; and in cases where we cannot purge, we commonly effect nothing without the lancet. Although, as we draw the blood out of a part, we reduce the inflammation in it, yet we do not by this *cure* the disorder, for no sooner are the vessels emptied than they are filled again; in fact, time must be allowed for the inflammatory action to subside. Under the head BLEEDING, will be found the *modus operandi*, instruments used, quantity, and effects of abstraction of blood.

Although the abstraction of blood rapidly from a large orifice is a *check* upon inflammation, it has some bad consequences, which in modern practice have been fully proven. The olden practitioner was so convinced in this respect, that, as Mr. Mayhew says, "he drew blood with the same complacency as he would draw beer from a barrel, and quite as often, even supposing him to be very fond of that exhilarating beverage. In the present day, however, either the character of disease has changed, or it is perceived the practice alluded to was founded upon a mistaken basis. Horses could not now bear the loss of half that quantity of vital fluid which is, on good authority, believed to have been formerly taken from them. Many an animal then, having influenza, has been bled into hydrothorax. Many an animal has been so reduced by repeated bleedings, that he has ultimately sunk, not from the disease, but in consequence of the measures pursued for its reduction. Bleeding has therefore lost its repute as the specific means of cure; for any disturbance of the circulation is easier and more safely equalized by the administration of a stimulant, than only apparently tranquillized by the abstraction of a fluid of which the animal rarely has a drop too much.

Purgatives, in the human subject, form the next active agents in combating arterial excitement; but there are some peculiarities in the structure and functions of the horse, which render these medicines less eligible than in man. To produce active purging in the horse, causes great constitu-

tional disturbance, and lowers the powers of the constitution in a remarkable manner, to say nothing of the time required for their action.

Sedatives and Nauseants are often valuable in inflammation; as it is a law in animal economy, that whatever excites the sense of sickness, lowers the pulse in force and frequency, and so diminishes the flow of blood to the inflamed parts. Of these, aloes is the first, both as a purgative, a sedative, and a nauseant. Dose, half a drachm to a drachm every four, eight, or twelve hours. Hellebore root is another nauseant (see list of horse-medicines), especially when, as in diseases of the lungs, aloes are dangerous. In doses of a scruple to half a drachm every four or six hours, it lowers the pulse and inflammation; but is a poison in large doses, and therefore requires close watching. If saliva oozes from the mouth, and the animal hangs his head down, or turns outwards the upper lip, discontinue the hellebore immediately. It should be given only after bleeding has been tried. Of *sedatives*, digitalis is the favourite, in doses of half a drachm to a drachm twice a day. This also is a dangerous poison, producing stupor, cold extremities, clammy mouth, vertigo, convulsions, and death. It irritates the bowels less than hellebore. Percivall gives the following formula:—

Powdered white hellebore root, or powdered digitalis	½ drachm.
Liquorice powder	½ ounce.
Syrup to make a ball.	

Diuretics (or "urine-balls," as the stablemen call them,) are more active in their operation on the kidneys of the horse than the same class of medicines are with man, who depends more on the excretions by the skin. The physician prescribes diaphoretics to smooth-skinned man; diuretics have the veterinarian's preference. Sweating a horse, except by exercise,—and that will not do in inflammation,—is next to impossible. Mow-burnt hay and fermented food act on the kidneys of the horse. Nitre is the leading diuretic; and for its combinations, and SEDATIVES, see those heads in LIST OF HORSE-MEDICINES, *ante*.

Alteratives, too, as antimony and mercury, are used in combating inflammation, as well as cold and warm applications. Cold water, or salt and water, or Goulard's lotion, are commonly used. Evaporating lotions have our preference. Vinegar and water, or spirits and water, answer the purpose well. In cases of much swelling, the following evaporating lotion can be recommended:—

Sal ammoniac	1 ounce.
Vinegar	4 ounces.
Spirits of wine	4 ounces.
Water	1 pint.

Mix the sal ammoniac and vinegar, then add the water and spirits.

Or,

Liquor of acetate of ammonia and spirits of wine, each	4 ounces.
Water	1 pint.

Paradoxical as it may appear, *warm* applications are as serviceable in many cases of inflammation as *cold* ones. When *heat*, however, is applied, it must always be accompanied by *moisture*.

Blisters (see list of medicines), with rowels, and setons, and their appropriate instruments, will be found in their proper place under OPERATIONS.

§ III. INFLUENZA, EPIZOOTIC, OR CATARRHAL FEVER.

This formidable disease has of late years extensively prevailed throughout every part of the kingdom. Malignant epizootics are on record which so strongly resemble its symptoms and course, though imperfectly recorded, that there is no reason to consider it a new disease. It is as well to be candid in acknowledging that we are ignorant of its immediate cause, though it is easy to talk learnedly of "atmospheric influences" of the real constituents or malefic action of which we know nothing; investigation having as yet shown no peculiar poison present in the air at the period or place of such visitations. Influenza spares neither young nor old, strong nor feeble, and neither regards season of the year, nor situation, dry or moist, elevated or low. Sometimes it is mild in form and action, resembling much a common cold, at others accompanied with severe internal inflammation, and destroying like an angel of death passing through animal creation. The term *influenza* is that adopted by almost universal consent, and expresses its tendency to spread. In 1836, horses in all parts of the kingdom were scourged with this epizootic disorder. Again, in the autumn of 1840, it made its appearance in various places. Olden farriers called influenza by the unmeaning name of "distemper," which may well be discarded and thrown "to the dogs." Mr. W. C. Spooner, of Southampton, in a paper contributed to "The Veterinarian," has given a clear account of the disease, of which we shall here avail ourselves. He says, in a paper read before the Veterinary Medical Association of London:—

"The influenza made its appearance during the month of September, 1846, and has continued up to the present time. My first cases were few and isolated, but they gradually became more numerous and more cumulative. The symptoms were very similar to those of the epizootic of 1836, at any rate sufficiently so to justify me in denominating it the same disease.

"*Symptoms.*—The first symptom that awakened attention was the sudden failure of the appetite, which was either total or partial; the horse, perhaps, might have appeared perfectly well in the morning, and at noon refused his food. The mouth hot, the pulse quickened, varying, however, from 40 to 80, being sometimes full and strong, but more frequently soft and weak. There was, generally, a somewhat dull appearance of the animal at first, although nothing to what afterwards supervened; the coat was often staring, and, when so, the attack usually became more

severe. This symptom, however, was far from being universal. The extremities were rarely cold. In the course of six or twelve hours, the symptoms became more aggravated, the pulse increased in frequency, and the appetite more diminished, and probably the legs and eyelids considerably swollen. In some cases the respiration became quickened, and in others there was cough and sore throat; but in the majority of my patients, there was no bronchial affection whatever.

"In a few instances, the disease quickly reached its acme, but, generally, the symptoms increased in severity for two or three days, when, supposing judicious treatment had been employed, they gradually declined, and at length totally disappeared, the animal slowly regaining his former health and spirits.

"The bowels, generally speaking, were not apparently much deranged, but their mucous coat was particularly susceptible to the action of aperient medicines; and the fæces were frequently enveloped in thin slimy mucus, and often softer than in a state of health.

"In some cases the affection of the eyes was so violent as to occasion temporary blindness; and in others pneumonia was present, but more frequently severe bronchitis. In many patients, the œdematous swelling of the legs was enormous, and continued obstinate when the other symptoms had abated; but, commonly, in proportion as the legs and eyes were much affected, the internal viscera were free from disease, and *vice versa*. This rule, however, was by no means universal, for, in several patients, severe cephalic and thoracic symptoms were present in the same subject and at the same time

"*Treatment.*—When the pulse was full and strong, I abstracted blood, and with the best effect. The blood was slow in coagulating, and invariably presented a buffy coat. I took great care, however, not to abstract too large a quantity; and could produce the desired influence by half the quantity which, in ordinary inflammatory affections, it would be necessary to take away. The amount of blood withdrawn was always determined by its effect on the pulse, taking care, as soon as its character was materially altered—that is, softer and less perceptible—to pin up the orifice. This alteration was sometimes produced by the loss of only 4lbs. of blood, oftener by 6lbs., occasionally by 8lbs., and in a few instances by 10lbs. In two or three cases where there appeared to be severe internal inflammation, I repeated the blood-letting on the following day, and in one instance on the same day; but, as a general rule, even in cases where the pulse had on the following day regained its strength and fulness, I abstained from a second bleeding, trusting to medicine and the progress of the disease to soften the pulse, which I found to take place commonly on the second or third day.

"Local venesection was more frequently resorted to than general bleeding; indeed, whenever the eyes were much inflamed, or the lids swollen, Mr. Turner scarified the latter with a lancet, and opened the anglar veins with the best results; the local inflammation generally subsiding in the course of twelve or twenty-four hours, whether the patient had been bled generally before or not.

"The treatment in the way of medicines consisted in administering the following:—

Croton oil	5 drops.
Nitre	4 to 6 drachms.
Tartarised antimony . . .	1 drachm.
Spirit of nitrous ether . . .	4 to 8 drachms.
Spirit of Mindererus . . .	2 to 4 ounces.
Warm water, sufficient to form a draught.	

"Sometimes 4 drachms of bi-tartrate of potash were added to the above; and when the head appeared much affected, 1 drachm of camphor. This draught was administered generally once, but sometimes twice a day, the croton oil being omitted after the first dose. After the first day, in by far the greater number of cases, 2 drachms of gentian were added to the draught; and after the second or third day a ball was substituted for the draught, consisting of:—

Nitre	3 drachms.
Tartarised antimony . . .	1 drachm.
Gentian	2 drachms.
Pimento	1 drachm.

"In one case the above draught produced profuse perspiration immediately after and each time it was administered. Although this effect may be principally ascribed to the idiosyncrasy of the animal, yet it proves the diaphoretic properties of the medicine, though this may not generally be distinctly perceptible.

"*Counter irritation.*—In by far the greater number of cases there was no inflammation of the air-passages; but whenever it was denoted, I blistered the throat, the course of the windpipe, and the breast; or inserted setons or rowels, as the particular case appeared to demand.

"Such is a brief account of the treatment found successful, not only in conquering the disease, but in restoring the health and strength in a short space of time. Although the majority of cases were not dangerous, yet many of them were so; and it is notoriously the fact, that a great number of horses have died from the disease in various places. Indeed, in the establishment to which I have referred, three horses died from it under the care of another person, not a member of the College; and in several instances where horses have been treated by the owners, although the case was not dangerous, they recovered but slowly, and with great loss of condition."

We have had occasional recurrences of this disease, though not to the same extent as before, and have found the best results attend the administration of calomel with tartarised antimony. Either a drachm each should be given once a day, or one-half this dose both morning and night, continuing for several days, adding occasionally Febrifuge and Diuretic medicines. (See LIST OF HORSE-MEDICINES in Chapter I.)

Mr. Spooner, found a greater disposition to œdematous swelling of the extremities and sheath in the later epizootics

than in that of 1836; and so obstinate, occasionally, were these enlargements, that they were reduced with much difficulty, and only after the frequent and continued employment of diuretics, and the insertion of setons in the thighs. There likewise appeared to be throughout the attack a capability of taking large and repeated doses of diuretic agents without exciting the kidneys in any great degree. At least double the quantity could be given, and with no greater action than half the quantity in a state of health.

In an addendum to this paper, Mr. Spooner discusses the question of blood-letting and purgatives in influenza as follows. Of bleeding he says:—"I take it for granted that the chief art in treating the disease is to know when to bleed, and when to abstain; being guided in this matter chiefly by the state of the pulse. Where, however, I have not bled generally, I have witnessed the very best effects from local bleeding. It has, in a few hours, relieved the tumefaction of the eyelids, and the heaviness of the head, to a great extent. One thing is most clear,—we can produce a very great effect on the system by very moderate bleeding."

To the question, Is aperient medicine judicious? he replies:—"This, too, is an old disputed point. I am in favour of a very moderate dose at the commencement, but against its repetition. I have most commonly administered five drops of croton oil, which has generally produced a sufficiently laxative effect. The addition of a few drops more I have known produce purgation. I am inclined to believe that a very moderate action on the intestines will hasten the recovery of the patient. Additional experience has so far modified this opinion, that in ordinary cases the gradual administration of a few drachms of the proto-chloride of mercury in small doses will have a sufficiently laxative effect on the system."

Cases of superpurgation, arising from the administration of full doses of physic in this disease by empirical practitioners, often occur.

We would recommend a drink compounded of sulphuric ether, laudanum, and cold water, then wait an hour and watch symptoms. Repeat the drink at night; next day add to it a scruple of calomel sprinkled on the tongue, and wash it down with the drink. Persevere with this daily till the pulse is quicker and so soft as scarcely to be felt. Then leave off medicine and give a quart of the best stout night and morning, carrots chopped fine, fresh grass, and scalded oats. These will be found the best tonics when you have turned the corner upon the influenza.

§ IV. GLANDERS AND FARCY.

Volumes upon this horrible and fatal malady have been written. Its bibliography alone forms the subject-matter of 28 pages of Mr. Percivall's third volume (pp. 252—280); whereto the studious and curious reader is referred.

Glanders consists in a discharge, from one or both nostrils, of matter which by transfer or inoculation will produce the disease in another animal (either of the equine or human species), and which discharge is, sooner or later, accompanied by injection of the vessels and chancrous ulceration of the Schneiderian membrane, by tumefaction of the submaxillary lymphatic glands, and by farcy. There is every reason to believe that glanders and farcy are merely modifications of the same disease; or rather that farcy, in many cases, supervenes on glanders. The seat of glanders is in the *pituitary* or *Schneiderian membrane*—that membrane with which the respired air comes in contact, and which lines the nose, the sinuses of the head, the windpipe, and its branches. Snape was the first who declared Glanders and Farcy to be the same disease affecting different parts. He calls glanders, in his quaint way, "Farcy in the head." The proofs of identity in nature between glanders and farcy rest upon—1st, their reciprocity of production through inoculation; 2ndly, their traceableness to the same causes; 3rdly, their termination one in the other, which almost invariably takes place, when they are suffered to run their natural course previous to death; 4thly, their frequent simultaneous appearance in the same subject, together with the similitude of the phenomena and course they exhibit. A clever paper written in 1859, by M. Gerard, "*Sur l'Identité de la Morve et du Farcin*," in the "*Journal de Médécine Veterinaire*," seems to us to set the question beyond cavil as to the identity of these diseases of the lymphatics.

The diseases with which glanders is liable to be confounded, or for which it may be mistaken, are catarrh, nasal gleet, and strangles.

The signs of true glanders are with singular accuracy described by old Solleysell in his "Compleat Horseman" (1679). No better diagnosis has been made since, with all our science. He says:—"The signs by which the disease may be known, are when a horse, already too old to be troubled with strangles, without a cough, voids matter by the nose, and has a kernel sticking to the bone; and besides, in glanders, the matter usually flows from one nostril, whereas in a cold it runs almost always out of both."—"Some cast the matter that is voided by the nostrils into water, and if it swim on the top, they conclude the horse to be free of this distemper; but if it sink to the bottom, it is a sign of glanders: the principal use of this experiment being to distinguish the pus."—"But you must not depend on the certainty of this sign; for if the matter stick to the nostrils like glue, it is a bad sign, and you may conclude the disease to be the glanders, though the matter do swim on the top."—"When either the breath or matter that comes out of the nostrils stinks, the disease is almost always incurable."—"I have seen horses troubled with this distemper without kernels, or, if there were any, they were little and movable; and the only sign by which we could discover it to be glanders was by the glueyness of the matter."—*Hope's Translation.*

Solleysell is well confirmed by a clever article by Mr. J. Turner on what he calls *Insidious Glanders*, in Vol. III. of

"The Veterinarian," page 694, in which he adduces instances where a horse, being glandered, propagated glanders without himself exhibiting anything more than a constant thin gleety discharge, without offensive smell; having no visible ulceration of the nasal membranes, no swelled legs, or even anything resembling farcy; yet the chronic discharge was glanderous, and capable of propagating the disease in all its virulence in other horses.

The forms of glanders, in modern books, are called *acute*, *sub-acute*, and *chronic*.

Acute glanders results from inoculation or contagion of the virus. This runs its deadly course, and includes what the French veterinarians have termed typhoid or putrid glanders. The course of acute glanders cannot be better illustrated than by the following note from the "Cases" of Mr. John Field.

"*May 3rd.*—An ass was inoculated in both upper eyelids, both sides of the loins, the off side of the withers, and on the inside of the ala of each nostril, with the discharge from the off nostril of a grey gelding (purchased by Sir P—— D—— three years previous), which was affected with this same glanderous discharge at the time of purchase, and had so continued ever since.

"*7th.*—All the wounds suppurating, except those on the nostrils, which appear to be healing.

"*9th.*—Absorbents inflamed from the ulcers on eyelids and back.

"*14th.*—Absorbents much thickened, having diffused inflammation about them, and at different parts of their course circumscribed tumours suppurating; the inflammation from the ulcers of the loins proceeding to the groin, that from the off side of the withers to the breast, and, on the eyelids, producing small fluctuating tumours on the jugular vein, just below the ear: the alæ nasi were beginning to swell, and there was a snuffling in breathing, &c.

"*19th.*—The alæ nasi much thickened, copious discharge from nostrils, and the swelling increasing.

"*22nd.*—Respiration greatly embarrassed. He died on the following day.

"*Examination.*—Much frothy spume in trachea—general infiltration of lungs, which were inflamed—considerable consolidation of the anterior and inferior portion of right lobe—warty exulceration of Schneiderian membrane of both nostrils to a greater extent than I had ever witnessed before."

Mr. Ernes, of Bermondsey, relates a case in the "Veterinarian," for 1842, of typhoid glanders, of which the autopsy was as follows:—"The effusion into the swollen parts of the membrane was of a *black colour*, resembling oil paint, sticky, and of considerable consistence. The membrane of the nose was one mass of gangrene, and in many parts covered with the same black substance that was found in the swellings. The lungs were a complete mass of ulceration, and of the same black hue. The abdominal viscera were all of a dark colour. The mucous membrane was healthy throughout, accounting for the absence of diarrhœa, which is a frequent complication of this disease." The French term this "*morve charbonneuse.*"

In 1843, acute glanders prevailed as an epizootic disease in and around Paris to a terrible extent.

Epidemic glanders is merely acute glanders in its spreading form.

Sub-acute glanders is the variety of most ordinary occurrence. "It commences with the usual signs—slight or otherwise—of indisposition; and the disease may, though the circumstance is a rare one, in the first instance assume the acute type. Instead, however, of continuing its rapid course, even after ulceration has displayed itself, both the inflammatory and ulcerative processes subside down to a state almost of total inactivity. The Schneiderian membrane grows pallid, acquires a leaden hue, and the ulcerations upon it lose their prominent red-streaked borders, and exchange their rugged bleeding bases for comparatively smooth and livid bottoms, throwing up a glass-like reflection from the lymphy matters covering them. It is evident, the moment the nose is inspected, that the disease exists in the sub-acute form; how long it may continue so is very uncertain. It will not visibly impair the health, nor affect the appetite or spirits, so long as it does so remain. The moment, however, anything occurs to derange the health, or even after a certain time—after a month or two, or three—without any apparent superadded cause, we may expect the acute disease to supervene, and then the destruction of the patient's health commences, and is speedily consummated in death. Though there be an evident cessation of the external disease, we are by no means certain that the inward organs—the lungs in particular—are not all the while forming a *fomes* for its spreading. In most cases it is probable this does happen, inasmuch as, whenever death has followed from the supervention of the acute disease, we find those organs in a state of tuberculous disorganisation. It is this apparent cessation of the glanders outwardly, and the interval during which the disease continues in abeyance, that has afforded opportunities to experimentalists and hunters after a cure to make trial of their various nostrums. And it is the topical influence some of their remedies have had upon the secretion—and even upon the ulceration of the nasal membrane—that has led so many persons to delude themselves at various times, that they have discovered the true antidote. No sooner, however, has the fire which has been smouldering within the lungs or head broken out, and shown itself outwardly in the form of acute glanders and farcy, than the bubble of a cure has burst, and the boasted remedy shared the fate of those that have gone before it.

Chronic Glanders consists simply in a discharge from the nose, oftener from one nostril* than from both, accompanied

* Dupuy says, of eight cases of glanders, only *one* was affected in the *right* nostril. Percivall says, of 58 cases recorded from observation, 21 were in the left nasal cavity, 19 in the right, and 18 in both nostrils; which shows no decided majority, but nearly an average.

by enlargement of the correspondent submaxillary lymphatic gland or glands. Symptomatically, it differs from the acute and sub-acute diseases in the absence of anything like inflammation or vascular injection, or chancre, or in fact of any perceptible change whatever in the aspect of the Schneiderian membrane denoting morbid activity: all is as usual in the appearance of parts, and in the animal's health and spirits and appetite; nothing whatever seems amiss, save the flux from the nose and the submaxillary tumefaction. And in this state, as we have recently observed, the horse may continue for years. Pathologically, also, it differs from the acute and sub-acute disorders in having for its especial seat the membrane lining the sinuses of the head. It is possible a chronic discharge may proceed from the nasal membrane: however, it rarely does so for any length of time without some discoverable change in the aspect of that membrane. Although it is quite possible such a case might at first be supposed to be chronic glanders, a little time would suffice to show whether it really were so or not. If it be chronic glanders, having for its seat the nasal as well as the frontal membrane, or to the exclusion even of the latter, sooner or later we shall detect the miliary ulceration, the only ulceration present in this form of disease, and therefore truly characteristic.

Chronic glanders appears sometimes as the sequel of other disease in the air-passages and lungs. It mostly attacks its victim in a mild and masked form. The horse is thought to have caught cold; and no suspicion, perhaps, is aroused to the contrary until it comes to be discovered that this "cold" is lasting a great while longer than it ought to endure, and that it resists all means of cure. The horse's ordinary spirits and looks and appetite are not in the slightest degree impaired: he works as cheerfully as ever; but all the time he has a discharge from one nostril, with an enlargement of the submaxillary lymphatic gland or glands of the same side. And although the nasal issue may be of a nature of itself to excite suspicion, and the enlargement may be such as appears to confirm this suspicion, yet do cases incipient in their nature too often present themselves, in which it is impossible for any practitioner, from these appearances alone, to determine at once on the nature of the attack. Give time, and the veterinary surgeon, by watching the progress of the case, will be enabled to solve the mystery, and at length to demonstrate beyond doubt the real nature of the animal's ailment.

No cough accompanies real glanders in any of its stages; and this, though a negative piece of information, should be taken as a criterion not to be neglected. A running may make its appearance at one nostril in glanders, and the glands may adhere to the jawbone, as they do in real glanders, but no cough accompanies these symptoms of glanders. When cough supervenes, the disease may be a catarrh, a consumption, asthma, or strangles, but these are not contagious, unless they last a long time, and adhesion of the glands takes place. In these last-mentioned disorders the discharge commonly proceeds from both nostrils alike; whereas, the running in incipient glanders is often confined to the one nostril, and the gland of one side only is then affected.

As the disorder proceeds, it affects both sides. Chancres appear all over the pituitary membrane, occasioned by the erosive nature of the discharge. This assumes a different appearance as the fluids of the individual may have been more or less vitiated. The appearance or quality of the discharge differs also, according to the manner in which the disease may have been engendered or caught by infection, as is already shown in distinguishing the acute and sub-acute varieties. If it come of the first-mentioned, through a depraved system, the glands are harder, often smaller, and always adhere more closely, than in those cases which are derived from infection, at a time when the animal is otherwise in comparatively good health. Again, with the infected horse, the matter comes off copiously; it is curdled, and may be rubbed to powder between the fingers when dried. It subsequently hardens, and becomes chalky when submitted to acids; whereas, the animal that engenders the disease without receiving infection, sends forth matter that is parti-coloured, less in quantity, blackish, watery, and mixed with bloody and white mucus. Finally, if the animal that receives the disorder by infection be previously in a bad state of health, those symptoms are complicated and more intense, the chancres are more numerous, the cartilages of the nose become rotten, and the bones likewise, in a shorter time. The creature seems to have combined the evils of its own system with that of the sufferer from whom he has received it. In both cases the swelled glands are simply hard tumours without any matter in them.

In addition to the preceding tokens for discovering at an early period glanders from other disorders, let the nostrils of the animal be examined, and the running nostril will be found of a deeper colour than usual, whilst the other, or dry nostril, is of a paler colour than ordinary, or almost white. At this period the discharge is a white glairy fluid, and the diseased state of the sub-maxillary gland of that side is but just perceptible to the touch: but these being symptoms that belong equally to a catarrh, it is best to be guided by the varied colour of the two nostrils, remembering that in catarrh, or cold, both nostrils run.

Well worthy of remark is the fact that when horses in a tolerable state of health first receive infection, they show mettle, and are full of freaks; as the disorder proceeds in its ravages this spirit goes off. Other acquired diseases have the same effects on animals—the venereal, for example, on man.

A great stench accompanies the discharge in long-confirmed glanders, which increases during the latter stages of the disorder; and the stableman who has once scented it may presently ascertain whether glandered horses have been recently kept in any stable he may examine for the purpose of detection.

In duration, hardly any disease can be more uncertain than chronic glanders. It may continue, simply as a discharge from one nostril, accompanied by submaxillary glandular enlargement, with very little or unimportant variation in either, for months—nay, for years: on the other hand, it may run into the acute in as many weeks. Any person, therefore, having a horse of this description in his possession can at no period say how long it may be before the disorder may show itself in an active, nay, rapidly destructive form. In some cases the nasal flux runs for a long period with but slight or unimportant alteration; in others, in quality as well as quantity, it exhibits most remarkable fluctuations—at one time appearing so scanty and trifling as hardly to be worth notice; at another, pouring forth in all the abundance of the eruption of pent-up channels, solid as well as fluid, from the admixture of lymph with muco or sero-purulent flux; and all of the most fetid nature, in consequence of having been shut up for a period, and so undergone a putrefactive fermentation within the sinuses of the head. Its colour, too, is very variable, depending upon the time it has been retained within the sinus. It may be white, yellow, green, brown, black, according to circumstances; its colour being often a sort of guide to us in respect to its composition and probable duration in confinement.

A distinction must be made between chronic glanders and what we are in the habit of calling nasal gleet; an affection some horses are known to have either all their lives, or at certain periods of them. We must not set down every horse that comes to us, having for any length of time had, either constantly or only at times, a flux from one or from both nostrils. The membrane clothing the nasal chambers and sinuses of the head is, the same as other mucous membranes of the body, liable to derangements in its functions—to secrete too much or too little, or not of the proper quality. Therefore, like the membrane of the human urethra, it may become the source of gleet, and of gleet of so long duration that in time it becomes habitual to the secreting apparatus. This is the only way in which we can account for horses having, at times, discharges from the nose all their lifetime; yet they work, never showing glanders; indeed, to those acquainted with them, causing little alarm. The important question for us to consider is, how are cases of nasal gleet to be distinguished from those of chronic glanders? The discharge in gleet consists of an unusually white mucous or sero-mucous matter, and in several instances has been remarked to be lumpy. There is no enlargement under the jaw; and this circumstance, as well as the white, mucous, and lumpy nature of the discharge, together with the history of its origin, which should be carefully inquired into, may be found pretty safe ground of distinction between nasal gleet and chronic glanders.

Beyond any information we can glean from the symptoms, and such as is to be derived from the history of the case, we have no means of testing its true nature save through an operation, or by inoculation of an ass (or another horse) with the discharged matter.

Mr. Percivall narrates the following:—"The good health horses having chronic glanders in general enjoy, together with the condition and apparent aptitude for work they maintain, it is that has given rise to a fraud often successfully practised in horse markets, in days when glandered horses were more common in the country than they are at the present time. Three knaves act in confederacy. The horse, who previously has been made by some sternutatory means to blow out any matter lodged in his nose, is by one of them led to the market for sale, where he is soon sold at a price much below his apparent value, the purchaser having been persuaded and urged on by a stander-by—a seeming stranger—who is the second confederate. Pleased with his bargain, the purchaser takes him away homeward; but has no sooner got clear of the market than he is met by another stranger—the third confederate—who happens to recognize the horse, and who at once expresses surprise and dismay that he should have bought an animal with such a foul and horrible disease upon him; adding that the horse ought to be, and must be, in obedience to Act of Parliament, shot without delay; and in order that the purchaser may not be at any further trouble or responsibility, offers at the same time for a small fee to take the horse of him 'at knackers' price.' In this way the subject of fraud finds his way back into the hands of his former possessors, and is offered again for sale; not perhaps in the same market, but in some other part of the country. The late Captain Harvey—a gentleman well known as one of the best riders in the Old Surrey hunt—was cheated in this manner at Bromley Fair: in his case there was no third confederate. The Captain thought he had got an excellent hunter for very little money, with the trifling drawback of his having 'a slight cold in his head,' and brought him the following day to my father for his advice. The opinion sought proved short and decisive;—the horse was 'glandered.'"

Cattle and sheep should on no account be trusted with a glandered horse; and the mangers and racks in the stable which have been used by a glandered horse, after being washed with soap and water, should be thoroughly cleansed with a solution of chloride of lime.

Strangles is another disorder with which glanders may be confounded, but not by an experienced practitioner.

Mr. James White, many years Veterinary Surgeon to the First Dragoons, whose excellent work has gone through nineteen editions, the last almost re-written by Mr. W. C. Spooner, paid the greatest attention to the subject of glanders, and certainly had the greatest opportunities for practical experience and observation. To that gentleman's instances of the *causes* of glanders, the Editor adds:—

"From the circumstance of horses having sometimes escaped the disorder, though they have been standing in the same stall or stable, or drinking out of the same bucket or

trough, with a glandered horse, many have been led to doubt its being contagious; and the little care that some large proprietors have taken to prevent the spreading of the disorder, in consequence of such opinions having been held, has been the cause of very serious losses, many instances of which have come within my personal knowledge. That the glanders is contagious, has been clearly and indisputably proved by numerous experiments; and the manner in which it is propagated has likewise been satisfactorily demonstrated. At the same time, it is generally believed that the glanders takes place also independent of contagion; but from what causes or circumstances it is then produced, no author has attempted to state precisely.

"It has been said, in a general way, that close unwholesome stables, hard work, and bad provender, sudden changes from cold and wet weather to hot close stables, hard work, and insufficient keep, and, in short, anything that will weaken the animal considerably, is likely to produce glanders or farcy.

There will be no danger in admitting this opinion if, at the same time, we keep in view the contagious nature of the disorder, in whatever manner it may be produced. For if such cruel and foolish treatment of horses does not produce glanders and farcy, it produces other disorders which are often more speedily fatal than glanders; and if it does not actually produce a disorder, it weakens the constitution to such a degree that the animal is rendered more susceptible of the contagion of glanders, as well as of other diseases. It is from this cause that glanders spreads so rapidly amongst post and stage-coach horses, while among horses of a different description, its progress is generally slow.

"It has been said that glanders has often been produced in the cavalry by putting the horses, immediately after coming from camp, where they are constantly exposed to the weather, into warm stables, and giving them the full allowance of oats. This, it is true, has often brought on inflammatory disorders which were very destructive, and sometimes of the catarrhal kind, in which case they were accompanied with a discharge from the nostrils. The acrimony of the matter would sometimes even ulcerate the nostrils, and the disease would then be considered as a decided case of glanders.

"Later researches have fully proved that glanders may be produced, not only by contagion and the causes before enumerated, but also by catarrh, either in its common or epidemic forms, also by strangles, and by inflammation of the lungs. In such cases these diseases are said to degenerate into glanders. In the last three cases that came under my attention," says Mr. Spooner, "one was preceded by strangles, another by bronchitis, and the third by catarrh. That form of the disease called bastard strangles, in which the glandular swelling does not suppurate kindly, but becomes hard and scirrhous, is very apt to degenerate into glanders."

It is a remarkable circumstance that glanders cannot be communicated by applying the matter which is discharged from the nose of a glandered horse to the nostrils of a sound horse, unless there be an open wound or sore, even though a piece of lint soaked in the matter be put up the nostrils, and kept in contact with the pituitary membrane for a short time; or even if the matter be thrown up the nostrils with a syringe. But, if the smallest quantity of matter be applied in the way of inoculation, either to the membrane of the nostrils, or to any part of the body, a glanderous ulcer will be produced, from which farcy buds and corded lymphatics will proceed. After a few weeks, the poison will get into the circulation, and the horse will be completely glandered. The circumstance of glanders not being communicated by applying matter to the nostril, enables us to account for a horse escaping the disorder, as he sometimes does, after being put into a glandered stable, or standing by the side of a glandered horse. Glanders, however, is frequently communicated by (accidental) inoculation; and there is only one other way in which it can be communicated, that is, by swallowing the matter which flows from the nose of a glandered horse. M. St. Bel, the first Professor of the Veterinary College, mixed some glanderous matter with flour, and formed it into balls. These balls were given daily to three horses for one week. The youngest of the horses became glandered in about a month; the others were not affected till some time after. Glanderous matter has been rubbed on a sore place, or ulcer, that had a healthy appearance in a sound horse. It altered the appearance of the sore for a time; but, after a few days, the healing process went on again, and the sore soon got well. From this it appears that, to communicate the glanders, the matter must be applied to a scratch or wound fresh made, and not to a sore on which matter has formed. A sound horse has been inoculated with glanderous matter that had been mixed with ten times its weight of water. This produced some degree of inflammation, and a small ulcer of a suspicious appearance; but after two or three days it got quite well. This shows that glanderous matter may be so far weakened by dilution with water, saliva, or the watery secretion from the lower part of a glandered horse's nostrils, when he has the disease in a very slight degree only, as to render it incapable of communicating the disease. On the other hand, when a large opening is made in the skin of a sound horse, and a piece of tow or lint, soaked in glanderous matter, put into it, in the manner that rowels are inserted, the disorder is communicated in so violent a degree that the animal is generally destroyed by it in a few days. The same effect is produced when glanderous matter, mixed with a little warm water, is injected into the jugular vein of a sound horse.

A horse affected with glanders may inoculate himself, and thereby produce the farcy. This has happened to horses while at grass. The horse has an itching in the hind leg, which leads him to rub and bite the part, and, at the same time, rub on it the glanderous matter which flows from his

nostril. The possibility of this circumstance taking place may be easily proved by inoculating a glandered horse, in any part of his body, with some of his own matter. There are many ways in which a sound horse may be accidentally inoculated with the matter of glanders, for the slightest scratch in any part of the body is sufficient. Horses that are cleaned with a curry-comb are very liable to be scratched in those parts where the bones are prominent, such as the inside of the hock and knee, the shank bones, and the head. To such scratches glanderous matter may be applied by the hands of the groom after he has been examining the nose of a glandered horse, or wiping off the matter from his nostrils; or by the horse himself transferring glanderous matter from the nose of a diseased horse, or from the manger, or other part where any matter has been deposited; for horses are very fond of rubbing their noses against the manger or stall, and a glandered horse will generally try to rub off the matter from his nose against the manger, the rack, the stall, or against another horse. If a sound horse happens to stand by one that is glandered, they will often be seen nabbing or gently biting each other, or rubbing noses. In short, having proved that glanders is thus communicated, we can conceive a variety of ways in which a horse may be accidentally inoculated. When a horse has been twitched, he generally rubs his nose and lips with considerable force against the manger, and may thus easily inoculate himself with a glandered splinter. The parts where local farcy first appears are those most likely to be accidentally inoculated; that is, the inside of the hocks and knees, the shanks, the lips, the under jaw—where grooms are often trimming off the long hair with sharp-pointed scissors, or singeing them with a candle, and often causing an itching, which makes the horse rub the part against the manger. In this way the heels also are often wounded. Horses that are too highly fed and little worked are liable to prurient humours, which make them nab or bite their skin, and scratch the hind leg with the opposite foot; and we may often see them bite, rub with the nose, and scratch with the hind foot, alternately, the other leg.

It is possible that in some cases where inoculation has failed, the virus was not sufficiently matured or was in too small a quantity to effect glanderous inoculation; it having been found that by introducing a considerable quantity of matter, the horse is speedily destroyed. The same rule will probably be found to hold good, in a certain degree, when glanderous matter is swallowed; as the horse's stomach possesses a wonderful power of resisting the impression of poisonous matter. A fact proved by the large doses of arsenic, corrosive sublimate, sugar of lead, &c., that have at different times been given, by way of experiment, to glandered horses. A horse, therefore, may possibly swallow one large dose of glanderous matter without being injured by it, while a repetition of smaller doses will produce the disorder. M. St. Bel gave the virus internally daily for a week; and the same method has been pursued in other experiments.

The disorder, too, would probably be more readily caught by eating the glanderous matter mixed with oats or hay, than by drinking it with water, as in the former case it is so intimately mixed with the food by mastication.

Having treated of the several ways in which glanders may be propagated; the modes of prevention almost suggest themselves. The glanderous matter exposed to the gas arising from a mixture of common salt, magnesia, and oil of vitriol has been so disinfected, that it has become inert, even when a young ass has been inoculated with it. This gas as a fumigation may be used when the stable is to be purified after glandered horses. Some persons advise the stables to be pulled down; this is altogether unnecessary. Let every portion of the stable to which the animals could have had access be thoroughly washed with chloride of lime, the following day scrubbed with warm water and soap, and when thoroughly dry washed over with sulphate of zinc. Three days after, they may be occupied without danger.

From these observations we gather that the precautions against the generation and spread of glanders and farcy, are, 1st, *Ventilation of Stables;* 2dly, *Cleanliness*, in which is included the draining of them; 3dly, The immediate and complete *Separation of the Sick from the Healthy.* To enter here, further than has already been done, into the subject of ventilation is unnecessary, after the full treatment it has received in the chapters on STABLES and STABLE-MANAGEMENT in the former part of this volume. It seems right, however, to remark, in regard to the segregation of a horse having or suspected of having glanders or farcy, that his separation can neither be too early nor too complete. To satisfy every doubt respecting contagion, he should be placed at such a distance from his associates in health, and in such a situation, that no direct atmospheric communication can exist between their habitations; and his pail, halter, bridle, even harness and saddle, perhaps, ought to be restricted to the patient's use, or not used among other horses until such time as they have undergone the necessary purification. Moreover the groom looking after the glandered subject should be careful not to allow himself or his clothes to become the medium of contamination between the diseased and the healthy animals. In large establishments, where many valuable horses are stabled together, we can hardly exercise too much nicety and fastidiousness on the occasion of any contagious disease, and especially of such a one as glanders or farcy, breaking out amongst them.

Communication of Glanders to the Human Subject.—Though for a long time disputed, the melancholy fact that glanders is communicable by the horse to man has received ample evidence of late years. It is as well proved as inoculation in syphilis, the absorption of the vaccine virus, or the contagion of itch or mange multiplying the acarides which produce those irritating skin diseases. Of the nature of the virus of glanders we know no more than we do of those of syphilis, rabies, smallpox, &c.; we can only speak from observation of their effects. When glanders is commu-

nicated to man, the consequences are indeed horrible. The whole secretory and excretory systems are affected, the glands of the armpits, the groin, and especially the salivary glands, swell painfully and burst, and the sufferer dies pitiably. Mr. Mayhew says:—"Three cases have come to the author's knowledge. Two respectable gentlemen, moving in good society, were contaminated, and both perished miserably of the terrible disease. Mr. Gowing of Camden Town, informed the writer of a boy who went out of a shop to hold a customer's pony. While the boy was so placed, the pony cleared its nostrils, and a portion of the ejected matter flew into the lad's eye. The handkerchief removed the soil, and the accident was forgotten. The poor youth was glandered, and died in the University Hospital."

The treatment of glanders in the human subject is not within the scope of this work. Suffice it to say, that, from some cases in the *Lancet*, it appears to be in human practice also an *opprobrium medicorum*.

Treatment of Glanders.—The general opinion of English and French veterinarians has settled down into a belief that glanders is incurable, and that farcy is curable. This is not, however, a reason why investigation should be relaxed or abandoned, although the long-sought-for and often-proclaimed specific, or the successful plan of treatment, yet remains to be discovered; we shall, therefore, run over the practice and remedies adopted with the most plausible appearances of success, and which from time to time have been asserted to have *cured* this fell disorder.

Lafosse's method was trumpeted to the world as a wonderful discovery, and pictures of horses' heads "with holes cut in them," and syringes injecting "proper and convenient remedies into the nose," were engraved in his work, in that of his disciple Bartlett, and in the Cyclopædias of the last century and the beginning of the present. Lafosse's work * was translated all over Europe; and, if the results did not answer expectation, he contributed a good many facts to the knowledge of the disease. A very few years of experience shewed even Lafosse the inefficacy of his "trephine," and in an after work, we find him covering his defeat by confessing "there is no answering for the cure" owing to "the stubbornness of the disease;" and making, as a bridge to retreat over, another "discovery," that besides "confirmed glanders" there are "*six other* kinds of discharges, *four* of which are incurable." Truly this is admirable and solemn fooling. We may therefore dismiss the trephine and local scouring of the nasal passages. Learned societies and colleges have been as credulous as the general public in their faith in cures, and have rewarded the supposed discoverers. The Royal Academy of Sciences rewarded Lafosse for his "discovery of the nature, seat, and *cure* of glanders;" the Royal Society of Agriculture in France gave a medal to Professor Collaine of Milan who cured(?) glanders with sulphur; and Professor Sewell, of our own Veterinary College has been rewarded for his specific—*sulphate of copper*. Later still, common salt (*chloride of sodium*) has been highly favoured by the Royal Agricultural Society. That sulphate of copper, administered in a state of solution, in gum mucilage, two drachms in a quart of water, twice a day, has a peculiar effect in healing abrasions and diminishing nasal gleet, is undeniable.

The *sulphate of iron* was Mr. Turner's favourite remedy; dissolved in the water the horse drinks, in his bucket "suspended in his box, and that he may drink whenever he pleases."

Cantharides is the sheet anchor of Mr. Vines.

"This medicine I have found of the greatest service," writes this author, in his chapter on the "Treatment of Glanders and Farcy," section, "Remedies to be employed." "whether alone or in combination. Cantharides appear to me, when given internally, to act on the system in two ways:—first, by stimulating the vascular surface of the inner coat of the stomach and intestines, thus promoting the greater formation as well of gastric juice as of the other fluids; and also increasing the appetite and digestion, and consequently forming a greater quantity of chyle, or new white blood. Secondly, by absorption, their active properties being taken into the circulation, and producing in a very short time a material change in the mucous membrane, followed by ulcers of the nose as well as ulcers of the skin." Mr. Robertson, a surgeon, has published an excellent work on the efficacy of cantharides for gleets or affections of the urethral membrane, and for unhealthy sores in the skin; he (Mr. R), twenty years ago, recommended its use at the Veterinary College, where it failed, Mr. Vines says, "from its having been given in too large doses (two drachms)." The principal precautions to be attended to in using cantharides internally in the horse are, not to administer them either at the commencement or early stages of inflammatory diseases, or in too large quantities for a dose, or too frequently to repeat them. For they are only proper to be used when the symptoms of disease are of a chronic, or slow form and nature; that is, when the system is either in a state of debility, or approaching to it." The doses are—"for a middle-sized saddle-horse, four grains; for a large carriage or dray horse, six grains, in fine powder," made into a ball with ginger, gentian, &c. "A ball may be given every day, or every other day, either in the evening or morning." Should the horse's appetite amend, and he appear to be going on well, after a week, ten days, or a fortnight, the dose may be augmented a couple of grains; but after another like interval the medicine had better be suspended for a few days or a week, when the first doses may be resumed, and after a week increased to ten and twelve grains.

Iodine has been administered, and also the *iodide of*

* "A Treatise upon the True Seat of Glanders in Horses, together with the Method of Cure," &c., with cuts. By M. de Lafosse, Master Farrier of Paris, and Farrier to the King's Majesty's Stables. 1751.

potassium by Professor Dick, with no appreciable effect. We will notice diniodide of copper under FARCY.

Iodine and copper mixed (iodide of potass and sulphate of copper), made up into powders, one grain daily, with green food ad libitum, were administered by Mr. Lord, V.S., of Parsonstown, Ireland, to a farcied horse on the 12th of August, and on the 4th of September. The treatment being persevered in, the ulcers of the nostril "had then dried up and the discharge and farcy-buds disappeared."

Barytes was once insisted on by Mr. Percivall as having effected cures, but he afterwards admitted, on extended experience, that "its success must be regarded incidental or circumstantial."

From an idea of its similarity to gonorrhœa or syphilis, copaiba balsam, cubebs, and especially mercury, have been resorted to. "Recoveries" under the use of barytes, copaiba, cubebs, and cayenne pepper are confidently recorded. Internally, mercurials may be said to have utterly failed with the horse, though some Italian surgeons have declared they have found blue ointment (ung. hydrarg.), one ounce, rubbed on to the inside of the thigh daily cure farcy.

Mr. Storry relates several instances of glandered horses cured by him by fumigating the nostrils with carbonic acid gas, assisted by tonic medicine.

Creosote has been used with success in glanders of the human subject as a topical application to the ulcers; and it has in a few instances been tried on the horse with good effect. In a case of glanders it has stopped the nasal discharge, and healed the ulcers by its use.

The combination of iodine and sulphate of copper, which readily unite by adding a little proof spirit, has been recommended by Mr. Norton, and administered with excellent effect in doses of two drachms daily. It is preferable to the "powders" mentioned above.

To sum up the system of treatment to be adopted in this disease, it should first be repeated that there are but few cases in which the symptoms are sufficiently mild and the horse of sufficient value to justify the expense incurred in keeping and treating the animal, except by way of experiment; we must therefore closely examine the horse previous to our attempts. If the pulse is increased, though only eight or ten beats in a minute, the lungs are probably affected, and it is better to destroy the animal. So likewise if the animal has been affected for several years, although the symptoms may still be mild. Should, however, the case be comparatively recent, and the appearances favourable, we would then administer daily the tonic recommended by Mr. Sewell, or that advised by Mr. Vines; or what, perhaps, is still better, give the one for several days, and then try the other, or the iodide of copper in doses of one or two drachms daily. If there are any ulcerations within sight, a solution of creosote should be syringed up the nostrils daily; and if there are none visible, it may be well to try the effect of fumigating the nostrils with carbonic acid gas; if creosote could be applied in this manner it would be still better.

An ointment of hydriodate of potash should be rubbed on the enlarged glands; and if the symptoms should disappear with the exception of the indurated gland, it would be advisable to excise it, as it generally contains glanderous matter, which may inoculate the system anew.

All these are given merely as indications of the treatment to be pursued: were any one of them generally, or even frequently efficacious, we should not still be driven to the stern necessity of passing sentence of death upon the glandered horse.

FARCY.

We have already said that farcy and glanders are modifications of the same disease. Farcy was for a long time supposed to be a *disease of the veins;* a natural error, seeing the lymphatic vessels along which the virus travels were then considered as a sort of vein, if not veins themselves. Later writers regard the farcy-bud as the degeneration and coagulation of the lymph. Farcy may be said to have its seat in the skin; that of glanders being accounted to be the pituitary membrane. Glanders and farcy together constitute one and the same disease of the lymphatic vessels and their glands. The disease originates in these vessels, and for a time confines itself to them; in the course of its progress; however, it extends into the contiguous tissues, affecting in one case the true skin, in the other the mucous lining of the air-passages, and it is in these parts respectively that the phenomena of farcy and glanders are exhibited. No wonder, therefore, that the appearances in farcy (the local symptoms) should differ so much from those of glanders; and that the buds and ulcerations of the one should be found, in the course of treatment, so much more manageable or more "curable" than those of the other form of disease; or that one disease should be so much more dangerous to the animal affected, as well as to horses (in health) around him, than the other. Inflammation in the cutis is a different disease from inflammation in a mucous membrane—productive of different phenomena, and requiring a different treatment: hence the apparently wide differences between two diseases essentially or in nature alike.

In general, in dissecting farcied limbs or other parts, as soon as we have cut through the thickened and indurated skin, we appear to have bottomed the disease—to have reached its depth or profoundest seat; the subcutaneous tissue everywhere around is infiltrated, apparently in a state of local dropsy, but of the farcinous disease the skin has manifestly borne the brunt. In cases, however, of inveterate or malignant farcy, in which the deep-seated as well as the superficial order of lymphatics have taken on disease, we meet with farcy-buds and pustules, and occasionally with abscesses of large and irregular dimensions, situated among the muscles.

Dupuy informs us he has met with "tubercles" (or farcy-buds) and farcy-pustules upon the mucous lining of the alimentary canal; and Leblanc, so far as having witnessed one case of the kind, confirms this account. On the same authorities also we may state that the liver, the spleen, and the testicles have all been known to exhibit farcy.

Whatever tends or operates to the production of glanders, the same has the power of causing farcy. Contagion becomes no exception to this admitted truth, supposing its agency to be through the medium of the constitution. Contaminated blood is quite as likely to emit its virus in the form of farcy as in that of glanders. Professor Coleman, however, appears to have viewed the operation of contagion in glanders as being local, upon the Schneiderian membrane; and that, to take effect, it must have a local operation also in the production of farcy; since in his lectures, he informs us, that, "of all three affections,"—viz., acute and chronic glanders and farcy,—"farcy affords the most conclusive evidence of the production of the disease in the absence of contagion." Undoubtedly, it is out of the range of probability—out, almost, of that of possibility—for the inside of the thigh of one horse to come into contact with the nose of another horse, or, in fact, with any contagious virus, through chance or accident; supposing, however, that the contagion enters the system before the local disease be produced, there is in that case quite as much likelihood of farcy following as that of glanders. We know that, by inoculation, farcy has been produced by the matter of glanders, and glanders by the matter of farcy, and that, consequently, there is every reason to infer a similarity, or rather an identity in the viruses of the two diseases. In further proof of this, as was said before, one disease, or form of disease, almost invariably terminates in the other prior to dissolution. There can be no question but that the same contaminated or miasmatic atmosphere of the stable or elsewhere which produces glanders may occasion farcy; and *vice versâ*. Mr. Percivall ("Hippopathology," vol. ii, p. 230), disposes, to our thinking, of this question.

M. Rodet, Professor at the Veterinary School of Toulouse, in his work on glanders (1830) gives the best description of farcy-buds we have met with. Detach a moderate-sized farcy-bud of recent formation, and before the softening process has commenced in it, and cut into this firm, indolent, rounded, everywhere-isolated, completely-formed bud, and its interior will be found composed of a hard, fibrous, condensed, milk-white tissue, and though exhibiting throughout, in certain cases, a homogeneous texture, is nevertheless, in other instances found grooved and traversed by some sanguineous capillaries. At a rather later period than this, at the time when it commences growing soft in its centre, and is about to become adherent to the skin, and sometimes before it has adhered, we may observe (providing the recent internal process of liquefaction be not completed) that its circumferent parts still retain the white fibrous indurated texture which formerly constituted the entire bud, and that within its interior is inclosed a pultaceous matter of a yellow or dirty-white colour, or else slightly reddened. At length, when the process of softening is completed, and before it is converted into abscess, we find within the bud several little morbid productions, united by lamina one to another—arranged in concentric layers, and resembling serous membranes slightly infiltrated, the raw interior of which gives the appearance of ulceration to its inner surface—forming the walls of the abscess, inclosing a white, thick, homogeneous matter, of a consistence at one time caseous, at another puriform, at another analogous to thick jelly.

The peculiar well-known spheroid shape of the farcy-bud, as well as that of the pustule which succeeds it, is proved to be owing to the existence of the valves within the lymphatic vessel; these preserving their integrity while the coats of the lymphatics are vanishing through absorption. In very bad cases the valves, as well as the tunics, inflame and ulcerate or become absorbed. In consequence, the farcy pustules run one into each other, and by such communication lose their characteristic shape, lengthening into fistulous abscesses, well known to farriers under the denomination of "farcy pipes," or spreading into abscesses of large and irregular shape, burrowing deep in the connecting cellular tissue.

The skin itself undergoes changes, resembling thickening and induration of the farcy-bud. In time the "bud" becomes enormously augmented in substance, remarkably white, and unusually tough and hard, cutting like so much white leather rather than skin, especially in the immediate vicinity of the buds; several of the more superficial of which, that have become pustules, will be found embedded in its thickened substance. We, however, no sooner cut through the indurated cartilaginous-like cutis than we expose chains of farcy-buds and pustules, immediately underneath it, invested by cellular tissue full of infiltration of a jelly-like citron-coloured fluid, beyond which bed of effusion we appear suddenly to lose all vestiges of disease. In inveterate farcy, however, the infiltration will sometimes be observed extending deep between the muscles, and every now and then abscesses, deposits of matter of considerable volume, will be discovered buried among the fleshy structures. Nor do the bones, any more than the muscles, escape the ravages of farcy and glanders. The turbinated, ethmoid, nasal, and maxillary bones have suffered in malignant cases of the former disease: and we are assured by Dupuy and others, that many of the bones of the limbs and body have proved extensively diseased in horses that have for a length of time been afflicted with farcy.

Treatment of Farcy.—The system must be supported by a generous and agreeable, but not too stimulating, diet, to which carrots and green food form useful additions. The horse must be exercised daily. If we determine on emptying the bowels, mix firstly a purgative and diuretic mass together (see MEDICINES), into a ball of moderate strength. Next administer tonics. Of these sulphate of copper, sul-

phate of iron (see GLANDERS), in his drink; chloride of barium, (muriate of barytes), in half-ounce doses at first, increased to one ounce daily, in a ball with meal and molasses, have each their advocates. For ourselves, we advise the tonic to be varied, upon experience of its efficacy or the reverse. Blaine tells us that nearly all the mineral acids have been found useful, and some of the vegetable ones. All the different forms of mercury have been tried with some success, but corrosive sublimate appears to have answered best; and, when determined on, should be given to the full extent the stomach and bowels will bear without salivation or symptoms of inflammation being brought on. Ten or fifteen grains may be commenced with, ground very finely with sugar, and given night and morning in gruel as a drench. If this occasion no distress, it may be increased to a scruple, and from this to half a drachm, if it be borne with ease; but the utmost care and watchfulness should be exerted when the dose is considerable. When the weakness and irritability of the horse are too great for the exhibition of the corrosive sublimate, give half a drachm of calomel twice a day; or the blue pill, or the sulphuret of mercury may be substituted, still carefully watching the salivating process. Should the stomach suffer much under the use of these active agents, either join with them bitter tonics, or alternate them with each other. We would also recommend that they be in these cases given in solution, and further sheathed by some ingredient of a mucilaginous nature.

After the trial of mercurials, arsenic ought next to claim the attention, as that has also proved efficacious in farcy, and it may be given in the form of liquor arsenicalis, or Fowler's tasteless solution. Verdigris was for some time a favourite remedy at the Veterinary College, in doses of a scruple three times a day, increased to a drachm. We have witnessed also good effects from this preparation; but we have found it most efficacious when given in a ball in conjunction with the blue vitriol, half a drachm at a dose. Some practitioners choose to employ several articles in conjunction, and they assert the cure is speedier from the combination than from any one article separately. In this case, give the following:—

Corrosive sublimate	5 grains.
Arsenic	5 grains.
Verdigris	5 grains.
Blue vitriol	½ scruple.

Mix into a ball with palm oil and linseed meal; give every morning.

In addition to the several acids, benefit may be derived from the following drinks, in conjunction with the ball last mentioned.

Sulphuric ether	1 ounce.
Laudanum	1 ounce.
Tincture of quassia	1 ounce.
Oak bark	1 ounce.
Capsicums	2 drachms.
Water	1 pint.

Sea bathing and daily doses of sea water have been found beneficial in cases of farcy with enlarged limbs and œdematous swellings.

Local treatment in farcy is of as much consequence as constitutional means. In glanders we are, in respect to the extent and nature of the disease, working in the dark; we know neither the precise condition nor the exact situation of the ulcerations; in farcy the local disease is under our eye, and we can apply topical remedies suited to the inflamed, tumefied, ulcerated, scirrhous, or other condition of the limb.

In their inflamed condition, the best application to the cords of farcy-buds is a refrigerant or evaporating lotion; with this they ought to be sponged often enough to keep the hair wet, the object being to repel or disperse the swellings.

As soon as heat and tenderness have subsided in the buds—supposing that, instead of softening and suppurating, they evince a disposition to diminish and grow harder—we must alter our treatment. We must use lotions of a discutient character, or, in fact, any applications, liniments or ointments having the effect of causing absorption of the swellings. Of this description are, mercurial ointment and camphor, iodine ointment, blistering liniment or ointment, &c. Indeed, when there appear signs of hardening and approaching insensibility in the buds, a blister is by far the best application. Mr. Percivall advises the *acetum cantharidis;* dipping a painter's brush in the blistering essence, and applying it, after the manner a painter does his paint, upon the tumefactions; tying the horse up afterwards, or putting a cradle on him; and after an interval of twenty-four hours sponging the blistered parts with warm water; an operation that should be repeated daily so long as any moisture or issue appears upon the surface. "Sweating blisters," like this need not interfere with the patient's regular exercise; and as soon as one has "worked off" another may be applied; the repetition being regulated as well by the condition of the skin as by the demands of the case.

The practice of Mr. Percivall seems to us so intelligible and practical, that we shall not hesitate, with slight modifications, to adopt it entire.

In the majority of cases of farcy, it happens that, instead of diminishing in size and growing harder in consistence, the buds plump up and become soft, and at length turn into pustules; and once a pustule formed, it will ripen and burst, and turn into an ulcer. As soon, therefore, as we perceive that it is out of our power to prevent the suppurative stage, it becomes our duty to contribute all we can to its promotion. For this purpose fomentations may be used to the parts, poultices likewise, if we can manage to apply them. The patient's diet, also, must be improved in this stage; he should no longer feed on mashes, but have scalded oats, carrots, turnips, linseed, &c. When the pustules are ripe, some practitioners make a point of opening them; others suffer them to burst and discharge their contents sponta-

neously. The old or farriers' mode of opening ripe farcy-buds is with the actual cautery—the heated budding-iron ; and it is a practice still in vogue with many very respectable veterinary surgeons. In this manner the contents of the pustule are, as it were, fried by the red-hot iron, while its base and interior are altogether destroyed, and the result is a slough, followed commonly by a superficial ulcer of larger dimensions than the original pustule, and presenting a healthy granulating surface; this ulcer is in the end, under judicious management, very often got to heal. Should we suffer the pustule to burst of itself, we may still cauterize its base with the budding-iron ; or, if we prefer it, we may rub it with a pencil of lunar caustic. At all events some caustic or strong escharotic dressing will be demanded ; without it we shall never obtain what we so much desire—a healthy granulative action. The bottom of the ulcer once cleaned out, dressings of various kinds, depending upon its aspect (healing or spreading, sloughy, stationary, &c.) will be required by it afterwards. Commonly, mild escharotic applications answer best, though, at times, stimulant or astringent ones appear preferable ; in short, the selection of a dressing must be left entirely to the judgment of the practitioner.

Water or spirituous dressings are better than greasy ones, and we have ordinarily observed the best effects from such as these :—Solutions of lunar caustic, of the sulphates of copper and zinc, and of alum ; the tinctures of benzoin, and of myrrh with aloes. The nitric acid lotion is an excellent dressing for sloughy sores ; and the solution of chloride of lime an admirable one for such as secrete fetid matters. The ulcers should always be cleaned, and have any hairs shooting over their edges trimmed off, preparatory to their being dressed of a morning ; and it tends to the preservation of them in cleanliness, and promotes their healing tendencies as well, to besprinkle their surfaces, immediately after dressing them, with some powder that will imbibe the discharges, correct acrimony, and have some effect in restraining their production ; none answers these ends better than common (baker's) flour. It should be made as dry as possible before being used, and may, when required to be additionally astringent, have some powdered alum mixed with it ; which it will sometimes have already. As a change, on occasions, we may employ for the same purpose powdered bark or calamine. Mr. Turner recommends a strong solution of sulphate of iron plentifully applied over the ulcerations, and well rubbed into the sound parts likewise. Mr. Blaine, as we have already noted, found sea water and saturated solutions of common salt good dressings; he speaks, too, in favourable terms of sea bathing for farcinous limbs, aided by "daily doses of sea water."

The internal remedies and exercise are not to be omitted on account of the ulcerated condition of the swollen parts.

The Tumefied Lymphatic Glands, in farcy as well as in glanders, will require treatment. By some French veterinarians their extirpation has been recommended with much assurance of success in farcy, notwithstanding the notorious failure of a like operation in glanders. For the disease in the hind limbs, M. Maurice, veterinary surgeon in the First French Artillery, directs us to cut out the inguinal glands. For farcy of the back, loins, or flanks, the glands in the flank ; and for farcy in the fore limbs, neck, and shoulders, the axillary glands. M. Maurice makes mention of three hundred cases of farcy cured by such operations. And Renault informs us that the practice has proved successful at the Veterinary School at Alfort.

On this Mr. Percivall remarks : "I no more doubt that horses with farcy have recovered after such operations than I do that others have returned to health after taking copper, or iron, or barytes ; between the *post hoc* and the *propter hoc*, however, there is all the difference in the world. It is absurd to think of extinguishing a disease proved to be constitutional by the extirpation or destruction of tumefied lymphatic glands and farcy-buds."

The treatment proper for the enlarged glands is the same in the various stages of disease, as has been recommended for the farcy-buds. Endeavour, in the first instance, by refrigerant and evaporating lotions, to abate inflammation in them, and so to effect their dispersion ; secondarily, when they come to lose their heat and tenderness, apply blisters over them. It is in vain to try to "bring them forward" to a state of suppuration, like the ripening farcy-bud ; they are hardly ever known to take on the suppurative action.

By pursuing such a course of treatment we not very unfrequently succeed in patching up the ulcerations and getting rid of the corded swellings in which they originate, and at the same time so far reduce the size of the limb as to render the patient (his general health and condition being good) capable of undertaking work. Indeed, it is advisable that he should do so, since under the operation of slow or moderate work it often turns out that his limb experiences, by degrees, further reduction, and that his health and condition, by generous feeding, improve. All, in fact, is likely to go on well so long as the animal experiences no return of his disease or fresh attack of it. Should he do so, in the same limb or part even, it will much lessen the chances of his second restoration ; and, if it recur in some other limb or remote part of his body, above all in the head, wearing the aspect of approaching glanders, we may bid adieu to all hope of recovery. The destruction of the animal is now the most merciful course. We have known, however, kind-hearted masters object to this fatal sentence being carried out. Should, then, the season of the year be favourable, pasture may offer a resource, certainly pleasant to the animal, and one that the medical attendant will, with satisfaction to himself, if not with benefit to his patient, recommend. A change of diet, from dried to green and relaxing food, living in the open air, and the constant exposure of the farcinous limb to a lower temperature than that of the stable, together with the walking exercise the animal is from time to time taking upon it, all have a

tendency to do good, and have sometimes proved of eminent service. In particular, salt marshes have been regarded as beneficial, and apparently not without reason. Whenever and wherever the patient may be turned out to grass, he ought to have no companions save such as might happen to have on them the same disease as himself. It would be full of danger to suffer him to run with healthy horses. In situations where, or seasons when, pasture cannot be procured or resorted to, it is desirable to soil the patient in his box; vetches or rye, or, in the winter season, carrots or Swedish turnips, become a desirable change of diet. There arrives a period, in this protracted and indolent stage of farcy, when the resources of medicine seem to be exhausted; and when the disease is judiciously "left to nature," to take, uninterfered with by art, her spontaneous course. Mr. Vines recommends cantharides in combination with vegetable bitters as a cure for farcy and glanders.

CHAPTER XXV.

DISEASES OF THE BRAIN, SKULL, EYE, TEETH, TONGUE, PALATE, AND PHARYNX.

§I. DISEASES OF THE BRAIN AND NERVES.

INJURIES OF THE BRAIN.—CONCUSSION.—FRACTURE OF THE SKULL.—PHRENITIS.—STAGGERS.—ABSCESS OF THE BRAIN.—VERTIGO.—MEGRIMS.—HYDROCEPHALUS.—PARALYSIS.—TETANUS.—RABIES.—STRINGHALT.—SPASMS.

When we observe the smallness of the brain of the horse, we find physical causes for the animal's limited intellectual development. In treating of the Structure and Anatomy of the Horse (*ante*, p. 338), we gave a general anatomical view of the brain, its membranes and nerves. Insanity, in the sense of human medicine, does not exist in the horse, whose sensorium is not affected by causes of a social or moral nature; though his brain may be affected, as the centre of the nervous system, by wounds and irritating disorders, through what we now know as "reflex nervous action." Its sympathy and connection with the stomach is also clear. The brain is disordered by severe indigestion; and a violent blow upon the stomach, or that organ seriously overloaded, may give rise to what is called "stomach staggers"—a decided cerebral attack. Tetanus, or locked-jaw, from wounds, is also another example of reflex nervous irritation. A horse pricks his foot with a nail, and tetanus is sometimes the result. The spinal marrow, which is a continuation of the substance of the brain, exhibits clearly the same nervous mechanism. Division or injury of the marrow produces loss of sensation and voluntary motion in those parts only which derive their nerves from it beyond (or below) the part injured or divided. A perusal of the works of Sir Charles Bell, and of Dr. Marshall Hall, "On the Excito-Motory Nerves," will give a large insight into these interesting points of vital economy.

Notwithstanding the brain is the source of all sensation, it is, in itself, destitute of feeling. In operations on living animals it has been pricked, lacerated, cut, even burnt, without any manifestation of pain. We remember having heard the late John Abernethy mention a case where a man lost two ounces of brain by an accident, and lived many years, at the head of a mercantile establishment, with apparently unimpaired faculties.

Pressure and *Concussion*, however, have serious effects. A portion of bone depressed from above, prostrates the animal and destroys life; not so laterally, or from the side: and pressure on the spinal cord produces paralysis *behind* the part so interfered with.

Injuries of the Brain are not frequent in the horse, though backward falls and blows are not uncommon, owing to the immense strength of the parietes or walls of the skull.

Concussion, so fatal to man, with his higher organization, produces nothing more than fright or giddiness; a bleeding a cooling draught, and a warm fomentation to the occiput, will generally dispose of this apparently dangerous accident

Fracture of the Skull, for the same reasons, is rarely seen unless at the base, or basilary process. There is in most cases more danger of bloodvessels giving way than bone, even in these heavy concussions; unless abscess of the brain, of which we shall speak presently, ensue, external injury seems but temporary in its effects.

Bloodvessels are liable to give way in any part of the brain; those, numerous and large, about the base, contiguous to the seat of the blow, are most likely to become ruptured. The symptoms will of course vary in their nature and intensity with the kind and degree of the mischief done; the faculties of motion and sensation will be more or less impaired, should not death itself immediately result; the senses also, one or more, will probably be lost or disturbed. By the parts affected, and by the extent to

which they are affected, must we form our opinion of the nature of the case, as well as our prognosis. Commonly, the animal is found down, unable either to rise or stand without assistance. Should he still retain feeling, and be in possession of his senses, and there be means nigh or at hand of treating him, remedies may be tried upon him; but when he has to be removed upon some drag or carriage to any distance, he will in general do himself so much mischief by struggling before he has arrived at his place of destination, that his case will probably be rendered yet more hopeless than it was in the first instance. Fresh hæmorrage will be likely to ensue, and may prove fatal, even when, before the struggling, hopes of recovery had been entertained. On this account, it is of importance, when the case holds out prospects for treatment, to house the animal somewhere close to the place where the accident has occurred. In general, bloodletting will be proper; though the symptoms from loss of blood or nervous depression may be such as not only positively to forbid this evacuation, but even to demand the exhibition of stimulants.

Vinegar, muriate of ammonia, and spirit of wine, with warm water, should be applied to the head. A mild purgative, if the animal can stand, may be administered. Where paralysis is marked, death usually soon supervenes.

PHRENITIS (INFLAMMATION OF THE BRAIN), STAGGERS.

The farriers divide inflammation of the brain into three disorders, called, in their peculiar phraseology, *sleepy staggers, mad staggers,* and *stomach staggers.*

Sleepy staggers (or *coma*) is usually no more than the first stage of *mad staggers.* The horse is drowsy and dull, and falls into a lethargic state. His appetite is rather interrupted than lost. The horse is found with his head hanging between his forelegs, or resting in the manger and forced against the wall of the stable; or, if at grass, against a tree or wall. The eyelids droop, and when forced open, show the pupil unnaturally dilated; the lining membrane of the nostrils is of a dull leaden colour (we have found them, as well as the conjunctiva, just the reverse, increased in redness). Costiveness is present; and the stupor extending to the absence of all nervous irritability. It is only in this stage of the disorder that remedial measures prove efficacious.

TREATMENT.—Copious blood-letting is urgently indicated. Open both jugulars and let the blood flow till the eye awakens or the animal sinks. Give purgatives (see List) every three hours till the bowels are fully relieved: and sedative infusions. Half a drachm of aconite, or a drachm of digitalis, with a pint of hot water poured upon it. Cool, and give this quantity every half hour till weakness, not stupor, supervenes. He will then (if down) breathe more gently, open his eyes and look at and perhaps recognize things or objects. When this treatment fails, and the mere congestion or surcharging of the vessels of the weakened brain ensues, then inflammation comes on, and we have the second stage, or,

Mad Staggers, Phrenitis.—This fatal termination is ushered in by the animal waking out of his sleepy state, and staring about him with a fearful wildness and vacancy, his breathing becoming quicker and laborious, and the pulse rising with the respiration. Suddenly, he makes a frightful throe, dashing himself against rack, manger, or wall, or throwing himself down, and then lying breathing stertorously, his eyes looking as if starting out of their orbits; no light at the time affecting the dilated pupils, and the animal totally heedless of anything that may be done or said to him. On other occasions the frantic animal will rear both his fore legs into the manger, and in this posture stand, with his head erected, for several minutes, no person daring to approach, lest he should unexpectedly spring up, or reel and fall upon the intruder. In a word, our patient is now "mad;" furiously so, in the worst sense of the word as applied to staggers; and how, or where, or upon whom he may in his delirious plunges precipitate his body, is so uncertain, that any approach without extreme caution, or in a way in which ready escape is at hand, is fraught with imminent peril. As the disease increases, instead of lying quiet as before, in a state of apparent insensibility after a throe, convulsions will follow so quickly upon one another that the patient will be kept in a continual struggle; panting and perspiring, and perhaps foaming at the mouth; leading his attendants to believe he is not only phrenitic but actually rabid. This is a circumstance engendering so much apprehension and alarm, that not only is a prompt and decisive opinion demanded of the veterinarian, but, at the same time, such a line of conduct on his part as will at once convince his employers that he is right in his decision.

Mad Staggers must not be confounded with *rabies*—there being no dog, or mad dog at least, visibly connected with the case, is primâ facie evidence. Further, the symptoms of the two cases are different: there being, according to Mr. Blaine, in rabid phrenitis, "not merely a frantic, but a decidedly mischievous disposition:" the animal purposely attacking everything, living and dead, all around him: rack, and manger, and stall—are all laid prostrate.

In the true Staggers, nothing of this kind appears; the horse is wild and beats himself about, and endangers everything about him, but not with premeditated design. On the contrary, he merely labours under spasmodic contractions of the muscles, which force him to these violent efforts: he rears, plunges, falls, and injures himself in the frenzy of pain." Veterinary authorities recommend the opening of both temporal arteries in *mad staggers.* Recovery is, however, scarcely to be hoped for, as a return of the disorder is to be feared, or an entire loss of energy, without which the animal is almost valueless.

Mr. Percivall's experience furnished him with several cases of recovery from phrenitis. He says, after speaking of bleeding from the temples, "I have had several cases which were despaired of, until, as a last resource, while the

animals were desperately struggling and throwing themselves about, I have contrived to plunge the lancet into their temples, and allowed them to bleed *ad libitum*, regardless of the quantity lost, paying attention, in fact, only to effects. In several instances, to the surprise of all around, the frantic patient, from kicking about in a pool of blood, jumped suddenly and unexpectedly upon his legs, and, after shaking himself once or twice, appeared, as it were, by magic, almost all at once restored to his senses. Mr. Rickwood, veterinary surgeon at Bedford, has likewise related a case in 'The Veterinarian' for 1839, which tells eminently in favour of preferring blood-letting from the temples. Mr. R. was sent for to attend a mare, who had just come in with the Leeds coach, and was seized with staggers. She was wandering about, with dilated pupils and laborious respiration, and symptoms of palsy of the hind extremities. She was bled to twelve pounds from the jugular vein, and had administered an aloetic drink and frequent clysters. The symptoms increasing, both temporal arteries were opened, from which she was bleeding rapidly when Mr. R. was compelled to leave her. The bleeding continued until she became so exhausted as to begin to make a noise in breathing 'as a roarer would make in his gallop.' At length she fell; after which the symptoms began to subside, and in a few days she was sent home."

A black mare, who was attacked with phrenitis after concussion of the brain, had been bled copiously twice or thrice from the jugulars, without any very apparent benefit. When Mr. Percivall visited her she was lying upon her side, flinging herself about in a state of frenzy, surrounded by spectators, who were betting any odds she could never rise again. He promptly plunged his lancet obliquely into one of her temporal arteries, from which instantly issued such a stream of blood—spouting up like a *jet d'eau*—that it seemed quite unnecessary to endeavour to turn her to puncture the other temple. She lay, rapidly and profusely bleeding, for some minutes, when, to the astonishment of all beholders and despairers, she suddenly sprang upon her feet, gave herself a rustling shake or two, and immediately commenced eating some hay which happened to be in her manger. In fine, from that hour she was a recovered mare.

Purgation for this disease has ever stood in such high repute with farriers, that a common saying among them is—"purge a horse with staggers, and you cure him;" and this, like many other veterinary adages, appears to have been founded in sound observation. In fact, it is a practice pursued by every surgeon in brain affections, with the twofold view of removing any source of irritation or cause for the head-affection that may exist within the bowels, and of indirectly abstracting blood by derivation and discharge. No surer or more effectual cathartic is known than aloes, which is aided by the addition of calomel. It may be administered in ball or drench, as most practicable.

Decoction of aloes - - - -	1 pint.
Calomel - - - - -	½ drachm.

Warm the decoction, and stir in the calomel.

Or of

Purging mass - - - - -	½ ounce.
Calomel - - - - -	½ drachm.

Mix into a ball. A drachm of the farina of croton seeds may be used instead.

Mr. Percivall concludes: "It would be futile to give further directions, where so much must depend on the circumstances of each individual case, and so much rest on the nerve and discretion of the practitioner." The French veterinary writers recognise a disease to which they attach the name of *arachnoiditis*, or inflammation of the arachnoid membrane. It is merely staggers in its inflammatory stage.

Abscess in the Brain may be looked upon as beyond the reach of veterinary skill. Abscess in its general sense will be noticed under a separate head, and in the parts in which it occurs. Abscess in the brain is the result of external injury. It is usually the result of fracture of some of the skull bones. A small wound is sometimes seen after a runaway horse has dashed a vehicle to pieces. It heals, and there is no discharge. The mischief is within. Abscess is forming In the picturesque description of Mayhew—"The horse becomes dull, as in sleepy staggers. It refuses its food, lies down, and after a time beats its head upon the pavement. Death ends its misery, and a small abscess, containing about half a drachm of healthy pus, is discovered in the superficial substance of the brain." Neither operation nor physic avail here. The only means of relief would be to afford an exit to the matter, but this is "past all surgery" of a remedial character.

VERTIGO (MEGRIMS).

As apoplexy, in the sense of human practice, can scarcely be said to be a horse disease, though scientific veterinarians have recognised a distinction between it and sleepy staggers, which seems sufficiently marked, we shall consider vertigo or megrims as its equivalent; and megrims as minor apoplexy, or rather epilepsy, in horse nosology. Megrims, is known also to stablemen by the names of "sturdy" and "turnsick."

It frequently attacks horses during their work, particularly in harness: it is, however, now and then seen in hot weather, in the stable or at grass. When it seizes a horse in exercise, he stops short, shakes his head, looks irresolute and wandering; in this state he remains for a few minutes, and then proceeds as before. In more violent cases he falls at once to the ground; or first runs round, and then sinks senseless; or the limbs may continue to move after consciousness is lost, when the animal thus affected becomes very dangerous. In either case, the whole system appears agitated by strong convulsions. The horse may dung and

stale insensibly; he sometimes is violent, at others more passive, but is equally unconscious to everything around. After remaining so a longer or shorter period, his faculties return, and he rises. It is frequently brought on by mechanical causes, which produce a momentary congestion of the brain; as tight reining up, or the pressure of the collar in ascending a hill, which obstructs the return of blood from the head. It may also be occasioned by a morbid pressure produced by constitutional causes. Such are found in the plethoric, over-fed horse; particularly when subjected to long confinement.

The TREATMENT must be regulated by the cause. If it be mechanical, remove it, or the affection may become habitual. If plethora be apparent, purge; or give a course of mercurial alteratives, followed by relaxing medicines. It is said that covering the skull with a wet cloth will prevent megrims, where the horse is subject to their recurrence. Of course a horse liable to megrims is most dangerous to drive or ride; the frontispiece of Mr. Mayhew's "Illustrated Horse Doctor" is an alarming example of the results of this disorder.

Hydrocephalus, or water on the brain, is so rare a disease in the adult horse, that, though recognised by the French writers, it is not worth wasting space upon. Should it exist congenitally, serous effusion in the ventricles of the brain may bring on mad staggers or megrims, or produce paralysis. It is useless to try to make a horse so afflicted serviceable to his master.

PARALYSIS.

Palsy of the whole muscular frame is very unusual in the horse, except from actual pressure or irritation of the sensorium by blows on the skull, by portions of bone forced in, or by abscess in the brain: sometimes it is constitutionally brought on by unknown agencies. Paralysis of one side is of very rare occurrence. Paralysis of half the body, most frequently of the hinder parts, is sufficiently common, and is either primitive or secondary.

The causes are often involved in much obscurity; in some cases they are sufficiently obvious. Mechanical injuries are of this kind, as casting in the stable, turning round in a confined stall, blows on the spine, sudden falls or slips may, any of them, luxate, or more likely fracture, the vertebræ, and, by occasioning pressure upon the spinal cord, produce paralysis. Ulcerations of the bones, or exostoses, abscesses, or tumours within them, may be the cause of the affection. It may be altogether secondary, as being derived from accidental lesions of other organs, or from inflammations in them: it may and does occur from a diseased state of the stomach, bowels, liver, and more particularly from those of the kidneys, badder, and womb. The symptoms are total or partial loss of either the mobility or the sensibility, or both, of some part of the body, usually of the hinder quarters and limbs. The secretions are sometimes lessened or almost stopped, or the urine flows involuntarily; convulsive twitchings affect the skin, partial sweats present themselves, and the animal remains utterly helpless, although he may fatigue himself with fruitless efforts to rise. These are, however, extreme cases.

The treatment of paralysis must, in a great degree, follow the cause. If mechanical injury have occasioned fracture in any part of the spinal column, the case is hopeless. If the injury be less severe, it is possible that extravasated blood only, or serous deposit, or coagulable lymph, are effused into the spinal canal, and disturb the functions of the part; in which case, topical applications are requisite, to encourage an absorption of the obstructing deposit. When the paralysis can be traced to some visceral affection, or to disease of the stomach, kidneys, or bladder, the result is not necessarily unfavourable, although our hopes of a recovery are lessened. We should, in these cases, primarily attend to the exciting cause, if it can be discovered. But when there is loss of sensation without loss of motion, the limbs being cold and the horse insensible that he is in possession of such parts, and moving them only when absolutely forced—or otherwise, when they are entirely paralytic, and yet sensitive, it is probable that the nervous irritation originates within the spinal canal. Here, though we may with propriety use external stimulants, there will be but small prospect of success. Of internal remedies, strychnia has been found sometimes useful, in one grain, gradually increased to three grain doses; and it may be united with other tonics, as gentian, or aromatics. This, with purgatives as required, blisters, sheepskins, or a charge over the loins, has occasionally effected a cure, when the paralysis has been confined to the hinder limbs only.

TETANUS.—LOCKED JAW.

The spasmodic rigidity, hardness, and apparent tension of the muscles in this formidable disorder, are indicated in its Greek name *tetanos*, stretching, from *teino*, to stretch. When the spasm exclusively affects the muscles of the jaw it is called *trismus*, from *trismos*, gnashing [of the teeth]. *Tetanus* differs from other spasms in its permanency, its rigid contraction being rarely alternated with periods of relaxation. *Locked jaw*, so called from the persistent closure of the mouth, is the result of a morbid irritation of the whole nervous system, acting on the brain, and thence by the excitor nerves reflected on the motory nerves.* As this irritation is capable of pursuing "a retrograde course along the spinal marrow," a wound in the hind-foot or hock is almost as likely to induce a locked jaw as one in the fore-foot.

Tetanus is divided into *symptomatic* and *idiopathic*. The first, also called *traumatic* (from the Greek *trauma*, a wound),

* The reader will do well, if he desires to pursue this subject, to peruse Dr. Marshall Hall's works on the *Diseases and Derangements of the Nervous System*.

is produced by external injury: the second developes itself from various obscure or conjectural causes acting on the spinal cord and brain. Cold, caused by evaporation; standing still after a severe burst in the hunting-field; the dripping of water from an unsound roof, or the eaves of a hayrick or shed when the animal has been at grass, have been known to produce it. Worms, severe visceral affections, and even bots (when producing solution of continuity in the lining membrane of the stomach), are assigned as causes of the tetanic spasm.

In traumatic tetanus, upon pushing our inquiries, we may gain clearer information. There has, perhaps, been some slight injury; a nail has been driven too close; or a piece of glass has cut the foot; or a blow has been lodged just above the eye; or the knees have been recently broken; or the stable fork has been used to strike the horse about the legs, and the point of it has only gone a little way into the back sinews. Sometimes an operation has been recently performed; let not the proprietor blame the surgeon, if such should have been the case. Any puncture, however small, may produce tetanus; but it may not follow the most severe and the largest wounds. No means we know of can originate it, no care or skill can prevent its appearance. We may learn, however, that the tail has been docked or nicked; the wound has very nearly healed, and it may look as well as could be desired; or it may all at once have assumed an unhealthy appearance; a thin ichorous fluid may be discharged from it, and there may be a spongy appearance around it. Most commonly the wound nearly heals, when this alarming affection bursts forth. Castration, when performed under unfavourable circumstances, has sometimes produced tetanus.

The fibril of some nerve has been injured; irritation ensues, it rapidly spreads along the various branches of that nerve, and, through the spinal marrow, affects the whole body.

Symptoms.—One of the first observable is a certain stiffness about the head, and a peculiar mode of standing. Upon raising the head, the haws of both eyes are pushed out, giving to the countenance of the animal a strange expression; but sooner or later it extends all over the body By the tetanic action, the haw is drawn partly over the globe, at the same time that the tension of other muscles gives the eyes a vivid appearance which ill accords with the more placid effect of a protruded haw. The jaws are not invariably fixed, though from their being generally closed springs the popular name of the disorder. As the disease extends over the voluntary muscles of the trunk and extremities the appearances are distressing in the extreme. The head is raised, the ears pointed forwards, the nostrils dilated, and the nose is protruded; the legs straddle wide; the tail is cocked, and quivers; and the abdominal muscles are drawn tight over the belly, giving to the horse an appearance of having just completed some extraordinary exertion. The complaint presents a few moments of imperfect relaxation, sometimes, from the extreme contractions of over-strained muscles; while profuse sweats mark the distress of continued convulsion. The circulation is, in most instances, at first not much affected; but as the disease increases, the pulse quickens and becomes tremulous and irregular. The respiration, also, gradually becomes hurried and intermittent; costiveness is usually present, and the urine is sparingly voided. In this state of suffering the animal may remain from six to ten days, when, worn by inanition and irritation, he dies in convulsions. At others, either from remedies or spontaneously, the contractions give way slightly; feeble attempts are made to eat, the limbs become gradually under the action of the voluntary muscles, and a slow recovery takes place. Post-mortem examination shows no change from the healthy state, except some inflammatory appearances in the lungs or intestines, one or both.

Treatment.—There are many cases narrated in veterinary books in which some modes of treatment of very opposite kinds, have been practised with success. Some bleed largely, that they may gain the full advantage of this sedative influence. This depletion is followed by strong purgatives, and then the disorder is attacked locally by a blister, from the poll down to the rump, the sides, and, in some cases, all over the belly. By this system of counter-irritation, they tell us they have overcome the original affection of the spinal cord. Setons, too, have been inserted along the whole course of the spine; but they have not proved efficacious. Sheepskins, applied warm, from the poll to the tail, have been found to give more relief, and are certainly more humane. Docking and nicking being barbarities fortunately out of date, we may forget the treatment given in the older veterinary books, so often called for by tetanic attacks from those cruel operations. For ourselves, we do not advocate the severe treatment as necessary. The pulse is not usually accelerated in tetanus; bleeding, therefore, is not in every case indicated. The bowels are not invariably constipated; and purgatives are not required. The benefit of violent counter-irritation is not demonstrated; its employment, therefore, is not justified. The best practitioners doubt the efficacy of the active tortures of the old school, and think that perfect quiet is of more use than violent medicine. If the horse be costive, administer a purgative, and a bold one; because an ordinary purge will have no effect during the existence of tetanus. Sedatives are now indicated. Two drachms of opium, with one drachm of camphor, as a first dose; and one drachm of opium and half a drachm of camphor (with the same drugs as a clyster), have been found serviceable. The subjoined will be found a powerful compound:—

Powdered opium	½ ounce.
Sulphuric ether	1 ounce.
Camphor	2 drachms.
Tincture of aconite	1 ounce.
Spirit of Turpentine	2 ounces.
Strong ale	1 pint.

Mix the turpentine with the yolks of two eggs, then the other ingredients, and give in two doses, at the interval of two hours; and repeat if the symptoms do not mitigate.

Then place the animal where it cannot be disturbed, and take care to visit it as seldom as possible. The door being locked, the horse left alone, and every precaution taken to prevent the slightest noise. The absolute quietude thus obtained, has been found to be of more service than anything else; and the horse which has thus been shut up in silence has more frequently recovered than the one which has been continually annoyed under the pretence of assisting its restoration.

As for food—the horse is not able to take any solid nourishment; but he may have a mash more than usually wet in his manger, and a bucket of gruel may be slung in some part of the box; from either or both of which he may, perhaps, contrive to extract a little nourishment. The appetite of the tetanic horse rarely fails him; though he may be unable to eat, he will, under the influence of hunger, manage to imbibe enough for his support. Even if he makes no attempt to touch that which is placed before him, he should be left some days before any effort is made to drench him; and if he takes only a little nourishment, a further period should elapse before he is annoyed by forcing food upon him. Should he, however, appear to be losing strength, and to be sinking, he must then at every hazard be supported. Should it be possible to insert a small horn or the neck of a small bottle between his tushes and his grinders, almost any quantity of gruel may be given him; and, when he is in a manner starved, it is interesting to see how eagerly the poor animal will take the nourishment which is attempted to be given to him in this way. The dreadful cramp of the muscles of his neck should not, however, be forgotten; and the gruel should be given to him as gently as possible, and without elevating his head more than is absolutely necessary. Frequent injections of arrow-root or gruel may also be thrown up. The ordinary horse catheter, with Read's pump attached to it, will enable any amount of gruel to be thrown into the stomach; not only quickly, but without the necessity of elevating the head. The catheter is simply passed up the nose, along the floor of the nasal chamber, and, being pushed onward, it will enter the gullet. When the tube is inserted its full length, the fluid may be injected. This plan answers admirably; subjects the horse to little annoyance, and causes but small disturbance. There is a good engraving of this method in "Mayhew's Illustrated Horse Doctor," already referred to. Some animals, however, are so irritable that any interference throws them into convulsions; and, in such cases, perhaps the injection of nutritive liquids into the rectum is all which the symptoms will permit to be done.

In a disease of this nature, the humanity and patience of the attendant must be exerted. These virtues will aid him more in the end than all his science, however learned he may be. The disease may terminate quickly. We have known a horse to die of it in less than thirty hours. So speedy a close, however, is rather unusual. The animal with idiopathic tetanus often lingers. It occasionally happens that the horse does not begin to amend until ten or twelve days have elapsed; and in one case a month passed without more than an occasional remission of the symptoms. The treatment was, nevertheless, persevered in, and the animal perfectly recovered.

When the horse does begin to get better, not a particle of medicine should be administered. By giving tonic medicines much dangerous excitation may be produced. The best tonic is nourishing food, and even that should be supplied with caution. Green meat will in these cases be useful. If the weather, however, will admit of it, a run for two or three hours every day will be of essential benefit.

RABIES, OR HYDROPHOBIA.

The symptoms of rabies in the horse are the only important points in the present state of veterinary knowledge. Curative means are unknown. It is never spontaneously developed in the horse, but induced by the bite of a rabid dog. Mr. Youatt says, "The earliest and most decisive symptom of the near approach of rabies in the horse, is a peculiar spasmodic movement of the upper lips, and particularly of the angles of those lips." Close following this is a depressed and anxious countenance, and an inquiring gaze, suddenly lighting up, and becoming fierce and menacing at a slight noise, or the approach of a stranger. Then comes an irrepressible desire to attack and bite at any person or animal within reach of the teeth. Then comes an almost systematic demolition of rack, manger, and stable fittings; and the poor wretch lies snorting and foaming amidst the ruins, paralysis of the hinder extremities incapacitating him from further mischief by kicking and plunging. The disease proves fatal in from three to six days. When the bite of the rabid dog is early known of, and can be found, of course thorough cutting out, and the actual cautery, will save the animal. Mr. Spooner relates several cases of this. When, however, rabies has developed itself, treatment is useless, and humanity dictates that the animal should be destroyed without delay.

STRINGHALT.

This spasmodic contraction of some one or more of the flexors of the hinder leg, is, like most nervous disorders, of obscure origin. It is seldom seen in the fore-leg, though an instance is now under our own observation. It is not a lameness, as the other leg does not sink, and the rider cannot feel it as he does the "dropping" in hock disease. The animal is useless as a racer, as he cannot control the voluntary nerves for a start, till he has gone through his preliminary jerks and whippings-up of his leg. It is not usually developed except in the adult horse. Professor Spooner attributes it to a pressure or defect of the great sciatic nerve which supplies the muscles of the hinder extremities. It is correspondent to chorea, or St. Vitus's dance, in man. There is no treatment available. Stringhalt has been decided *not* to be unsoundness: and we often see instances where this

singular spasm is merely momentary at going off, disappears, and the horse has a more than ordinary amount of strength and courage.

SPASMS.

What we have said generally upon tetanus, staggers, &c., renders further remarks upon spasms here superfluous. Under DIAPHRAGM, URETHRA, BLADDER, INTESTINES, the spasms of those several organs will be treated of.

§ II. DISEASES OF THE EYE.

GUTTA SERENA (GLASS EYE).—SIMPLE OPHTHALMIA.—SPECIFIC OPHTHALMIA (MOON BLINDNESS).—CATARACT.—FUNGOID GROWTHS.—OBSTRUCTED LACHRYMAL DUCT.

The eye of the horse is exceedingly liable to disease. Its structure will be found described *ante* pp., 341—343; and figured in health and disease, ANATOMY, Plate VII.

The "haw" (membrana nictitans), at the inner corner of the eye, is, in health, a thin slippery membrane, thicker or more cartilaginous towards its base, where it is embedded in fat; its action is to remove dust, insects, &c., which may have fallen on the cornea. It is no unusual thing for a thickening of this part to take place, and it will then protrude itself on the fore part of the eyeball. In this disease the retractor muscle pulls back the eye to protect it from the irritating effect of the light, and this thickening of the haw pushing it forward, and the adjacent parts being also thickened, no retraction can take place.

The olden practice of cutting out this, is absurd, and ought never to be resorted to. Ignorant farriers have, in this state, taken the enlarged haw for an extraneous excrescence, and cut it out; the eye, consequently, being left unguarded. Bleeding, gentle physic, and cooling applications, will effect a cure.

GUTTA SERENA (AMAUROSIS).

This disorder, called by farriers *glass eye*, from the peculiar greenish glassy appearance it assumes, is dependent on a paralysis of the optic nerve in its expansion on the retina. This, however, is disputed by some, who consider it to arise from inflammation, by which coagulable lymph is effused over the optic nerve, rendering the retina insensible to the stimulus of light. Both may be right in different cases. It is certain, however, that irritation of the brain produces amaurosis, and it often follows staggers. In this disorder the horse shows blindness in his *actions* rather than in his *eyes*. He lifts his feet high, moves his ears quickly, and shows himself anxious to supply want of sight by the exercise of other senses. A simple test is waving the hand pretty close to the suspected eye, when of course there will be no winking: we have, however, seen a cunning horse-dealer who could make a blind horse wink by the peculiar manner in which he drove the air upon the eyeball and lid while bringing down his hand. We have also seen amaurosis supervene temporarily while the mare has been with foal, which would seem to point clearly to a nervous origin.

In *gutta serena*, local applications are of little service. Bleeding from the jugular veins, calomel and opium, or in some cases strychnia, may be tried.

SIMPLE OPHTHALMIA.

This is common or accidental inflammation, and has generally its origin in a mechanical cause; as blows, injury of the conjunctiva from a whip-lash, hayseeds, or other matters within the eye-lids, not being removed by the nictitating membrane, and the like. It is occasionally the consequence of a common attack of cold.

Simple inflammation of the eye looks outwardly an affection of the conjunctiva only, whereas specific ophthalmia involves the internal parts of the eyeball. Another distinction is, that in specific ophthalmia there is symptomatic fever, loss of appetite, staring skin, and constitutional disturbance. Both disorders, however, are alike in impatience of light, in distension of the vessels of the haw, and sometimes in its extreme protrusion. The cornea, too, is often opaque. From that sympathy which is found to exist between double organs, even when the affection has been entirely brought on by violence done to one eye, the other will by sympathy become affected also, but in a minor degree. Such liability should be borne in mind, as a mistake in this particular might lead the practitioner into important error.

TREATMENT.—First turn up the eyelid carefully, if the cause is not apparent, and remove anything which may have intruded itself. Wash the eye with tincture of opium and a pint of cold water, laying a wetted cloth also over the eye. If the inflammation is considerable, lance the eye-branch of the angular vein, and give the horse some food of which he is fond upon the ground; this will encourage the bleeding. If blood does not come freely, bleed also from the neck, and give a dose of physic. If the case is obstinate, and a film appears upon the cornea, take two grains of lunar caustic (nitrate of silver), mix in two ounces of water, and touch the eye over with a camel-hair brush. The next article will contain the treatment of the disorder in its constitutional form.

SPECIFIC OR PERIODICAL OPHTHALMIA.

This destructive disease of the eyes, by which a valuable animal is often reduced in price from a hundred guineas to a tenth of the amount, is, as already remarked, distinguished from the simple disorder by the constitutional disturbance which accompanies it, and its attacking the internal structure of the eye, the outer covering being merely involved by sympathy. Among farriers this disease used to be termed *moon-blindness*, from a superstition that the periodical attacks were influenced in their monthly return by the moon. The period of a monthly recurrence is, however, merely imaginary.

Symptoms.—These generally appear suddenly; in the evening, perhaps, there may have been nothing amiss, but on the following morning sometimes both eyes, but usually one eye only, is found nearly closed and suffused with tears; there is great impatience of light. Indeed it is somewhat difficult to induce the animal to open the lids sufficiently for examination, and when he does so, the pupil is found exceedingly small, so as to keep out the light as much as possible. The cornea is not so opaque as when the inflammation is brought on by an external injury; but on looking into the interior of the eye we observe that it has lost its brightness. The attendants of the horse usually report that some hay seeds must have got into the eye, or that he must have injured it in some way: but a proper examination will detect the difference, and this will be greatly assisted if we can ascertain that the horse has had a previous attack.

The eye is remarkably retracted, and this retraction forces the haw over a portion of its globe, where it is seen swelled and preternaturally red, from its participation in the disease. The inner lining membrane of the lids will be found highly vascular and hot, pouring forth, in most instances, a flood of tears, which continually trickle down the face; and the whole conjunctiva will present a network of turgid red vessels over its opaque white surface. If the cornea be not too opaque or too much inflamed, we shall discover the aqueous humour thick and muddy also; the iris and choroid will likewise be found altered from their natural colour. From this state it follows sometimes, that a central yellow patch is discovered at the bottom of the eye; in which case matter has formed, from the usual suppurative inflammation, but it most commonly becomes absorbed again, and sometimes very speedily. In very acute cases, however, there is a large deposit of fluid, which disorganizes the eye. The rapidity of the changes in the state of the eye is a very marked feature of specific ophthalmia; and the transition from an almost opaque to almost a clear state of the cornea, and from a simple dimness in the appearance to a perfect opacity, sometimes occurs in a remarkably short space of time. We have seen an eye opaque within and without, which was merely dim the night before; and perhaps within twelve hours it would again have almost become transparent, without any apparent medical agency.

Specific ophthalmia commonly attacks only one eye in the horse, leaving the other totally unaffected, or at most only sympathetically involved. Worthy of remark is the complete and sudden change which often takes place in this disease. From being in a very aggravated state of inflammation in one eye, it will suddenly shift its seat to the other, leaving the original much amended or nearly well; and it will not only thus change about from eye to eye, but may likewise either spring from, or be transferred to, other organs

The eye or eyes, however, thus far recovered, seldom remain very long sound; but often are again subject to the diseased action, and the complaint recurs with all its pristine violence. As these attacks are repeated, they leave the eye less and less transparent. The remaining opacity forms a nucleus for future and rapid accretion: sometimes, however, it will remain stationary for a long time, and now and then it never enlarges. But, usually, repeated inflammatory attacks succeed each other; and the whole crystalline lens at last becomes opaque, when the disease takes the name of cataract, in which almost all these inflammations terminate.

Causes.—Plethora acting upon a weakness of the parts, often hereditary, seems a cause of periodic ophthalmia, to which the horse is more liable than any other domestic animal. The fumes of ammonia in close, dark stables, stimulating food, or severe work and bad food, may equally induce the disorder, which seldom appears before the fourth year, or, for the first time, after the seventh. Harness horses are more often attacked than saddle horses; and it has been observed to be more frequent when many horses are kept together than in gentlemen's studs, which may be due chiefly to better ventilation.

Treatment.—Though the immediate attack may be removed without great difficulty, its recurrence is not easily guarded against; resembling, in this, scrofula in the human subject. General bleeding, warm fomentations (one dozen poppyheads in two quarts of water) at first, and then the cold lotion. (See Lotions, Zinc, &c., in List.) Stimulants, as tincture of opium, or the nitrate of silver wash, may also be applied with advantage.

The food should all be boiled, and of the most supporting kind—roots of all kinds, malt, oats, ground beans, clover hay, linseed, &c., &c. This will probably sufficiently open the bowels; but should it not, avoid giving more than one drachm of aloes night and morning; and even continue this quantity no further than is imperative to render the bowels soft, yet by no means to induce watery stools.

With regard to physic, anything administered must be of a soothing and supporting description; therefore give, night and morning, during the violence of the attack, the following drink:—

Sulphuric ether	1 ounce.
Laudanum	1 ounce.
Powdered colchicum	½ ounce.
Stout	1 quart.

Should the inflammation run very high, the superior branch of the angular or facial vein, called the eye-vein, may be opened as before directed.

On recovery, remove the horse to a high, clean, cool, stable, where there are no irritant exhalations from excrement. Listen to no quacks who pretend to infallible remedies for the remaining defects visible in the eye, should any remain. You may now and then strengthen the eye by a little cold lotion of crude sal ammoniac and red rose leaves, or laudanum and rose-water, if you must

be doing something; but don't let farriers put their ruinous messes into the sore and sensitive eye.

CATARACT.

Cataract is often the result of specific ophthalmia. Cataract is total, partial, or consists of specks on the capsule of the crystalline lens. In the first the lens is quite white.

In other cases that have stopped short in their career, spots only of an uncertain size are visible on the lens or upon its capsule; a white opaque spot on either is called a cataract. Cataracts, however, can and do exist in eyes that have never been subjected to ophthalmia; and as they make their appearance without any apparent cause, so they occasionally will depart without any treatment. Blows sometimes produce them; and when caused in this manner, they are for the most part stationary. However, in cataract following ophthalmia, there is generally much derangement of the other internal parts of the eye; particularly of the iris, which sometimes adheres to the lens, at others to the cornea; and in some cases its pupillary opening is so reduced by contraction as to render the cataract hardly perceptible. This internal derangement greatly prevents any benefit being derived from the operation of couching; added to which, a horse so operated upon, to have perfect vision, would require to wear spectacles. It has, however, been suggested that, even without glasses, so much benefit might be gained from it as to prevent accidents, like running against posts, falling into pits, &c. This, nevertheless, would be greatly overbalanced by the imperfect vision, which would render the horse so operated on very dangerous from his liability to shy.

Treatment.—Cataracts of all sizes and shapes are best let alone. Should they cause the horse to shy, blind the eye or eyes in which they may exist. The measures generally pursued, with very doubtful success indeed, are the blowing of mercurial preparations into the eye, the application of caustics, either in powerful solutions or in substance, to the organ; and, in short, all kinds of cruelties, more likely to favour the formation than to cause the dispersion of cataract.

FUNGOID GROWTHS OF THE EYE.

Small polypous excrescences occasionally form on the globe of the eye; fungus-like projections are also met with on the transparent cornea, sometimes from injuries, at others apparently of spontaneous growth. When these are evidently of a polypous, or merely fleshy nature, the knife and a styptic takes them off and stops the hæmorrhage. If fungoid and bleeding, wash with chloride of zinc in solution; and red precipitate ointment, thinned with Florence oil, may be painted over it daily with a camel-hair pencil. Observe, if the growth is within the ball of the eye (when a bright yellow substance will be visible on its interior base), extirpation of the eye is the only remedy. It has been often performed, is not difficult, but so barbarous, and withal useless in an animal of which such services are demanded, that a speedy death is the more humane and advisable alternative.

In lacerations of the eyelid, from a blow against a nail, hook, or other projection, obtain union of the parts by a suture of thread, and it will generally heal from the first intention. Remember, in cases of laceration, simple cold water is better than Goulard's or evaporative lotions.

In cases where the injury reaches the eye-ball itself, and there is active inflammation, the activity of treatment must correspond. Bleed from the head; give a strong purgative and cooling drench, apply anodyne fomentation (boiled poppy heads) to the eye with soft cloths or sponge. When the physic has operated, separate the eyelids and examine the extent of the injury. If the iris should protrude, touch it with lunar caustic or butter of antimony, to destroy the projecting portion, which causes agonizing pain, and to deaden the morbid sensibility of the parts. Apply the caustic till the protrusion is got level with the cornea, and use an astringent wash or unguent—(E) (F) (G), Astringents, p. 370—to repress the discharge of pus and cleanse the sore. White vitriol, one ounce, twenty drops of laudanum, and water at discretion, is a good eye-wash in such a case.

OBSTRUCTION OF THE LACHRYMAL DUCT.

This disease, called "watery eye" by the farriers, is occasioned by the stoppage of the small canal leading from the eye to the nostril, at the inner corner of the upper and lower eyelids, and ending in the dark skin of the nostril on the inner side. This minute sinus obstructed, the tears flow out upon the face of the animal, excoriate the flesh, and make bald places and sores. A bougie, or, better, a thin elastic probe of catgut a foot long, may be passed through the channel, an assistant holding open the eyelids, a mechanical cure is effected. (See, for detailed cases and cure, Percivall's "Hippopathology," Vol. III., pp. 154—157.)

WARTS.

The eyelids are sometimes affected with warts, which are very irritating to the animal, in consequence of his rubbing them on some prominent object: this causes them to bleed, and increases their number.

They should be cut off with a pair of sharp scissors, and the roots touched with nitrate of silver (lunar caustic), or blue vitriol.

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§ III. DISEASES AND INJURIES OF THE TEETH, PALATE, TONGUE, NOSTRILS, AND PHARYNX.

The "dentistry" of the horse will not occupy much space. Teeth disorders are the results of domestication, artificial diet, irregularities in feeding, and injury from the iron bit.

The teeth are often troublesome to the domesticated horse. Sharp edges on the outer side of the upper molars and the inside of the lower—one wounding the cheek, the other the

tongue, and causing the horse to swallow his food unmasticated, or producing "quidding" (*i.e.*, throwing out his food in balls from the mouth)—are a serious though apparently a trivial defect. The tooth-rasp, which requires no description, is the remedy; and the same when one of the grinders stands higher than the others. Sharp ragged teeth have been often overlooked, and the poor animal physicked and doctored for all sorts of internal complaints, even ulcerations in the mouth and lampas, when a scrutiny of the teeth and a rasp were all that was required for the restoration of the services of a valuable animal.

CARIOUS TEETH.—Mr. Cherry, Veterinary Surgeon to the Life Guards, and Mr. Percivall, relate cases where this complaint has occasioned a discharge mistaken for glanders. The smell of the discharge being horridly fetid. The key, and extraction of the tooth, is the remedy. The "key" will be found figured in our plate of INSTRUMENTS.

PARROT MOUTH.

By this appellation horse-people understand what dog-fanciers call "overhung;" *i.e.*, a mouth so formed—or rather so malformed—that the upper jaw projects considerably beyond the lower; so much that the inferior incisor teeth, instead of meeting the upper, come in contact, when the mouth is shut, with the bars of the palate, while the teeth of the superior jaw have no opposing surface whatever, unless the lower lip can be so regarded. This deformity is not of very common occurrence. The horse has less power of gathering up his hay and corn with his lips, and of the retention of the food while being transferred to the grinders; as is seen by the animal, while feeding, wasting part of his corn, and slobbering. In grazing, the parrot mouth is yet more disadvantageous, much difficulty being experienced in nipping off the grass; this seems the chief objection to the purchase of such a horse. There is, of course, no remedy for such a malformation.

INJURIES TO THE MOUTH AND TEETH.

Colts while breaking are often hurt in the mouth by pressure of the bit; and the lower jaw of many horses is injured by the snaffle between the teeth and first grinder. When severe damage is done, the bone exfoliates, or abscess is formed in the jaw. In this case mashes should be given, and, to prevent the formation of sinuses, the bone cut down upon, and chloride of zinc, one drachm, water one quart, and a little essence of aniseed, syringed into the opening several times a day. Don't let the wound heal, but keep open with the knife, so that the exfoliated bone may come away freely when grasped by the forceps.

Injuries under the tongue, and on the roof of the mouth, are sometimes occasioned by the "port" of the bit. If there is much inflammation and tumidness, bleed locally, use depletory measures, and a weak lotion of alum and laudanum.

Excoriated Angles of the Mouth.—These arise from bad driving or riding, "jagging," or "sawing" the animal's mouth. The treatment is obvious. A lotion of chloride of zinc, and water, one quart, applied with a soft cloth, and dress with a little alum, honey, and water. We chiefly mention this because vile and disgusting animal fats as ointments are often applied, to the horror and nausea of the cleanly and delicate animal.

INJURIES TO THE TONGUE.

In the clumsy administration of a ball, the under part of the tongue is sometimes lacerated, which renders feeding painful, and makes the horse slaver and froth at the mouth. This may be cured by a solution of alum, thrown in with a syringe.

The practice of tying a horse's tongue to prevent him from running away, may not be frequent, but it is done, and the loss of the tongue may be the consequence. Mr. White, in his "Farriery," says:—"Three cases of this kind I have met with; one I was told of by the person who did it, and who cut off the swollen part of the tongue to relieve the animal from his intolerable sufferings, the ligature being buried in the enormous swelling that had taken place. Two others I have heard of, in which the tongue was literally drawn out by the roots. The most common manner in which the tongue is wounded is, by the horse hanging back when he is tied up with a coil of the halter in his mouth and over the tongue; or, as it is vulgarly termed, with a "chaw" in his mouth. On this, Mr. Spooner remarks in a note: "The editor has met with many cases in which the tongue has been divided in this manner, and a good portion of it cut off; but though the horses for some time were unable to take their accustomed food, yet the remaining portion of the tongue gradually accommodated itself to the mouth, becoming flatter and flexible, and at length capable of gathering up the food apparently as well as before." When the tongue is partially divided, sutures must not be used. Metallic sutures wound the mouth or cheeks, silk or thread soon sloughs out. The tongue must be left alone after cleansing with a styptic lotion (zinc is best), and the horse fed solely on gruel.

Fistula of the parotid duct, and glandular abscesses, will find their place under ABSCESS, FISTULA, and TUMOURS, in CHAPTER IX.

LAMPAS.

We have here an opprobrium of farriery, not but that the older practitioners of human medicine have their barbarities and blunders on record. Lampas is a swelling of the roof or bars of the mouth or palate, near the front teeth. Blaine, forty years ago, raised his voice against the barbarous practice of burning the horse's mouth with a red-hot iron for this "imaginary disorder," as he properly called it; Percivall, years afterwards, says in despair, that "in the army you can hardly prevent the shoeing smith burning for lampas." Mr. Mayhew in his book (pp. 58—60) has given a drawing

of a poor horse under the torture of the actual cautery, and eloquently declaimed against the barbarity.

Lampas occurs from an early age, throughout colthood up to five years, when the horse's mouth is perfect. It arises from fever, the mastication of dry food, and, of course, with a sore mouth, the poor creature is "off his feed." The groom looks into the mouth of the animal, when, perceiving the bars to be almost on a level with the incisor teeth, he pronounces his charge to have the lampas, and takes the poor creature to be burnt within its mouth accordingly. It is true the animal has recovered its appetite by the time the effects of the burn have passed away, but so it would have done had no hot iron been cruelly employed. The fact is, the young animal is then cutting a molar tooth, and a day or two having elapsed, all the fever and pain occasioned by the process would have been over. "No man," says Delabere Blaine, "should allow his horse to be burnt for the lampas. It is a torturing and a wanton operation, and tends rather to do harm than good. In most cases a few mashes and gentle alteratives will relieve the animal, and a few slight incisions with a lancet across the bars will relieve inflammation, and never do harm.

NASAL POLYPUS.

A pear-shaped body, filled with blood-vessels, which pass through its stalk or peduncle, is often found on mucous tissues; it is called polypus, from an erroneous supposition that it has many feet, or roots. Polypi should never be sliced off in the old way of farriers, but extirpated by a single cut, or by ligature or torsion. Torsion is a good method, and not so painful as might be supposed, for the polypus has little sensibility under the knife or scissors. A pair of scissors, with sharp curved claws, are sold by surgical instrument makers for this purpose. The polypus is grasped by these claws, which are then drawn down to get a firm hold, and twisted round several times; this twists the stalk, or peduncle, and ruptures it, when it comes away. The twisting should be done quickly, and the bows of the scissors secured together by a piece of soft wire as soon as a good grip of the tumour is got by the claws. Ligature is more tedious; but there is no bleeding. It is, however, doubtful whether it is less painful than torsion. The ligature is a piece of fine zinc wire, a yard and a half long, doubled, and the two free ends passed down a small tube, leaving a loop at the doubled end large enough to put over the polypus; then draw the loop tight on the neck or stalk of the polypus, and secure it to a cross piece of wood at the bottom of the tube. The horse is to be carefully reined up, and next day the tumour will feel cold; if not, give the cross piece another turn, and tighten the wire. Watch the tumour, and, when it appears quite dead, twist the pedicle gently, and it will give way.

NASAL GLEET.

This distressing affliction must not be confounded with glanders. Horses taken up from grass, are found with the bones of the face swollen and soft. A blow on the facial bones is sometimes the cause. Pus gathers in the cavities of the turbinated bone, and there corrupts. In extreme cases, these cavities may be cleansed by the use of the trophine, by which a circular piece of bone is cut out; an elastic probe, armed with a tape, inserted and brought out at the nostril, thus establishes a seton, or gives a passage to syringe out the pus. To describe such a purely professional operation in a compendium like this, would be out of place. La Fosse's work, and Bartlett's "Farriery," contain engravings of the operation and instruments, as a supposed cure for glanders, where the inquirer may consult them. When nasal gleet, however, will not yield to medicine, dilute injections of warm water and chloride of zinc, or of creosote, the animal is valueless, and should be destroyed.

The ball recommended in this disease, is, copaiba balsam, 3 drachms; cubebs, half an ounce; powdered cantharides, 3 grains. Mix. A solution of sulphate of copper, blue vitriol, or the muriate of barytes, once supposed to be a specific for glanders, introduced in small quantities into the water the horse drinks—two drachms of the salt to a quart of water—may be put in the pail or bucket. The steam vaporiser, for steaming the nostrils, is also to be recommended. It is described under CATARRH, *post*.

DISORDERS OF THE PHARYNX.

Choking, and the methods of relieving it, will be noticed in CHAPTER VI., under ŒSOPHAGUS. The organs of swallowing may be injured by the practice of giving balls, especially when they are large or hard. A morbid state of the pharynx is thereby induced, which renders deglutition difficult, and sometimes impossible; the lower part of the pharynx acquiring a morbid irritability, which causes it to contract upon the approach of the food, and return it into the nostrils, or into the mouth, where it is often re-masticated, and at length thrown out into the manger like a quid of tobacco.* Such horses have been named "quidders" by dealers, and are considered of little or no value: such cases are often incurable, and sometimes so because not understood. Were the horse, in the early stage of the disease, kept a few weeks on gruel and bran-mashes, and then turned to grass, the muscles of deglutition would sometimes gradually recover their lost power.

Mr. White states that he met with a case, in a mare, where both swallowing and breathing were much impeded by ulceration of the pharynx, or upper part of the œsophagus or gullet, produced probably by her having swal-

* Sometimes there is a partial palsy of the muscles employed in deglutition, by which the animal has been gradually starved.

lowed hastily some hard or sharp substance, such as a stub of wood, or the unchewed stalk of a dock, thistle, fern, or bramble. "The pain and irritation which swallowing occasioned caused coughing, and some of the food to be thrown into the nostrils, and some into the larynx, where it produced a great deal of pain and difficulty in breathing, so much so that they were about to destroy the animal. Relief was afforded by making an opening in the windpipe, and passing a surgeon's probang into the opening, and up through the larynx, and then quickly withdrawing it. I then passed it up again, and withdrew it a second time, in order to remove completely, or as far as could be, whatever might be lodged in the larynx. I put two stitches in the skin over the opening in the windpipe, and did nothing more. The mare was greatly relieved, and brought up a colt she had. When the colt was fit for weaning, the mare, being of little value, was destroyed; and then the ulceration in the pharynx was discovered. I saw the animal just before she was killed, and found her breathing freely and looking tolerably well (considering she had been kept at grass, and on a common), and with a good udder of milk. But the owner informed me that she appeared sometimes much distressed, and coughed a great deal, probably by some food still getting into the larynx."

CHAPTER XXVI.

DISEASES OF THE AIR PASSAGES:—THE TRACHEA, BRONCHI, PLEURA, LUNGS: ROARING, THICK WIND, BROKEN WIND, SPASM, AND RUPTURE OF THE DIAPHRAGM.

In considering the important class of disorders which attack the organs of breathing in the horse, we shall divide the inflammatory affections of the air-passages into three sections; a division justified by recent discoveries and the improvements of modern practice, thus:—

1. *Bronchitis;* inflammation of the mucous lining of the bronchial tubes and trachea.
2. *Pleuritis* (pleurisy); inflammation of the membrane (the pleura) covering the lungs and lining the chest.
3. *Pneumonia;* inflammation of the substance of the lungs (Gr. *pneumon*).

1. BRONCHITIS.

Bronchitis may be *acute*, *chronic*, or *epizootic*. The causes of bronchitis may be set down as the same which induce common catarrh or cold. Most frequently the extension of inflammation is from the throat downwards. It is often a very insidious disease; though sometimes slight, and free from danger. In many cases it creeps on so gradually that it fails to attract attention until too late. It is not uncommon for a cough and a slight diminution of the appetite to be the only symptoms noticed for several days; although, if the animal were examined at this stage, he would be found to have a quickened and a disturbed pulse with slightly laborious breathing, with a slight discharge from the nostrils. The disease, after creeping on in this manner for several days, sometimes exhibits on a sudden the most dangerous symptoms; the pulse being exceedingly quick and weak; the respiration greatly accelerated; the membrane of the nostrils and eyelids of a red colour, and the discharge from the nostrils diminished or suspended. When bronchitis presents itself in this form, it is frequently fatal—the membrane of the nostrils becomes of a purple hue, and death too frequently closes the scene in the course of a week or ten days.

The disease fortunately does not always exhibit itself in this severe form. We often find the first symptoms are a loss of appetite, dulness, discharge from the nostrils, and cough; it can only be distinguished from a common catarrh by the quickness of the pulse (advancing from 50 to 70) and the disturbance of the breathing. From common inflammation of the lungs it may be distinguished by the warmth of the surface and the extremities which usually prevails, and by the more moderate acceleration of the pulse and respiration. It should, however, be observed, that it is by no means uncommon for this disease to be complicated with inflammation of the lungs; and when such is the case it is the more dangerous. It is sometimes attended with costiveness; the dung being often offensive, and coated with mucus; and yet the membrane lining the bowels is so irritable as to be violently acted on if physic is administered. On applying the ear to the chest, instead of the healthy murmur, we generally hear a wheezing or sucking sound; sometimes one resembling brickbats being rolled down from a considerable height is audible, owing to the air struggling with the mucus; but this, of course, will depend very much on the quantity of secretion which is effused. The breath is warm, and the mouth usually hot and dry.

Treatment.—One of the sequelæ of chronic bronchitis is thickening and change of structure in the air passages from which decreased capacity follows, with "thick wind" and wheezing. There may be a seeming necessity for bleeding, yet, violent as the symptoms may appear, the patient will not often bear loss of blood; here, therefore, more than in any other disease, will appear the propriety of the caution elsewhere recommended when treating of the operation of bleeding. No fixed quantity should be abstracted. The operation should never be left to the assistant, but should take place under the practitioner's own eye, in order that the bleeding may be stopped on the very first indication that the system is affected. There is no rule which admits of so few exceptions as this; that a disease of the mucous surfaces (and this is one) requires prompt and decisive treatment, but at the same time very cautious remedies, from the rapid debility which is connected with all these affections.

Perhaps, after all, it is better bleeding should altogether be abstained from. Such a bloodletting as we dare hazard in bronchitis is not likely materially to affect the disease; while the smallest abstraction of the vital fluid is sure to tell with dangerous (perhaps fatal) certainty during the subsequent debility.

Although it will be desirable to relax the bowels, aloes will be dangerous, except in the quantity of one or two drachms, and not repeated; but it will be better to substitute a pint, or nearly so, of linseed oil, guarded by a drachm of chloroform, and to assist its action by clysters if there is costiveness.

Sedative medicine, such as the fever-ball, should be given twice a-day; digitalis, calomel, and tartarised antimony, each half a drachm, with three drachms of nitre, is a good formula. Mr. Percivall prefers white hellebore to the digitalis; it is more active, but requires greater vigilance in the attendant.

Counter-irritation by means of setons or rowels in the brisket, or the liquid blister rubbed on the throat down the course of the windpipe, when the first acute symptoms have abated, are often attended with good effects. Mashes, gruel, and green-meat should form the food of the horse, but even these in stinted quantities.

2. pleuritis (pleurisy).

It was formerly the practice to mix up this disorder with *pneumonia* or inflammation of the *lung:* but, although in complicated cases the two are co-existent, yet in most pleuritis is marked and distinct, and examination after death shows that the substance of the lung itself is not involved. The pain of the inflammation of the fine smooth glistening membrane which invests the lungs is intense, every breath drawn or expired by the poor animal causing the irritated surfaces to crepitate in moving upon each other.

Symptoms.—The suffering of the animal is indicated by a constant pawing of the fore-foot and a looking round, slightly showing his teeth. The nostrils are dilated, as in pneumonia, to assist the difficult respiration, but their membranes are not much discoloured. Pain, on pressure of the sides, is intense; but the pulse is hard, full, and but slightly accelerated, until suffering has weakened the system. If the symptoms do not become aggravated by the fifth day, a recovery may be expected. If, on the contrary, a thin, wiry, and rapid pulse, with sweats and restlessness come on, hydrothorax (or death) is at hand. Mr. Field thus enumerates the distinctive symptoms of pleurisy from pneumonia. "In the former the pulse is hard and febrile, in the latter, oppressed; the peculiar saw-like respiration in the one, the difficult and convulsive breathing in the other; the absence of intense redness of eyelids and nostrils in pleurisy, and its presence in pneumonia; the extreme pain of pressure in the former, and the comparative insensibility in the other; the coldness of the extremities in pneumonia, the variable temperature of those parts in the other. The frequent lying down and getting up in pleurisy, and the obstinate standing up in pneumonia." The food should be mashes, and no corn.

Treatment.—Mr. Field recommends the immediate abstraction of ten to twenty pounds of blood. A small dose of aloes (linseed oil is preferable), sedatives as prescribed in the last article, seton or rowel in brisket, and blisters on chest and sides. Mild diuretics when hydrothorax is feared.

pneumonia (inflammation of the lungs).

When we consider how totally we have removed the horse from a life of nature to one of art, in which the lungs, more vascular than any other organs, are subjected in an extraordinary degree to the extremes of exertion and temperature, we cannot be surprised that they should in a great measure become the seat of acute inflammation.

The causes may be looked for in constitutional plethora, occasioned by high feeding, hot clothing, stabling with high temperatures, and accelerated exercise; all which render the lungs more susceptible to congestion, and less able to resist the effects of it. Among the various causes, alternations between heat and cold are probably the most common; and we have the more reason to believe that it is the alternations themselves which provoke the disorder, as we find that horses bear the extremes of both heat and cold, in different countries, with seeming impunity. Heat suddenly applied may be supposed to heighten the circulation generally, and produce congestion immediately within the lungs. Cold suddenly applied may act instantly also by driving the blood from the skin to the deeper-seated organs. A very fertile source of it is inordinate exercise, as regards quickness of progression, which wears out the vital activity of the lungs; thus pneumonia frequently follows severe runs in hunting. Cold, moist spring seasons are often marked with pneumonic attacks, which rage in an epidemic form.

Symptoms.—This disease sometimes attacks the horse suddenly, and he exhibits, with one or two shivering fits,

the excited breathing which is symptomatic of the complaint; at others, it steals on, almost unobserved for two or three days; but whether the approach be sudden or retarded, the general functions are disturbed. One that first shows itself is the unequal distribution of heat; the legs and ears being much colder than the other parts of the body. The coat stares; the horse loses his appetite; is evidently uneasy, and occasionally looks gently round towards his ribs. In the early stages, the nasal linings look paler than usual; but as it advances they become of a leaden hue; and although the general surface of the trunk may vary in its temperature, the extremities, as the legs, ears, and tail, and sometimes the muzzle, are found uniformly cold. Cough is by no means a pathognomonic symptom; many cases are without it; but when it does exist, it is at first short, dry, and frequent, and becomes eventually heavy, thick, and painful; occasionally some mucus with bloody striæ is thrown up in coughing, particularly when the bronchi participate in the affection. The respiration becomes disturbed as soon as the disease is formed; the first febrile attack will hurry it, but, the severity of that over, it becomes simply laboured. The local inflammation having pervaded the substance of the lungs, thickened the lining membrane of the tubes, and lessened the calibre of the air cells, respiration now becomes permanently quickened. The flanks are found to heave, and the breathing is carried on with labour and irregularity; the inspirations being delayed to retard the pain produced by the distention of the chest, while the expirations are more hurried to relieve it from distress. The cavity is, however, no sooner emptied, than a new source of distress, in the stagnant condition of the heart, forces the horse to renew the breathing. The state of the pulse is variable in this disease, according as the lungs or the pleura bear the greatest share in the complaint. It is, however, almost always quickened, sometimes to 100 even, from the irritated state of the arterial system; it is also in most well-marked cases small and oppressed, the pulmonary congestion preventing the free passage of blood through the lungs. We have occasionally found it moderately full and bounding, dependent probably on the membrane being more diseased than the substance of the lungs. The horse is now seen to look more anxiously round to his sides; the whole body also seems stiff and sore. Partially elevating the head occasions great pain, and he is altogether disinclined to move; on the contrary, he stands fixed with his head extended forwards, his nostrils outstretched, his fore legs somewhat apart but forward, and he seldom if ever lies down, or if he does he rises again quickly. The chest, if tapped with the hand, emits a dead sound; while the ear, applied to the side of the chest, will detect a dull but more urgent murmuring. As the complaint increases, the pulse becomes still more oppressed and irregular, so as to present, at the region of the heart, nothing but the faintest flutter; the legs, ears, and muzzle feel still more intensely cold, although partial sweats may visit the carcass. The nostrils change to a still more livid hue, and the air they expire is chill. The mouth now becomes cold and pale; convulsive twitchings affect the breast, neck, and face; the teeth grate; and death ensues earlier or later, as the disease has been more or less rapid; occurring sometimes as early as the second or third day, but more often between the third and seventh, being also sometimes prolonged to the fourteenth or fifteenth.

The terminations of pneumonia are more varied than in most other complaints. Resolution is that most to be desired; in which the symptoms gradually subside, either spontaneously, or aided by the curative treatment. Congestion is the termination to be dreaded; which sometimes suffocates the patient on the fourth or fifth day, by filling up the air cells with thickened blood. In the epidemic pneumonia, where a considerable degree of malignance is occasionally present, instead of blood, the air cells often become choked with serum.

Gangrene is not a frequent termination of true pneumonia. The irritation or the congestion usually destroys the animal before the tissues are completely broken up. Suppuration sometimes follows pneumonia; in which case there is a deceitful remission of the symptoms, but not so great as in hydrothorax. It is further marked by an irritating cough, a purulent discharge from the nose, with a hard, hurried, and an irregular pulse. In these cases a speedy termination follows by suffocation, or a more protracted one, in which the animal dies emaciated. Hepatization (Gr. *hepar*, the liver), or degeneration into a *liver-like* substance, is also not an uncommon termination; in which the substance of the lungs becomes so blocked up and solidified as to make them, contrary to the usual state, sink in water. When the condensation is only partial, the affections called thick wind and broken wind are the consequence; or an increased irritability of the lungs themselves, or of the mucous membranes of the bronchii and trachea, may be left, which subjects the horse to a long-continued or permanent cough. It is also the parent of tubercles, which end in phthisis or glanders.

On the subject of symptoms, it remains to guard against mistaking pneumonia or inflammation of the lungs for such other affections as it may be confounded with; as with influenza, bronchitis, or other diseases of the mucous membranes. In influenza, the extremities do not continue invariably cold; the distress of countenance is not so great; sore throat is commonly present; the breathing, though quickened is less laborious, and the pulse seldom oppressed. The cough in influenza is generally deep, sonorous, and very painful: a weakness, not corresponding with the violence of the symptoms, is very early seen in influenza; and though the lining of the nostrils may be inflamed in influenza, it is seldom so much so as to present a purple hue. The principal necessity which exists for making a careful distinction between the two diseases, arises from its not being found

prudent to push the treatment so far in influenza as in pneumonia; for if the two should be confounded, and the milder be treated as the severer case ought to be, then it is a thousand to one but disease of the chest supervenes, hydrothorax sets in, and brings the mistaken disorder to a termination. Inflammation of the lungs has also been mistaken for Colic, from the horse sometimes expressing considerable uneasiness, and often looking round to his sides; but in colic the horse evinces acute pain, by kicking at his belly with his hinder legs. By turns, he lies down and rolls, and then suddenly rises, appearing quite well for a certain space, during which he will fall to eating; while, on the contrary, in pneumonia, he never lies down, but stands stupidly quiet; except now and then, when he may look at his ribs, but without any of the impatient indications of pain, or intervals of perfect ease. It may also be added, that in inflammation of the lungs the pulse announces danger from the beginning, while in colic it is, at the commencement, of a healthy character.

The Treatment must be prompt. The old practice was to extract blood immediately upon entering the stable. The first blood-letting was to the amount of two gallons at least, the second of one gallon, and two, or even more, subsequent withdrawals of half or three-quarters of a gallon each; thus, at all events, four gallons of blood, or more, were taken away. A full-sized horse has but eight gallons of blood in his body, and one moderately fat has not that amount. Here, however, the veterinary surgeon withdraws half the blood from the poor horse's body, under the impression that the animal's disease announced it had too much of that fluid, to regulate the quantity of which is the care of the whole system. After this, he used to look upon the subsequent signs of excessive debility as natural results.

The antiquated notion about a horse having too much blood, is now exploded; many excellent practitioners do not bleed at all; but if you resolve to take any, watch the animal; never mind the pulse at this time; and at the first sign of change, though it be ever so slight, pin up the vein, and on no account repeat the experiment.

Blaine's practice in pneumonia cannot, we think, be bettered; we therefore extract it in his own words:—"The next point to be considered is counter-irritation, and most practitioners blister both the sides largely, choosing for their agent cantharides, which is uncertain and slow in its action. One of the signs of improvement in inflammation of the lungs, is the animal lying down, which during health it always does upon its sides. The rendering of these parts sore seems to be opposing an obstacle to the animal resuming the recumbent attitude. The better plan would be to reject cantharides, and spare the sides. A more active vesicatory, and a safer place for its action, can be found. We proceed to have the hair clipped from off the entire length of the back; then we take liquor ammonia, diluted with four times its amount of cold water, and with this we thoroughly saturate the place from which the hair has been cut. We next cover the part with cloths several times folded, to prevent the ammonia from evaporating. This needs to be watched, but will often raise a blister in ten minutes, whereas, cantharides rarely has any effect before the next day. The ammonia is likewise more certain than the Spanish fly, and is altogether to be preferred, as in inflammation of the lungs in the horse there is no time to be lost before remedial measures are adopted. While this is doing, we procure four men if possible, and place one at each leg, to rub the part with their hands as hard and as long as they can. Four thick woollen bandages are then produced, and one wound gently, not tightly, round each leg. A hood is then put upon the animal's head, but the whole of the body left uncovered.

"The next thing is to procure a cool loose box, not a cold one, but a cool loose box, and to have the horse gently led into it; and then to look about and observe that no draughts blow directly upon his body; this being ascertained, provided the weather be favourable, the door and windows may be left open throughout the day.

"All this accomplished, order the following drink to be prepared and administered:—

Sulphuric ether	1 ounce.
Laudanum	1 ounce.
Extract of belladonna . . .	1 drachm.
Tincture of aconite	2 drachms.
Cold water	1½ pint.

"Rub down the belladonna in a little of the water. Then mix with the other ingredients. The aconite (wolfsbane) should be of the strength of a drachm to an ounce. If stronger or weaker, make the due allowance, so as to have but the virtue of the fourth of a drachm in the drink.

"Should the foregoing be rejected, either of the following may be employed:—

Tartar emetic (in the form of the antimonial wine of the Dublin Pharmacopœia) .	1 drachm.
Digitalis, made into a decoction . .	1 drachm.
Nitre	2 drachms.
Cream of tartar	3 drachms.

"Mingle with a pint of warm water and give; or the annexed may be tried:—

Powdered white hellebore . . .	10 grains.
Powdered ipecacuanha . . .	½ drachm.

"Make the last prescription into a drink, with half a pint of thick gruel. Either of the above drinks is to be given four times daily at the commencement, and to be gradually lessened as the disease abates.

"Great caution is required, in giving a horse with inflammation of the lungs anything in the shape of a drink. Time and patience accomplish wonders. Lower the horse's head the moment it begins to cough. This last direction is most important, and should not be neglected, or the horse may fall dead from the fluid having fallen upon the lungs, which the examination after death is certain to

disclose. The best plan is to proceed with firmness and yet gentleness, dividing the drink into four portions if necessary, and allowing the animal to take its time over each.

"All food should be removed. No trouble should be expressed because the horse does not eat. The animal, with inflammation of the lungs, generally has no disposition to feed, or if the inclination remain it should not be gratified. Starvation is one of the most active means of cure, and one of the surest agents in cutting short the complaint. The horse will lose more flesh in one day from the wasting effects of the disorder, than he can in seven days from actual abstinence. Warm mashes, not hot, however, may be placed in the manger, because in inflammation of the lungs it is dangerous to give any physic, lest the bowels sympathize, and the animal perish. Two ounces of Epsom salts may be dissolved in every pail of water, which should be repeatedly changed, and placed continually before the horse. Enemas of simple soap and water, in conjunction with backraking, may also be tried, in order to excite the bowels into action.

"If debility should appear, tartar emetic should be withheld. If, in spite of this, the weakness increase, the horse may have linseed tea made thick placed before it, with two quarts of stout per day. The aconite, likewise, should be withdrawn, and attention paid to the legs, rubbing them whenever they are cold. In extreme cases, brandy and ammonia are admissible.

"When the disease abates, which it generally does in forty-eight hours, the care must not lessen; for the attack is likely to recur, or remain in a chronic stage as thick or broken wind, or even to degenerate into glanders. It is apt to involve other structures in its progress, as the pleuræ, when the symptoms will be somewhat confused, being between pleurisy and pneumonia. In such a case, the terminations may be either those of inflammation of the lungs, or of the pleura.

"It is a bad sign when the flanks heave, and the horse's head is put out of the window; and a much worse one when the head is withdrawn and the eye becomes amaurotic. When the animal keeps walking round and round his box; and breaking into partial sweats, sometimes raises its head and neighs, proving he is delirious, and in imagination answering the call of his species. In this last case be certain that death is not far off."

HYDROTHORAX (WATER IN THE CHEST).

This is a result of pleurisy—or pleuro-pneumonia as the double disease of both pleura and lungs is called—it is generally fatal. The only chance is by the operation called "tapping," which is effected by introducing a trocar (a cutting instrument with a canula four inches in length and a quarter of an inch in diameter), when the fluid contained in the cavity punctured escapes. Percivall* recommends aloes, calomel, digitalis, and tartarised antimony to be persisted in; and *after* the tapping the following:—

Blue vitriol	1 drachm.
Digitalis	½ drachm.
Tartarised antimony	2 drachms.
Turpentine	*q. s.* for a ball.

Mayhew, who gives drawings of the trocar and its stylet, with the operation of drawing off the fluid, advises, after the process, carefully boiled oats and beans, and the following night and morning.

Iodide of iron	1 drachm.
Strychnine	½ grain.
Sulphate of zinc	½ drachm.

Extract of gentian and quassia (powdered) sufficient to mix the ball.

CATARRH, COUGH, COMMON COLD, SORE-THROAT.

Common cold is an inflammation of the mucous membrane lining the nostrils and throat. It may attack the neighbouring parts, or be confined to one only; it may be so slight as to ask no treatment, or become so severe as to threaten suffocation. We have already noticed influenza or catarrhal fever. In the simple attack on the Schneiderian membrane, which shows itself by a thin watery secretion from the nose, or perhaps the eyes, we have the first symptoms of common cold. In a few days the lymphatic glands become inflamed, swelled, and tender, and symptomatic fever is present, and the tendency of mucous membrane to form pus without ulceration begins to shew itself. Some cough is not unusually present. The discharge thickens, then ceases, and the horse is over the attack.

The TREATMENT is very simple. Extra clothing, &c., warmer dwelling, with a mild purgative ball, bran mashes with nitre (six drachms); a drink of linseed meal or tea, with an ounce of ipecacuanha wine mixed in, should the cough be annoying, will suffice. If there be much fever (A) or (C) FEBRIFUGES, p 235. When the discharge is considerable, infuse bran or hay in boiling water, and steam the horse's nostrils with a suspended nosebag. Read's patent Vapour Inhaler is a most convenient and effective apparatus where available.

Professor Spooner recommends sulphate of iron, two drachms; ginger, one drachm; and gentian, two drachms; in treacle, as a tonic ball, once a day, when the discharge from the nose in catarrh seems obstinate.

In SORE-THROAT, where the region of the gullet and fauces is hot, and the salivary glands swollen and tender, a good addition to the practice is a blister or mustard poultice to the throat, with a fever ball, containing half a drachm of tartar emetic and a drachm of nitre, night and morning. Purgatives to be omitted, the food scalded, and the water chilled.

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* See *Hippopathology*, vol. ii., pp. 112, 122, where operations and successful cases are detailed.

CHRONIC DISEASES OF THE AIR PASSAGES:—ROARING, CHRONIC COUGH, THICK WIND, BROKEN WIND.

The artificial life of the domesticated horse occasions numerous diseases and changes of structure in his respiratory organs. Not only do the great lobes of the lungs suffer, but the passages to them are altered in dimension, and more or less obstructed, so that the sound produced by the passage of air is modulated, and "wheezing," "whistling," "roaring," &c., become familiar terms among horsemen. Thus, a horse "wheezes" when any obstruction exists in the nostrils; "whistles" when the obstruction is situated farther back, and near the opening to the larynx; and "roars" when the larynx is malformed, or the hindrance to the passage of air lies within the windpipe.

ROARING.—The causes of roaring are of two classes, acute and chronic. The acute are from obstructions accidentally formed, as cicatrices from wounds or injury, foreign substances lodged in the windpipe, extravasation of fluid or coagulable lymph, which, once organised, forms a permanent obstruction: when this extends up to the glottis, it produces whistling. Whoever has handled the throats of many old horses must have observed a hardened state of the larynx, which almost resisted all attempts to what is termed "cough them." This ossification is not an uncommon cause; and a similar state in the cartilages of the trachea is productive of it also. A cause, also, of roaring is a band of lymph stretched across the tracheal tube; at others, an internal ring of the same matter simply diminishes its diameter. The obstruction is sometimes so considerable as to excite the sound upon the slightest exertion; in general cases, however, roaring is only exerted when forcible inspirations and expirations are made. Mechanical obstructions to free respiration may eventually be productive of roaring: the custom of tightly reining in our carriage-horses, especially such as run in pairs or double harness, there is reason to think, produces it; the practice of using tight throat-lashes or neck-straps may likewise induce it. In furtherance of which last opinion it may be recollected that horsemen have a very general supposition that cribbiting ends in roaring, in thick wind, or in broken wind. May not the tight collar, strapped around the throat, here tend to the former of these affections? The custom of "coughing" horses, and so frequently as it is practised in fairs, may be readily supposed as a cause. A horse passes from fair to fair, having his unfortunate throat brutally pinched thirty or forty times each day. Is it to be wondered at if inflammation takes place, and adhesive deposit follow?

TREATMENT. This must be regulated by circumstances. When it is acute, and depends upon the diseased state of neighbouring parts, the inflammation of those parts must be relieved. When it can be discovered to be the consequence of recent inflammation of the laryngeal or tracheal cartilages, a physic ball may be given, and the seat of the disease blistered, while, from day to day, some sedative medicine is administered. In every case of roaring, however, excepting the acute, the cure depends quite as much upon chance as upon skill.

CHRONIC COUGH.—Coughing is a spasmodic effort of the diaphragm, intercostal, and abdominal muscles, producing a forcible expulsion of the air from the chest with such violence as is calculated to remove any extraneous body that may intercept the free passage of the air. Whenever it accompanies a general affection of the constitution, it is regarded as simply "symptomatic," and the original disease is attended to for its removal. Thus catarrh is accompanied by a cough, but we attend principally to the general affection, as the best means of subduing it. A "chronic cough" is often symptomatic of some affection of the air-passages; it is also an attendant upon the state called broken wind. It likewise accompanies glanders; and appears when worms are in the stomach and bowels. But besides these cases, there exist at times, without any attendant difficulty of breathing (the horse at the same time eating well and thriving), a permanent cough, usually more considerable in the morning and evening, after meals, particularly after drinking, or on first going out to exercise; and it will remain in this state, without otherwise affecting the horse, for years; sometimes it will even be continued with no obvious injury for his whole life.

The TREATMENT of "chronic cough" must depend on our view of its causes and consequences. When it appears to arise from a want of mucous secretion, give expectorants which excite such secretion (A) or (C) EXPECTORANTS, p. 235. When a redundancy of the mucous secretion is apparent, tonics are required. See TONICS and STIMULANTS in List. When the secretion is acrid, try a DEMULCENT, p. 232. The cough, which is the effect of an irritable state of the parts, is sometimes relieved by stimulating the throat externally, and by giving internally opium with bitter tonics.

When worms in any large numbers are present in the stomach, or intestines, a continued cough generally exists, with irregular appetite and unthrifty coat, stools fetid and slimy, at one time loose and at another hard and dry; for which turn to the head under which those parasites are specially treated of. In all chronic coughs the best effects sometimes follow from feeding with carrots. Turnips, parsneps, beet, and potatoes, may be beneficially used where carrots cannot be got; and a mash with bran and linseed, or malt, may be occasionally given. Try the following every morning, made into a ball with honey:—

Powdered ipecacuanha . . .	½ drachm.
Camphor	2 drachms.
Extract of belladonna . . .	1 scruple.

THICK WIND.—This is also a consequence of either acute or chronic pulmonary inflammation. In some instances, it is the immediate consequence of violent or long-continued exercise, and particularly if the exercise be taken upon a distended stomach and bowels, or after full drinking; or it

may be brought on by the application of cold. It is often connected with a plethoric state, and is therefore very common among pampered animals and gross feeders; and more particularly in low-bred and thick-set horses. The post-mortem examinations of such cases exhibit, in some instances, a slight hepatization of lung, the consequence of repeated congestions; in others, the minute bronchial cells are filled with adhesive matter, or the general substance may be pervaded with minute granulations of a bluish colour.

The Symptoms of thick wind are sufficiently known to any one at all conversant with horses. The capacity of the air-cells being diminished, renders it necessary for the air to be more frequently taken in, because, being acted on by a less surface, the blood is not thoroughly oxygenated; and a sufficient number of air-cells not being expanded, the animal makes hasty inspirations to remedy the default. The force with which these are effected occasions the sound so well known as the distinguishing mark of thick wind. In this affection, the obstruction to both being equal, the inspirations and expirations are alike, which serves to distinguish it from broken wind. Thick is however very apt to degenerate into broken wind.

The Treatment of thick wind can seldom be more than palliative, for, once established, it remains permanent. The remedial means are more in the hands of the proprietor than of the surgeon. The food must be moderate in quantity, and of such a kind as will occupy the least possible space. No hay should be allowed; and as thick-winded horses are gross feeders, the muzzle ought to be put on as soon as the manger has been emptied.

Broken Wind.—This peculiar affection has long excited the attention of veterinarians. The older writers indulged in the most extravagant notions respecting it. On the Continent it has occupied, in later times, the research of many eminent veterinarians, but with little satisfactory issue. It has been attributed to external and internal causes; to a defect, and to a superabundance, of vital energy; to altered structure of the heart, of the lungs, of the diaphragm, the stomach, the liver, &c. It is injury with some, nervousness with others, and simple distension with a third. Among our own writers the discrepancy is equally great: Gibson attributed it to an enlargement of the pulmonary mass generally; Dr. Lower to a rupture of the phrenic nerve; but in later times it has been mostly attributed to structural change.

The cause of broken wind is hereditary or constitutional predisposition. A certain form of body is unquestionably favourable to its production, and it is from this circumstance that it proves hereditary. The narrow confined chest, and the pendent belly, which mark low-bred horses and gross feeders, predispose towards the affection. It may be the subjecting horses to a long-continued unhealthy course of feeding on dry food, as chaff, bran, barley meal, &c. &c. that brings it on; as also working in mills, where much dust is necessarily inhaled. It is seldom the immediate consequence of pneumonia; but frequently it results from those states of disordered respiration which succeed to it, as thick wind, chronic cough, &c. We are much in the dark about its origin: we see that it gradually steals on a horse, occupying months, and even years, with a slight occasional cough, which, ripening into a state of impeded respiration, at last ends in broken wind. We see it also follow one hard gallop; and we may leave a horse well one day and find him broken-winded the next.

It is not by any means uncommon to meet with broken-winded horses whose lungs after death are neither emphysematous or otherwise structurally deranged; and which, with the exception of their lighter colour, and greater bulk than natural, cannot well be distinguished from the sound lung, although they crepitate or crackle when pressed by the hand. It appears likely that rupture of the air-cells is the cause of broken wind, because it is not always sudden, but gives some years of a warning cough, or of thick-winded wheeze.

There is another view of the cause of this disease, namely, that it depends upon derangement of the digestive canal; and if the irritability of the larynx favours the opinion advanced with respect to the lungs, the constant passing of wind supports the other conjecture. Horses with broken wind will eat almost anything, which again is opposed to the conclusion that the lungs are the sole seat of the disorder. The belly is enlarged, the stomach distended, and its coats much thinned, which last-named facts would seem to decide the question. But the truth is, broken wind appears to be a universal derangement, and it is not one structure that suffers, but the entire body undergoes more or less alteration.

Symptoms.—These are well marked: the cough and the manner of respiration may be considered as conclusive. The sound emitted by the cough is peculiar, and is often forced out with a kind of grunt, in a short but vibrating feeble tone compared with the usual cough of sound-winded horses. The respiration is conducted with a remarkable difference between the inspirations and expirations. Inspiration is effected quickly; and the lengthened laborious strain of expiration, is performed by two distinct efforts, in one of which the usual muscles operate, in the other the abdominal muscles come into violent action, to complete the expulsion; after which the flanks fall with peculiar force, and the air is again inspired as by a spasm. An auxiliary symptom is the peculiar flatulence of every broken-winded horse; this is strikingly characteristic of the disordered state of digestion common in these cases, and of the constant thirst which is invariably present.

The Treatment of broken wind can seldom be more than palliative. Whatever increases the distension of the stomach and bowels aggravates the complaint, by increasing the difficulty of expanding the lungs. Therefore, avoid stimulants, and promote regular evacuations; abstain from over-distension of the lungs by too violent and too sudden exer-

tions, particularly after eating. By carefully attending to these principal indications, a broken-winded horse may be rendered comfortable to himself and useful to his owner. The food should be regularly given, in moderate quantities only; but most particularly it should be of such a nature as will contain much nutriment in a small space. Hence corn is more proper than hay, and, above all, a manger food composed of one part bran, one part bruised beans, and two parts bruised oats, agrees particularly well, if given somewhat moistened. On a quantity of this food no horse will need hay. When they can be got, give also carrots, mangold wurzel, Swedish turnips, parsneps, or cooked potatoes, which feeding will be found to combine both medicine and nutriment, and render little water necessary. Turning out to grass commonly aggravates the symptoms of broken wind; a neglect of moderate exercise also aggravates the complaint. Water should be sparingly given, particularly in the working hours; at night a moderate quantity may be allowed, but on no account let the broken-winded horse drink his fill at a pond or trough. Medicinally, benefit has been received from daily small doses of foxglove; under these circumstances it has been given to the amount of a scruple; a piece of rock-salt placed in the manger has seemed to do some good.

Horse-copers have a mode of what they call "setting" broken wind. Fat, shot, opium, in short any substance that will act as a sedative, is used; often with a fatal effect on the animal. The test is to take the horse to a trough or pond and let him swill at pleasure. The cough returns, the flanks heave, and broken wind reveals itself by all its ordinary symptoms.

BRONCHOCELE.

Bronchocele is an enlargement of the thyroid gland in the throat—in the human subject, goitre—and is a disorder of unknown origin. It is not very serious beyond mechanical inconvenience and unsightliness. The gland in its normal state is about half the size of a pigeon's egg; but sometimes, without showing active disease, as large as a hen's egg. It has, however, been known to grow so large as to press upon the larynx. It is a well-established observation, that certain countries and localities are favourable to its production. In England, Derby and Nottingham shires have obtained this repute; on the Continent, Switzerland, the Tyrol, the valley of the Rhone, and others; and to an extent to lead us at once to the conclusion that influence of soil, or climate, or both, must have much to do with its production. Old medical writers ascribe its appearance in particular persons to that convenient *fons et origo*, "a scrofulous habit." Of late years the disease has been thought to be hereditary; and so strong has appeared the evidence of this in dogs, that Mr. Youatt's forcible expression on this point is, "I am quite assured that it is hereditary."

In horses we know nothing further about it than that a tumour, seldom of any great magnitude, makes its appearance in the throat, just below the part we grasp to excite coughing, either directly in front or inclining to one side, having a circular or an ovoid form, and feeling soft and puffy, and movable, without any flinching or sensibility being evinced by pressing or squeezing it, and without being the occasion of the slightest inconvenience or disparagement, save what may be considered to arise from its being regarded as an eyesore.

Treatment.—Should the tumour, on account of its volume, become the subject of medical treatment, iodine is our sheet-anchor. Supposing the case to be recent, it might, in the first instance, be advisable to give a brisk purge; after which administer, daily, a ball composed of a drachm—which may be increased to two drachms—of iodide of potassium and linseed meal, and, at the same time, rub into the swelling as much of the following ointment as is equal in bulk to a small walnut. Take of:—

Iodide of potass	1 drachm.
Simple cerate	1 ounce.

Or, if a drench is preferred:—

Iodide of potass	½ drachm.
Liquor potassæ	1 drachm.
Distilled water	½ pint.

And after the drink rub in the ointment till no grease remains. Should the part become sore, you may pause in the rubbing-in treatment, as the disorder is not active, and the tumour is not morbidly sensible.

STRANGLES.

Strangles, a name given when there was little more known of this disease than its evident danger of *strangling* the patient has come down to the present day. The disorder is peculiar to young horses between the second and fifth year. It is seldom met with in aged horses. It is evidently of febrile origin, yet its proximate causes are not known. It appears like smallpox or measles in the human subject, but it is not contagious. Sometimes it is so mild as to come and go without remedial measures, and the tumour has been absorbed naturally. Mr. Castley ("Veterinarian," vol. iii., p. 426) remarks, that "often when a young horse is looking sickly, delicate, or thriftless, farmers or breeders will say, 'he is breeding the strangles,' or that 'strangles is hanging about him, and he will not get better until he gets over that complaint.'" The explanation of which appears to be, that the animal is suffering more or less from "strangle-fever"—a fever, the disposition and tendency of which is to produce local tumour and abscess; and most commonly in that situation—underneath the jaws—from which it has obtained the appellation of "strangles."

Symptoms.—High-fed colts are more liable to be seized with it at an early age than those which are kept upon a lower diet. The first symptom is cough, differing but little from that of a common cold, only that there is a more abundant

discharge from the nostrils, of a yellowish colour, and unaccompanied by disagreeable odour: it is also in most cases slightly purulent. There is, besides, a discharge of slimy stringy fluid from the mouth. The membrane which lines the nose is red. It will be found that considerable swelling has taken place under the jaws, accompanied by fever; which is distinguished by want of appetite, a quick pulse, a hot mouth, and a general weakness of the whole frame, producing a dejected appearance. There is likewise a quick motion of the flanks, and coldness in the ears and limbs. The swelling is in the form of a tumour between the jaws, increasing with various degrees of rapidity, occupying nearly the entire space, and giving pain to the horse when eating; who also manifests a great disinclination to feed. This is accompanied by thirst, but the swelling prevents him from indulging in water; and having swallowed a mouthful or two, he desists. After which, and even after eating, he is frequently seized with a spasmodic cough, with suffocating symptoms. The swelling is one uniform body, and consequently differs from the enlargement of the glands in catarrh and glanders.

Treatment.—As the visible complaint consists in the swelling between the jaws, the first thing to be attended to is, to bring the tumour to suppuration. A sharp blister is the first thing to be applied. This, administered in time, will facilitate the discharge a week or two earlier than it would have taken place if allowed to come to a period naturally. It will also have a tendency to draw out the inflammation from the mucous membrane of the throat, and consequently ameliorate the cough. The following stimulating ointment may be applied with advantage after the removal of the blister:—

Camphor	1 drachm.
Hog's-lard	1 ounce.
Oil of origanum	½ drachm.

Shortly after having been anointed with the above, a large hot poultice may be applied, and both repeated twice a-day until the tumour is full of matter and is quite soft. It frequently breaks of its own accord; but it is better that it should be laid open with a lancet, from the bottom upwards. The matter must be well squeezed out, and the lips of the incision kept open with a piece of lint for several days, until the matter is completely discharged; otherwise, a second tumour may be formed, which frequently proves difficult of cure. After the matter is dislodged, a small quantity of Friar's balsam should be injected into the cavity of the tumour daily. It will be found that where tumours break spontaneously, the lips of the wound, from having uneven edges, will be more difficult to cure.

Should the neighbouring glands show signs of induration, rub them with an ointment of hydriodate of potass daily.

At this stage of the complaint, if there is no unusual degree of fever, a gentle laxative and a tonic to follow may be administered. Cooling medicines will be beneficial should there be fever. If there is no fever, the animal will soon manifest a desire to eat. His food should principally be oatmeal gruel and bran mashes, with a supply of green meat, consisting of cut grass, or tares. Should these not keep the bowels sufficiently open—which is of great importance in diseases of this kind—then a laxative must be given. This will have the effect of preventing eruptions, which sometimes follow the strangles; and nothing more will be required, if it operates freely.

If, however, the complaint is followed by weakness, it will be necessary to have recourse to tonic medicine, which should be repeated daily until the horse recovers strength.

In bad cases of strangles the parotid gland will swell to a great size, and even become ulcerated; and in other instances an accumulation of fluid will take place, and burst into the cavity of the mouth, being discharged through the nostrils. The Eustachian tubes, too, have been found full of pus. In some cases the tumefaction has been so great as to call for Bronchotomy (see Operations), which is explained elsewhere, and delineated in Plate XIV., Fig. 5.

Strangles seems incidental to almost every horse; and as it is a complaint which is often of long continuance, foreign veterinary surgeons conceived the idea of inoculating to produce a milder degree of the disease. This they performed either with part of the discharge from the nostrils, or with matter from the tumour. In many cases this has had a beneficial result, the disease being both shorter in its duration and milder in its effects.

DISEASES OF THE DIAPHRAGM.

The great muscle which divides the chest from the abdomen, or the organs of respiration and heart from those of digestion and secretion, is liable to two lesions, spasm and rupture.

Spasm of the Diaphragm is marked by a loud thumping noise, audible some yards from the sufferer. The pulse felt at the chest is feeble and rapid, and but scarcely perceivable at the jaws. The breathing is quick and laborious, and the animal shivers distressingly. Over exertion on a full stomach is often the cause. Bleeding, aperient medicines, and then a sedative, are the active treatment called for.

Rupture of the Diaphragm, induced by the same causes as spasm, is, if extensive, fatal. If slightly ruptured, the horse has been known to live with symptoms of broken wind. Extra exertion will be at once fatal, as the viscera would come through the fissure and become strangulated. There is no treatment for ruptured diaphragm.

CHAPTER XXVII.

DISEASES OF THE HEART, PERICARDIUM, AND BLOOD-VESSELS.

GENERAL OBSERVATIONS.

AIR, food, and exercise in good quality, and proper quantity are the first requirements for good blood; with these, the production of the fluid which builds up every structure of the body—bone, sinew, and muscle—would remain in due proportion and quality, and disease (if nature did not scorn to be bound by our limited logic) would be unknown. The constituents of the blood are given already at Page 350, to which the reader is referred. The organic functions of the other viscera may be summed up in two words, ASSIMILATION, and SECRETION. That of the blood, the product of assimilation, is to build up and renovate. Every part of the living animal is constantly running into decay from use, and requiring renovation; a process which begins with birth and ends with death. The air and food, then, as we said in the first instance, form the blood, the residue of unassimilated matter being expelled as fæces. The blood thus supplied would soon over-nourish the system, and occasion what is called *plethora*, but this again has its escape in the *excretories* which throw off its useless or redundant portions.

The blood is the medium through which all this is accomplished; but we shall here merely look upon it in connection with the organs which mechanically distribute it, its vitiation embracing the whole range of diseases.

Until the application of the stethescope, and the general practice of auscultation, disease of the heart was, as a rule, unrecognised by the veterinarian, and consequently treatment adopted for other and often non-existent disorders. So far as the heart itself was concerned, this was, perhaps, of the less importance, as heart-disease in the horse may be considered an organic and incurable defect. To form a correct judgment, however, of the true seat of a disease, is of the very highest consequence; and a study and practice of auscultation is of the greatest use to this end. In the horse, the practised ear will readily discriminate between the natural beat of the heart and that accompanying disease. A reference to CIRCULATION and RESPIRATION, Chapter IV., in STRUCTURE and ANATOMY, pp. 204—208, will show the mechanical action of the heart and pulsation. These movements in a state of health must first be well understood, especially as to the strength of the *shock* or *beat*, and to the *time* (or *rythm*) of its recurrence. We must also examine the animal when he is in a state of quietude and has not been exciting himself, and take care that he is not alarmed at our presence or proceedings, all of which any observer can quickly judge of.

Of course, we must expect a fat or a thick-made horse to give less sound than a lean one, with thin walls or parietes to his chest. In lean and narrow-chested horses, too, the heart may be listened to on the right as well as the left side, while in round fat ones it will be only well audible on the left, and over a smaller extent just opposite the heart. Violent exercise, or fear, will often cause palpitation, or such violent beats as may be heard, not only in the region of the chest, but in the abdomen and other parts of the body. By *hypertrophy*, or enlargement of the substance of the heart, the impulse to the touch is increased, but the sound diminished; by simple *dilatation*, or increase of the size without thickening of its walls, weakness and diminution of impulse is produced; and lastly, when increase of its substance and dilatation of its cavities takes place, the violence of the dead abrupt blows strongly repels the hand.

The diseases of the heart divide themselves into three classes,—those affecting the substance of the heart; those of the surrounding membrane (pericardium); those of the lining membrane, and of the valves and coats of the great blood-vessels.

INFLAMMATION OF THE HEART (CARDITIS).

French writers treat upon this disorder in the routine style, describing its symptoms, causes, and treatment; but as it is clearly pericarditis they describe, further reference need not be made to them. The signs of heart-disease should, however, be known, as the animal so afflicted is a very risky investment. "He may appear pleasing and even skittish," says Mayhew, "yet his existence shall at any movement be cut short." Auscultation is the surest means of detection. The visible signs, however, are sometimes sufficiently emphatic to admit of no doubt. The eye is expressive of anguish; the countenance is haggard; the pulse irregular; the throbs of the heart visible; and occasionally as visible on the right side as on the left. The carotid artery can be seen to pulsate in the neck. The regurgitation within the jugular vein is nearly always excessive—it often reaches almost to the jaw. It takes place by jerks, which ascend higher and higher, each becoming smaller and weaker as it mounts upward. The appetite is sometimes ravenous, but

more often it is fastidious. The breathing is not accelerated in any marked degree, which distinguishes heart disease from many other disorders. The animal suddenly stops, trembles, and appears about to fall; but, often as suddenly recovers and proceeds upon the journey. Sometimes the horse will refuse to move, and is always very unwilling to turn in the stall. Occasionally he will open his mouth as if yawning, and then heave a long-drawn sigh. No peculiar symptom, however, can be specified as heralding the final attack. Death is always at hand, and comes without any special warning. Worse than all, it is most imminent when the horse is going at speed.

INFLAMMATION OF THE PERICARDIUM (PERICARDITIS).

This is the disorder usually known as inflammation of the heart. The membranous envelope of the heart is by no means unfrequently the seat of inflammation. In opening horses that die of pleuritic disease, nothing is more common than to find effusions of lymph and water within the pericardiac cavity, as though the one membrane had morbidly sympathised with the other.

Mr. Pritchard, veterinary surgeon, of Wolverhampton, has communicated to "The Veterinarian" some interesting cases of heart-disease, whence we may gather much information. The effused lymph is mostly disposed in layers upon the internal surface of the sac, and upon the exterior of the heart, giving additional substance to the one, and often a complete coating to the other, and, in some instances, forming adhesions between the two. In this manner, the pericardium may be increased in thickness to an enormous extent. The lymph assumes the same albuminous character as it does in the chest, and on being cut into, while recent, displays a honey-comb sort of texture, having its interstices loaded with a yellow serous fluid; in fact, putting on the same appearance, only that it is more concrete, as it does within the chest, and undergoing—should it remain—the same changes towards organization. In process of time, and when it exists as an additional lining to the pericardium, it grows close and firm, and attenuated in substance, and turns of a white colour. It has been found converted into a substance of the nature of cartilage, an eighth of an inch in thickness.

Pericarditis may assume either the acute or chronic type. It may exist as an idiopathic affection; but in most cases it will be found to be secondary—consecutive on inflammation of the pleura. That it may, at least in a chronic form, commence by itself and run its course alone, is in some measure proved by the cases of heart dropsy which every now and then present themselves unaccompanied by disease of other parts.

DROPSY OF THE HEART, (HYDROPS PERICARDII),

Is that stage of pericarditis where effusion has taken place, and the membranous sac is supposed to contain both lymph and water.

"The symptoms of this affection, apart from pleurisy and pneumonia," Mr. Pritchard informs us, "are well marked. They are, palpitation of the heart; the carotid arteries beat forcibly, and are readily recognized on applying the finger to their course in the neck. There is a good flow of blood through the jugulars, a copious return of blood through the neck, when the state of the pulse is considered, the surface of the body and extremities is warm; and these latter symptoms continue until within one or two hours of the horse's death." "In addition to the above symptoms, there is such an expression of alarm and anxiety in the countenance of the animal as no other malady produces." "The respiration is but little disturbed."

The fluid collected in most cases resembles the serum of the blood. Sometimes it is red, from being tinged with exuded blood—at others, it is turbid from lymph floating in it—often it is sero-purulent in character, and looks like so much whey. Now and then we find pus in flakes mingled with it. In quantity it varies considerably—from a pint to a gallon or more. The horse generally sinks from other disease, or from constitutional irritation, before the cavity is filled. Mr. P. mentions the case of a cart-horse which occurred while he was a pupil at the Veterinary College, whose death, without any previous ilness, took place most suddenly and unexpectedly, in whom the pericardiac sac was found distended to that degree with water, that it was inundated and choked in its action.

RUPTURE OF THE HEART.

This is more frequent than is supposed. Where it takes place, even from violent exertion, it is the result of previous enlargement, dilatation, or aneurism of the aorta. Mr. Percivall says ("Hipopathology," Vol. ii. p. 167), "During one of the racing meetings that used to be held annually at Woolwich, one of the horses, who had vehemently contested, and lost only by half a neck, a heat, suddenly fell and died just after he had passed the winning-post; I afterwards examined the body, and therein found the heart burst: I think it was the right auricle that had given way—the animal had literally died of 'a broken heart.' In my regimental predecessor's time, one of the troop-horses, intended to mount king's guard, from the same cause, dropped down dead on the parade." There are several cases of rupture of the heart in the "Veterinarian," and other works. As there is no TREATMENT to be prescribed for such fatal lesions, we will not waste space upon them. Where disease of this important organ is suspected, attention to the general health, and regular, moderate, and slower work than the animal has been accustomed to, may prolong life, and preserve the utility of the animal in a humbler capacity than the saddle, the fast trap, or the carriage.

ANEURISM OF THE AORTA.

The horse is by no means so subject to this fatal disorganization as man. It is, however, met with generally as a consequence of ulceration. A number of cases are given in the French veterinary books. The horse with this "weak point" in his main blood-vessel, (or in the iliac artery, which also occurs,) is past all treatment, and may be looked on as "a dead 'un" for any serviceable purpose.

INFLAMED VEIN (PHLEBITIS).

Inflammation of the vein is an affection now and then met with in practice, and ordinarily a discreditable result of careless or clumsy bleeding, and the effusion of blood in the divided integuments and membranes. A dirty or rusty fleame has been known to produce it.

The natural process by which the parts wounded in letting blood are repaired, may be thus described:—As soon as the aperture in the skin is pinned up, the blood extravasated between it and the opening in the vein, into the cellular tissue, becomes coagulated, by which the latter is so completely plugged that all further escape of blood is effectually prevented. Soon afterwards, the lips of the wound in the vein take on inflammation, and adhesive matter is effused, which so perfectly restores their union, that, in the course of but a few days, it will be found to have assumed the appearance and texture of the parietes of the vein itself. In the interim, the coagulum between the skin and the vein is becoming every day less and less, until, by a process of absorption, it is totally removed. Lastly, the new-formed membrane—that which but lately was adhesive matter—occupying the site of the puncture, in time acquires such perfect identity, as to be with difficulty distinguishable from the coats of the vein themselves.

Should anything occasion a fresh separation of the lips of the wound, and thereby destroy this natural adhesive process, suppuration will probably ensue, the parts will fester, but the hair will generally become matted over the external orifice, so that, until we come to disturb it, no matter makes its appearance. At the same time the parts become tumid and hot, and tender on pressure. In fine, everything indicates the approach, or rather the presence, of internal inflammation.

Inflamed vein has also been observed to occur when the lancet has been employed by operators not long used to that instrument, which has occasioned the integumental and venous opening to be not exactly opposed to each other. Whenever, therefore, an early extravasation of blood follows bleeding, first having removed the pin, carefully press out the effused blood with the fingers; and, if there appear no likelihood of more hæmorrhage, do not again insert the pin, but tie the horse's head up day and night. Should the swelling not be observed immediately, or when it happens that inflammation has already taken place within the cellular membrane, first treat by rest, and frequent bathing with a cold solution of muriate of ammonia and vinegar; or apply a mild blister. If the tumour suppurate, as soon as fluctuation is felt, make a depending opening, or introduce a seton through it. We will now consider something further than the mere integumental inflammation, and come at once to the point we set out at—the inflammation of the substance of the vein itself, which is either communicated from the integuments, or originates within the vessel from the puncture, which is supposed to occasion a peculiar inflammation of the inner coat of a wounded vein.

The Symptoms of the injury appear about the third or fourth day usually, when the lips of the cut begin to gape, and a little lymph is thrown out; the next day the edges are more cast back, as well as more red and expanded. A sanious discharge issues, or perhaps hæmorrhage occurs. The tumefied vein now feels corded, hot, and tender; and if the progress of the inflammation be not stopped, the tumefaction extends along the course of the vein. If in the jugular, it proceeds towards the head; and if it occur in any of the other veins of the body, as the saphena and plate vein, it extends towards the heart, hardening the vessel into a cord-like substance. This appears to be the consequence of the inflammatory action, by forming the contained blood of the venous trunk into a firm coagulum, and therefore all attempts to save it afterwards fail. Suppuration of the tumour now often appears; though sometimes the punctured part itself will present little more than a spongy mass, from which a grumous liquid distils, while abscesses form in various situations around the course of the vessel. As the morbid action extends upwards, it frequently involves the whole neck, and often affects the side of the head, from which results hindrance to motion: and often some difficulty is experienced in eating and drinking. There is commonly constitutional disturbance. In some cases the symptomatic fever runs very high. The pulse has been above ninety; and the excess of irritability brought on has destroyed life.

Treatment.—The course to be pursued will depend on the state of the disease. It is of importance to keep the horse as quiet as possible, and to restrain the neck from movement; which latter is best effected by tying up the head, and giving him gruel for food. It is also recommended to apply a mild blister in the course of the tumefied vein, which seems to assist by lessening the general inflammation: this, in fact, is an indication never to be lost sight of.

When, however, we have no hopes of saving the vein from obliteration, but, on the contrary, a disposition manifests itself to form abscesses in various situations we must proceed to more active measures. The abscesses must be opened freely with a knife, or, if one appears to communicate with another, setons may be passed through the sinuses by which they are joined. The head must be tied

up, and blister follow blister; another being re-applied before the action of the first has ceased. In this fashion the life will be saved, although the vein will be lost; the horse subsequently may become equal to the severest service, though immediately after the loss of a jugular he may require some care. He must not be fed from the ground, or ridden hard, for twelve months succeeding his recovery. His manger ought to be elevated, and his water even lifted up, so as to prevent him from stooping his head. At first, his food ought to be such as requires little mastication, but in three months he may return gradually to hay and oats. At the termination of a year, he may feed off the ground.

A marked morbid consequence of bloodletting arises from bleeding in the plate or in the thigh vein; in which the fleame often passes through the vein into the fascia that lies between the vessel and the muscles. In these cases the fascia inflames, and a formation of pus takes place within it, which, as it cannot escape, insinuates itself to some depending situation: an opening should, therefore, be made to evacuate the matter, or a seton may be inserted for this purpose, and the part be repeatedly blistered; the animal being taken good care of, and not put to hard work too soon afterwards.

Mr. Percivall recommends the actual cautery. The "budding iron" "when hæmorrhage takes place, should be introduced at a red heat, to sear the interior; our object being twofold—to seal up the vein, and afterwards to slough the wound."

PLETHORA AND ANÆMIA.

Plethora, or richness of blood, is a condition premonitory of disease; poverty of blood, also, may give rise to its production. We are now about to learn that the system may become vitiated or corrupted, and disease in that manner be engendered in it. There are various ways in which noxious matters may obtain introduction into the system, some of which are palpable and open to demonstration; while others elude our observation so far as to become apparent only through their effects. The channels through which they gain admission are, the alimentary canal, the air-passages, and the skin.

An animal may eat that which is unwholesome, mingled with his food, or he may drink water that is insalubrious; or he may, under some casual or incidental circumstance, lick in and swallow, mixed with his saliva, matter of a contaminating or morbific nature; in either of which ways he may lay the foundation of disease in his system. We know that within the alimentary canal is elaborated the chyle; that the chyle feeds the blood; and that the blood nourishes and repairs every part of the body: consequently it is natural to suppose that any hurtful or morbific matters existing within that canal, will contaminate the chyle; the chyle, the blood; and the blood, the system. In this manner medicines, given internally, affect the constitution: there are many whose presence, independently of their effects, can, a very short time after their administration, be satisfactorily attested in the blood. Madder has been mixed with the food of hogs; and some weeks afterwards, on their being killed, has been found tincturing with its scarlet dye even the inmost parts of the animal's bones. As pastures are known to have their degrees of nutritiveness, so do they possess their salubrious and insalubrious properties, arising not only from baneful plants that may be growing among the herbage, but even from the quality of the grass itself.

Blood may exist in the animal body to a greater amount than is required for its economy, or is compatible with its health; in like manner the same fluid may, under particular circumstances, exist in a less aggregate quantity than is natural or salutary: these conditions are vulgarly called its richness and poorness. In fact, in the one the blood is redundant, in the other, deficient in nutritive properties. In a general way, most domesticated animals consume more food than is required, or is converted into nutriment; a circumstance that, considered in connection with the customary mode in which horses at the present day are treated, renders a case of anæmia proceeding from lack of aliment of somewhat rare occurrence. Such a condition, however, may and does occasionally proceed from torpid or defective action in the digestive, or absorbent, or assimilating powers of the system.

Anæmia may give rise to disease, either from the insufficiency of the quantity of the blood for the purposes of the animal economy, or from the thinness or poorness of its quality. It is too prevailing a practice in the regimen of the stable, to keep horses "short of water," under the impression that much fluid is injurious; a notion that probably originated in the very proper custom of giving water very sparingly at the time the animal is required to exert himself. Hunters and racers are not allowed any, or but very little indeed, on the morning of the day they are to go to work. This, however, furnishes no good reason why the animal is to be debarred from quenching his thirst after his work is performed.

The water the animal drinks may prove the vehicle for the introduction of disease. It may contain some noxious impregnation, mineral, saline, or of other nature; or, it may, from being long stagnant, have become putrescent. Water forms an excellent vehicle for the exhibition of such medicinal substances as are almost or quite tasteless and inodorous. Mr. Percivall recommends the administering of arsenic and mercury in this manner. It is in the recollection of all, that race-horses at Newmarket were poisoned by the treacherous introduction of arsenic into their water-troughs.

Morbid or contagious matter may likewise gain introduction into the system through the alimentary canal, though we have not much apparent reason to believe such is often the case; nor are we by any means well advised in

regard to its probable consequences when such does, or is supposed to occur. A horse running at the nose from glanders, will drop the discharge into the manger, and smear it upon the rack and other parts of the stable within reach of his head, from which situations the matter, become probably dry and encrusted, may subsequently be licked off by some other horse occupying the same stable. All this may, and no doubt does, occasionally happen ; considering, however, how much alive horse-owners now-a-days are to the danger of glanders, together with other circumstances of improvement, it is by no means, a common or even very likely occurrence.

Through the air-passages it is that disease finds the most ready inroad into the blood of the horse. Considering how accessible, and at the same time how susceptible these parts are, and how much they in particular suffer by the change from a state of nature to one of domestication, it becomes no matter of surprise to us that they should prove so frail a medium. The air an animal breathes is a more common vehicle of the seeds of disease than the food he consumes. Miasms, influenza, animal and malignant effluvia, all by turns pervade the atmosphere, and exert their influences on the delicate and sensitive membrane lining the air-passages ; through it tainting the system, either by absorption or by direct effect on the blood itself in its course through the lungs. The natural stimulus of this membrane is pure air—at least air free from any irritating property ; whereas, the atmosphere of the stable is rarely free from animal exhalations, and but too often imbued with animal poison. The subject of atmospheric influences, in-doors as well as out of doors, is one on which we greatly lack information ; and he will be eminently serving the cause of veterinary science who successfully embarks in its investigation.

Through the skin, densely clothed as almost every part is with hair, disease finds a difficult entry into the system. We know, however, from experience that many medicaments rubbed into parts whose skin is thin and almost hairless,—the insides of the thighs, sheath, muzzle, &c.,—will take effect on the constitution. We therefore cannot doubt the possibility of disease being introduced in a similar manner, though we believe instances of it to be rare where there has been no abrasion of surface. For, so long as the cuticle remains entire, there is an evident indisposition in the absorbent pores of the skin to imbibe any morbific or noxious matters : destroy, however, the cuticular covering, and the disinclination ceases to exist. Even upon the bare membrane of the nose, glanderous matter may be applied without ill consequences ; although its effect has proved certain in any part of the body by inoculation. Such is the case, likewise, with the virus of rabies. So long as the integrity of the skin remains unbroken, there is little reason to apprehend any ill consequences, even though the saliva may have been resting upon its surface.

SANGUINEOUS AND SEROUS CONGESTION.

In those parts of the body in which the serum-bearing vessels terminate,—many of them in exhalants,—through these terminations exhales a sero-albuminous fluid for the purposes of moisture and lubrication. Now it frequently happens that accumulations of this serous fluid take place, imperceptibly to us, as well as unconsciously, at least without producing any inconvenience, to the animal himself, and without any previous or existent signs of inflammation, such are called serous congestions. These cases can hardly be called inflammatory, seeing that they occur without the combination of signs mentioned before : viz. heat, redness, swelling, and pain, which all consider to mark the existence of inflammation. Indeed, often the only one among them that we can recognize is swelling, and that manifestly owing to the presence of the collected fluid. It is by no means uncommon to meet with a circumscribed tumour in some part of the body where the skin is loose ; which, on being opened, proves to be a collection of serous fluid in the cellular tissue, and which has come on without any antecedent inflammatory action whatever.

In the internal cavities of the body, likewise, we occasionally find accumulations of serous fluid, without any accompanying traces of inflammation. In the cavity of the pericardium ; in the ventricles of the brain ; and, also, within the thorax and abdomen. In this respect there appears to be remarkable sympathy evinced between these several parts. Should a horse die from water in the chest (hydrothorax), we find water collected in his belly, and likewise within his brain ; in which two last-mentioned cavities the effusion may be regarded as the result of serous congestion.

Sanguineous and serous congestion may exist in combination. When a horse's legs fill from standing in the stable (which they do from serous infiltration into the cells of the cellular membrane), the tumour is not the result of inflammation, but of sanguineous and serous congestion, in consequence of standing long without exercise. Blood accumulates in these parts remote from the heart ; the seriferous vessels especially suffer from distension, and the easiest mode in which they can relieve themselves is to suffer the fluid to exude through their exhalant terminations. A similar disposition of parts may pervade the whole limb, as well as any cavity, organ, or part of the body, and thus give rise to that condition which goes by the general name of dropsy.

Windgalls of all denominations may be regarded rather as the effect of congestion than of any inflammatory disorder. They are formed, generally speaking, without heat, and without causing lameness. They are, in fact, enlarged (hypertrophic) bursæ mucosæ, originating in congestion and augmented secretion, induced by the frequent or undue exertion of parts, and are simply indications of over-work.

CHAPTER XXVIII.

DISEASES AND INJURIES OF THE ŒSOPHAGUS, STOMACH, PERITONEUM, AND INTESTINES.

§ I. DISEASES AND INJURIES OF THE ŒSOPHAGUS.

STRICTURE OF THE ŒSOPHAGUS.—CHOKING.—ŒSOPHAGOTOMY.

By *stricture*, in surgery, is meant the contraction of some tube or passage of the system. The three most common are those of the œsophagus, of the intestines, of the neck of the bladder, and (in the human subject only) of the urethra and vagina. There are two sorts of stricture—the spasmodic or sympathetic, and the organic or mechanical. In the first, the contractile or nervo-motory action is at fault. In the second, the lining membrane is thickened, and there is often an alteration in structure, almost or quite obstructing the passage. Sympathetic stricture is owing to other than local causes, and is noted elsewhere under STRANGLES, &c., the organic or mechanical stricture will be here spoken of.

The gullet or œsophagus of the horse is a most delicate organ, yet barbarous violence is often practised on it by grooms, carters, and farriers. Its lining mucous membrane is thrown into small folds or wrinkles, marking the amount of distension intended by nature. Its outside is enveloped by a large mass of cellular tissue, to ensure its independence of motion, unembarrassed by the surrounding parts. Its channel is small, but large and strong enough for an animal which masticates a long time before it attempts to swallow, and to which nature has forbidden the power to vomit. Yet, when some foreign substance, ignorantly or accidentally administered, becomes impacted in this delicately-organised structure, the butt end of a carter's whip is employed to drive the obstructing substance onward. In the words of Mayhew, "Should the obstruction be situated low down the gullet, the whip handle is neither small enough nor pliable enough to reach the offending object. Should it be high up, the mass is thrust partially onward, beyond reach of the human hand, and ultimate relief rendered difficult indeed. As the passage grows narrower, greater violence is resorted to, and the thrust is persevered in till the whip moves onward, and the stablemen congratulate each other that all is right at last."

"When the whip seemed to yield," continues Mr. Mayhew, "something more than the obstruction gave way; the membranous wall of the tube was ruptured, and an almost inevitable death awaits the unfortunate animal. He makes every effort in his power to complete his imperfect swallow, and gulp down the cause of his distress. Should he not succeed his throat and neck become, through his ineffectual exertions, spasmodically drawn up; and probably he gives every now and then a loud shriek, expressive of anguish. Should he attempt to swallow water, the fluid, together with the saliva abounding in his mouth, returns through his nostrils. The refusal of food, with symptoms of apparent sore throat, connected with circumstances of a suspicious nature, should induce us to examine the pharynx and œsophagus well with our fingers, to detect any prominence; also, to give the animal water, with a view of ascertaining whether there be obstruction of any sort or not. If the fluid is ejected through the nose, we should be warranted in introducing a probang, than which, in case the obstructing body lie below the neck, we possess no other means so sure of discovering its seat, or so readily removing it. A probang, however, is an instrument in the possession of professional persons only, and one which often happens to be at home when they want it abroad, and therefore they are frequently forced to seek a substitute. A stout cane might answer the purpose. In all cases no time is to be lost: water—often a great assistant—and the probang, are to be immediately had recourse to."

A word about the probang for the horse. It should be like that used for the human subject, consisting of a slip of fine whalebone, having a sponge at one end. When required, saturate the sponge with water or sweet oil, and sponge it dry before driving it down the œsophagus. The material will adapt itself to the diameter of the gullet without injury, and will not be difficult to draw back, even should it enter the cardiac orifice.

Mr. Percivall suggests a perforated or tubular probang, through which, when the obstruction had been sent forward, fluids might be injected without the irritation or loss of time of a fresh introduction. The patent stomach syringe is more effective, and, following the probang first described, will be found preferable.

Mr. King, veterinary surgeon, Stanmore, has furnished some cases to the "Veterinarian," which illustrate the subject by examples.

The following shows how a practitioner may be led astray by false accounts:—Mr. K. was called to a horse belonging to a coach proprietor. The owner said his horse "had a bad sore throat, and could not swallow." Mr. K.

examined the throat and gullet, but, finding nothing, suspected nothing. The horse was blistered and drenched; but the liquids all returned, without any effort being made to swallow them. The animal died; and, on examination, was found, within the thoracic portion of the œsophagus, a ball composed of the ashes of tobacco, enveloped in double paper. At first, all knowledge concerning this discovery was stoutly denied; but afterwards a confession came, that the ball had been administered for worms. Had not such delusion been practised, the probang would have been used, and, Mr. K. thinks, have proved effectual.

Mr. King observes, there is a notion among grooms that a new-laid egg will improve the condition of horses. Its administration has, in some instances, been the means of choking the animal.

Mr. King says he was once called to a horse with a reported "sore throat." The groom "swore" he knew no cause for it. Mr. K., however, had reasons for entertaining doubts of the man's veracity, and therefore proceeded at once to pass a probang. On the return of the instrument, the bulb was found covered with fragments of egg shell. The horse speedily recovered. Two similar cases fell under his notice in cattle practice.

The following fatal case of the same description occurred to Mr. T. Cooper, veterinary surgeon, Coleshill, Warwick.

Mr. C. was called to Dunton Hall, to a bay horse that was taken suddenly unwell. He found the animal "coughing violently, and stamping with his fore feet; with saliva running from his mouth, which he occasionally attempted to swallow, but the greater part returned through his nostrils." There was evidently obstruction. He was told the horse had been eating Swedish turnips. Mr. C. passed a whalebone probang down the œsophagus, "and a rounded substance could be distinctly seen driven before it. The horse after this appeared to be relieved: he ate some hay and drank some water, and was left for the night." "Next day he is much worse. He does not cough, but heaves very much at the flank; refuses all food and drink; is dejected; saliva with mucus runs from his nose, and much of it he swallows." He was bled; took an aperient with digitalis; and his throat was blistered, from a notion that "the substance might have injured his throat." Third day: much the same. "Takes gruel from a bottle, but will not eat." Mr. C. from the first had no hope of saving him, and early next morning he died. On dissection, a large-sized hen's egg, entirely whole, was found firmly impacted in the œsophagus, within a few inches of its cardiac termination; the parietes of the tube around the egg being "much dilated, and ulcerated nearly through." The groom confessed he had given the egg a few hours before Mr. C. was sent for, with a view of improving the horse's condition. The balls which had been given must have passed the egg in a liquid state, probably along with the gruel.

The following case shows a successful removal of a soft obstruction without resorting to œsophagotomy.

Mr. King was summoned to a horse that had had a ball administered to him by the groom, wrapped up in writing paper; since which he had ejected everything he had eaten or drunk. A prominence appeared in the neck, a little above its middle, but all means to force the obstructing body onwards were without avail. At length he determined on cutting down upon the œsophagus; having done which—without opening the tube—he found the obstruction arose from the lodgment of the ball the groom had given. Feeling the tumour soft and compressible, he squeezed and kneaded it with his fingers and thumb for some time: after which he left it *in statu quo*. Shortly afterwards the ball was by natural efforts carried down into the stomach, and liquids were taken and easily passed. It was not for some time, however, that the animal became enabled to take solids into his stomach. They were rejected through the mouth and nose the moment they had descended as low as the place where the ball had stopped. Mr. King thought that this must have been owing to the presence of a stricture—an opinion he conceived warrantable from the circumstances of the ball being in itself but a small one and of soft composition, yet incapable of being stirred by the probang.

ŒSOPHAGOTOMY.

When the means detailed under the head of CHOKING prove ineffectual for the removal of the foreign body obstructing the canal of the œsophagus, the operation of cutting into the tube, "œsophagotomy," is our resource; unless it happen that the obstruction is below the neck, when no knife can reach it. The same operation may likewise be practised with a view of overcoming stricture, or for the purpose of injecting medicinal or alimentary matters into the stomach, when there is no possibility of introducing them through the mouth. In the hands of a competent veterinary surgeon there is nothing to dread in the performance of œsophagotomy; although, from the œsophagus lying behind the windpipe, and much deeper, and there being the jugular veins and carotid arteries, the par vagum, and sympathetic and recurrent nerves by the sides of the trachea, the scalpel requires to be handled with caution as well as skill. Recollecting that the œsophagus, after proceeding down one-third of the neck, inclines to the left of the trachea, and before it reaches the chest gets quite round to the left of that tube, we should select the left side of the neck, and below the upper third of it, for the operation. Supposing we take the middle of the neck, our first incision should be three inches in length, and directed along the inferior border of the jugular vein; which vessel had better be kept distended the while by pressure from the hand of an assistant. The lips of the wound being kept apart by the assistant, the operator carefully prosecutes his dissection through the cellular tissue with which this hollow abounds, keeping his knife from wounding the jugular on his right, and guarding against the carotid artery and nerves which lie enveloped in the cellular

substance contiguous to the windpipe, whose situation he will best ascertain by feeling for the pulsations of the artery. His object now is to get behind the carotid, and there feel for the windpipe; and this being found, will guide him to a firm, cordiform, shining, red substance, in close apposition with it; this is the œsophagus. In case any injection into it be required, the œsophagus must be drawn forward with a blunt hook, and opened by a longitudinal incision, and an appropriate tube introduced. But where the extraction of a foreign body is our object—a circumstance that will render the operation much more facile, the tumour being our guide for incision—nothing remains to be done after this but to liberate the enclosed substance, and close the wound in the œsophagus with a common suture of silk thread, and unite the lips of the external wound with pins and tow twisted round them, in the same manner as the wound after bleeding is closed. Lastly, a compress upon the wound, confined by a roller around the neck, will give support, and, perhaps, be found serviceable. During the healing of the wound the animal's diet must be liquid, or nearly so: gruel, thick and nutritive, and boiled roots, and mashes of semi-fluid consistence. Chopped green meat of any soft and succulent kind, and short-cut grass, are also admissible.

§ II. DISEASES AND INJURIES OF THE STOMACH.

STOMACH STAGGERS.—GASTRITIS.—INDIGESTION.—DIARRHŒA.—COSTIVENESS.—SPASMODIC COLIC.—TYMPANY, OR WINDY COLIC.—RUPTURED STOMACH.—PUNCTURED BELLY.—SWELLED BELLY, (DROPSY).—WORMS.—BOTS.—CRIB-BITING AND WIND-SUCKING.

Stomach Staggers. The disorder known by this name may be referred to *phrenitis* or *mad staggers*, of which it is the first or premonitory stage. See *ante* p 417. In this case, however, the mischief, if observed in time, must be relieved by the unbinding of the stomach, whose oppression has involved the brain by recurrent sympathy. Medicine is often powerless from the gorged state of the intestines, and bleeding is accelerating death, although the books recommend it. The first thing is to back-rake, administer a clyster of salt and water, and drench him with warm water, in which a couple of teaspoonfuls of the compound spirit of ammonia is mixed with double that quantity of carbonate soda, to soften the contents of the stomach. If bleeding is ventured on, it should be in the sleepy stage, taken from the jugular veins. The drenching and clystering must be assiduously followed up till their good effect is visible. Some ease will be given to the animal in the sleepy stage by giving him a cask with a straw pad on it, to rest his heavy head upon. If a purgative is advisable after the above-mentioned treatment, give the following drench:—

Barbadoes aloes	1 ounce.
Calomel	1 drachm.
Oil of peppermint	20 drops.
Warm water	1 pint.
Tincture of caraways	1 ounce.

Instead of the common drenching horn, the fluids may be injected into the stomach with Read's syringe. White recommends croton oil, 20 to 40 drops, instead of the aloes, on account of its smaller bulk and more rapid action.

GASTRITIS.

Inflammation of the Stomach (Gr., *gaster*), is unknown in the horse, except as the result of poisons, acrid substances, or some powerful stimulant introduced into the stomach. However, it is sufficiently common from the above causes, and every case is attended with great danger, though unmarked by any characteristic symptom. It cannot be easily distinguished in its severe stage from twist of the intestines, stone in the bowels, &c.

The mode of treating it has already been detailed under STOMACH STAGGERS. The symptoms from poison are extreme distress and restlessness, a loathing of food; for if anything be given by the mouth it creates increased pain a long time afterwards. The animal breaks out into cold sweats; lies down and quickly rises again, as in inflammation of the bowels; becomes early and greatly prostrated in strength; and has a pulse usually quick and much oppressed. There may be purging, and generally is, though the opposite state may also exist. The signs are also materially shaped by the nature of the substance swallowed. The treatment will depend on timely detection of the true cause. All tests, however, are of more use to find out the reason of death, than to save life. The general treatment consists in a rejection of bloodletting, the administration of plenty of gruel, starch water, chalk and water, and abundance of opium. White gives a number of cases of death under this heading, from "a pint of vinegar," an "infusion of two ounces of tobacco in a quart of beer," "two ounces of ether," &c. They cannot be properly considered as "gastritis" in the sense of a disease, but as cases of chemical irritants inducing inflammation of the stomach traceable after death. In cases where there is reason to suspect that the cause is an overdose of mineral acids, or an ignorant administration of an excessive quantity of a purgative drug—chloroform, ether, or opium, by producing insensibility to pain, may give time for the recovery of the system from the nervous shock. The following is advised, where the symptoms are doubtful, and what has been done to the animal cannot be ascertained.—

Sulphuric ether	3 ounces.
Tincture of opium	3 ounces.
Carbonate of soda or magnesia	4 ounces.
Carbonate of ammonia	1 drachm.
Cold gruel	1 quart.

CHRONIC GASTRITIS.

This affection is, in our opinion, more common than is suspected. It is set down as merely "indigestion," and a consequence of a dyspeptic state of the gastric juice. This is plausible, but not all the truth. The disorder is said to be produced by rearing the animal on soft or sown land.

Mayhew, whose account is the best, thus describes it:—Gastritis, in its chronic form, "is frequently first displayed at the period when the services of the animal are esteemed most valuable, or between the fifth and sixth years, long after the mode of rearing has ceased to operate. The symptoms are various, and hardly ever alike. The stomach may affect the nervous system; then, its complications become difficult to disentangle. The affection is mostly declared by an irregularity of bowels and a capriciousness of appetite. The animal starts off violently purging. The looseness stops as suddenly as it commenced. Obstinate costiveness then sets in, and each state can be traced to no obvious reason. The straw or litter may be eaten ravenously, but all wholesome provender obstinately refused. The dung shows the condition of the appropriating functions; it crumbles upon the slightest force being imposed; it appears to consist of fibres not agglutinated together. Sometimes it is coated with mucus, and always smells abhorrently. A dry cough may be present; the visible membranes are pallid; the mouth feels cool; the breath is tainted; the eyes are sunken; the respiration is catching; the belly is pendulous; the anus is lax and prominent; the coat dry and ragged; while the body quickly becomes emaciated.

"The slightest exertion produces a thick and copious sweat. The symptom, however, which is most remarkable, when the cleanly habits natural to the animal are considered, is the peculiarity of the appetite. The rack and manger are generally neglected; but every unnatural or offensive substance within reach of the extended jaws, is devoured with avidity. Woodwork has largely disappeared. Soil and stones have been removed from the stomachs of creatures destroyed for incurable disease. Either of the substances last named, however, are usually spared, so long as a morsel of plaster, a portion of mortar or of brick, is within reach. Animals, when in the field, will leave the grass and enter any ditch to gnaw at bricks and mortar. When confined, they will, under the morbid influence of this affection, employ themselves for hours searching for a morsel of either amongst the straw."

The old custom of purging and bleeding for a case of this kind is positively injurious. It is better to administer bitters, alkalies, and sedatives;—the first, to amend the appetite; the second, to correct the acidity of the morbid secretion; the third, to destroy the uneasy sensation which provokes too many of the symptoms.

Strychnia	½ grain.
Bicarbonate of ammonia . . .	1 drachm.
Extract of belladonna . . .	½ drachm.
Sulphate of zinc	½ drachm.

Extract of gentian and powdered quassia, of each a sufficiency.

Or,

Powdered nux vomica . . .	1 scruple.
Carbonate of potash . . .	1 drachm.
Extract of belladonna . . .	½ drachm.

Extract of gentian and powdered quassia, of each a sufficiency.

Give, morning and night.

One of the above balls may be given daily. When their benefits seem exhausted, give, instead of a ball, half an ounce each of liquor arsenicalis, the same of tincture of ipecacuanha, with one ounce of muriated tincture of iron and of laudanum, in a pint of water. Also, damp the food and sprinkle magnesia freely upon it. Then, as the strength improves, introduce sulphuric ether, one ounce; water, one pint, daily; and ultimately change this last for a quart of good ale or stout.

INDIGESTION.

Indigestion, in a medical sense, is a phrase of much comprehensiveness. In man, whose digestive organs are in some respects differently constructed from those of horses, there is much reason for regarding the stomach as the grand agent of digestion; but in the horse, who is a graminivorous animal, one that is almost always feeding, and whose food is for the most part of a nature that occupies a large volume, notwithstanding his stomach is in itself but small, that organ appears to do less towards the completion of the process, leaving much to be done after the alimentary matters have passed into the intestines. To say, therefore, that indigestion is owing to some fault in the stomach alone, is taking too confined a view. Equally in error should we stand, were we to hold the stomach altogether without fault.

The comparatively short time the aliment continues within the stomach, and what remains to be performed to complete its digestion in the intestines, accounts for the latter being oftener the seat of indigestion than the former; though the stomach, as we have already seen, may, by being over-crammed with food or over-distended with air, become the seat of what may be regarded as the most dangerous kind of indigestion.

The Symptoms of indigestion are:—the horse does not thrive as other horses in the same stable, nor is he capable of the same work; though his appetite, so far from being impaired, may be even voracious. Often it is fastidious—good at one time, indifferent at another. Sometimes it is depraved. He will gnaw and even eat almost anything within his reach—dirt or stones,—a brick wall, and particularly the plaster or mortar from it,—his crib or rack, &c. His coat has an unhealthy aspect; it is what is called "pen-feathered" and arid, and, perhaps, scurfy; nor is it shed at the usual season. He is hide-bound. His dung has not the appearance it ought to have; it is either darker or lighter than is natural, has an offensive odour, and, when broken, crumbles to pieces, and appears to consist of lumps of loosely-compacted chopped hay, mingled with many entire or imperfectly changed oats. In the stable, the horse is mostly inclined to be costive; but when taken to exercise is soon excited to purge.

The Ordinary Seat of Indigestion would appear to be within the villous membrane of the stomach, or else that which lines the intestinal canal; both these membranes

furnishing secretions indispensably necessary for the due conversion of the food into alimentary and fæculent matters. Independently, however, of any derangement in these membranes, various other causes might be mentioned, sufficient of themselves to account for the incomplete performance of the digestive process. Mastication may not have been duly performed; the salivary secretion may be bad or defective; the liver may not have done its duty; the bile may be faulty in quality or quantity, or the pancreatic juice; or there may exist some derangement in the peristaltic action, and consequent irregularity in the progress of the alimentary matters. Other causes may exist, although irritation, or inflammation, or disorder in some form or other of the membranous lining of the stomach and bowels appears to be the ordinary one, and that to which our observations in this place are confined.

Treatment.—The ordinary mode of dealing with these cases is to administer two or three doses of physic, at intervals of a week or so. A preferable procedure to this, is the old one of dividing the ball into two doses, and giving them at intervals of three or four days. The bowels being, in many of these cases, in such a state of morbid susceptibility that a full dose of purging mass is very apt to bring on diarrhœa. Besides, keeping up a very moderate discharge from the bowels is, in the end, productive of more benefit than giving full doses of physic. When scouring is actually present, without any medicine having been given, or in a case where ever so little aloes induces it, much good may be effected by administering *hydrarg. cum creta* in doses of a quarter ounce once or twice a-day, made into a ball with common treacle. Cases in which, on the contrary, costiveness is a prominent symptom—there appearing to be a deficiency of bile—are benefited by the exhibition of a scruple of calomel once a day, either in combination with a drachm or a drachm and a half of purging mass, or else followed up by a dose of physic.

Change of diet will often much assist in the restoration of healthy digestive functions. When green meat can be procured, soiling in the stable will be advisable; though in mild weather, and when flies are not troublesome, a run at grass is to be preferred. Breathing the open air all day long, with the moderate exercise the animal takes of his own accord, being both very conducive to his health. In the winter season, carrots are given with advantage. Swedish turnips are also commendable; and bruised or scalded oats may be tried. When simply the mastication is found faulty, mingling the oats with chaff often proves a preventive. Linseed and malt may be given in mashes, or the latter may be made into tea; or hay-tea may be offered; though the horse is not likely to drink either of them voluntarily, unless he has been kept short of water. Drink should be given *ad libitum*, the pail being so placed that he can help himself.

DIARRHŒA.

The leading symptom of diarrhœa is the voiding of the fæces in a liquid state. In other words, an increased peristaltic action with a greater secretion of watery fluid in the intestines, or a deficiency of the absorbent power as regards the fluid contents; or, lastly, an irritability or slight inflammation of the mucous lining of the stomach.

It is distinguished from dysentery by the purging being incomplete from the very first; by its being less copious, having all the fæces in solution without any glairy mucous matter; and, also, by being seldom accompanied with fever, or any great affection of the general health. Some horses are very liable to purging on exertion, and such are termed, by grooms, "washy;" having usually narrow chests and lank bellies, in which the intestines have not sufficient room for their natural processes; but are pressed on, and thus forced to a hasty expulsion of the unassimilated contents.

Causes.—Diarrhœa may arise from mechanical pressure resulting from the last cause; thus, a light belly is often found with occasional diarrhœa; or it may arise from a debility in the intestines themselves. A weakened state of the bowels, inclining to this affection, is often brought on by drastic purges. It may likewise spring from the intestines containing some offensive matter, which nature is striving to cast out, little dung being emitted at a time.

It may also be occasioned by the sudden application of cold, whereby, the exhalant vessels of the skin becoming checked, more fluid is necessarily thrown on the intestines; which operates not only by increasing their quantity, but likewise by the addition of something foreign, hence irritating to them. In those cases which are marked with thirst and increased pulse, the restoration of the healthy action of the skin is necessary to a cure; diaphoretics, as antimony, warm clothing, &c., are advisable; and the use of outward astringents.

The Treatment.—In general cases, when the motion is copious, little need be done. Nature is then relieving herself, and requires little more than warmth and a change of diet. If constitutional, we must palliate by a mild but constant check on the existing causes. A light-bellied horse should not be worked severely several days together; avoid too much water, or too early labour directly after meals. Let the fæces be examined: if the food passes away undigested, the stomach requires tonics; but if it be a recent attack, examine well for the probable cause. Has it followed any undue exposure, any violent exertion, any change of food, any great difference in the warmth of the stable? Is the water good in quality? Are the oats, or is the hay, new? If none of these causes operate, we must first make ourselves aware that it is the fæcal discharge which passes, for such appearances have concealed an obstinate constipation. Being convinced of the diarrhœa, commence the cure by mild astringents.

In general cases of diarrhœa, give the following drink once or twice a day, according to the violence of the complaint :—

Prepared opium	½ ounce.
Powdered catechu	1 drachm.
Prepared chalk	1 ounce.
Sulphate of iron (green vitriol) . .	½ drachm.

Mix in thickish gruel.

Should the horse be weak, boiled starch, or arrow-root, or boiled bean-meal, may be passed down the throat frequently. Give no cold water to drink, but, instead, give thin gruel or rice-water, tepid. Clothe warmly, encourage a high temperature also, and carefully avoid exposure to sudden currents of cold air. The subject will again occur under DYSENTERY.

COSTIVENESS.

Some horses are habitually costive, which arises either from a defective secretion of the fluid of the bowels, or that the absorbents act too strongly, and take up too much of the liquid contents, by which the fæcal mass becomes dry, hard, and difficult to pass ; or it arises from a defect in the formation of the bile, either as to quantity or quality. This we know from what occurs in jaundice, in which, from a loss of the bile by extravasation, there is always present a strong disposition to a costive habit. Some food is prone to occasion constipation, as whatever is stimulating or heating. Corn of all kinds, therefore, has this tendency, but beans more than all. Habitual costiveness should not be counteracted by purgatives, as they generally increase the evil ; but attention should be paid to the habit itself, and the peculiar tendencies of that should be counteracted. Dry food should be remedied by occasional bran mashes. Green meat is particularly useful in these cases in summer, and carrots in winter. A costive state of bowels may sometimes be remedied by placing a lump of rock salt within the manger. When costiveness arises from defective bile, treat as directed under jaundice.

Occasional or accidental costiveness must be treated differently. First, back-rake, next throw up a large laxative clyster ; and then proceed to give a mild purgative by the mouth.

SPASMODIC COLIC.

Colic, "the Fret," "Stomach Cramp," or "Gripes" of farriers, is divided by medical authorities into several varieties, of which only two seem worth notice in a general compendium of horse diseases ; these are spasmodic, and flatulent or windy colic. We have preferred treating of it here, though the section on the INTESTINES, or BOWELS, has fully as much claim to it.

The pain of Spasmodic Colic is due (unlike enteritis, or inflammation of the bowels,) to a contraction of some portion or portions of the intestinal tube. The tube, by virtue of its muscular coat, possesses a power of contracting its canal, which contractile property it is that enables it to press the alimentary matters onward from the stomach, until they arrive at their ultimate outlet. This muscular tunic, in common with other muscles, is liable to be affected with spasm or cramp ; when this takes place the intestinal canal is locally contracted to that degree that the aliment is arrested in its course, and the pain, while the cramp or gripe continues, becomes poignant in the extreme.

The best description of the SYMPTOMS is that of Percivall. "The symptoms of colic are the same as, with two or three notable exceptions, denote painful bowel-affections in general. The attack is sudden. The horse appears to be all in a moment seized with acute pain in his belly. He commences violently pawing and stamping, and striking his belly with his feet. After a few times bending his knees and crouching his body, and advancing his hind feet under him in attempts to lie down, he at last drops rather than lies down, issuing a sort of grunt from the fall, and immediately commences rolling upon his back, endeavouring every time he turns to balance himself in the supine position ; though often he is unable to accomplish this until his legs, in rolling, happen to come against the side of the stall or box. When once he has got upon his back, he will, with his feet drawn downward upon his belly, and his head and neck, perhaps, curved to one side, remain quiet for a minute or two together, this posture appearing to afford him temporary relief. On other occasions, after several ineffectual endeavours to roll upon his back, he will suddenly rise again, and, having given himself a shake, as it were to get rid of the straws or dust about him, stand so quiet for a time that he appears by his rolling and struggling to have got rid of his pain. Soon again, however, he averts his head and regards his flank, with his ears down and an expression in his eye as much as to say, 'There lies my pain, and now I feel it coming on again.' Each successive fit or paroxysm turns out commonly to be longer and more violent than the one preceding. Early in the disorder, the remissions from pain, or intervals of ease, are evident enough ; but as the case proceeds, the paroxysms growing longer, the remissions become shorter, and after a time altogether unobservable. He heaves at the flanks, and breaks out into profuse perspiration : drops of sweat stand upon his brows and eyelashes, and every hair in his coat becomes wet through. The next change, should his torture continue unmitigated, is one bordering on delirium. He grows heedless of all around him ; his eyes turn wild and frantic ; his violent motions render all approach to him perilous ; cold sweats bedew his body ; tremors succeed ; he falls down, maddened and exhausted with pain, and in convulsions expires. The pulse at the onset of the disease, and during the remissions from pain, is but little altered ; but while the paroxysm endures it grows frequent, and becomes contracted to a thread, and indeed, at times, is so indistinct as hardly to be felt at all. Under the extremity of suffering, its quickness, and with that its strength and perceptibility, become augmented. The belly is tense, sometimes percep-

tibly swollen, and commonly very tender to pressure. The bowels are constipated, though oftentimes dung will be passed on the eve of the attack; and in the height of his pain the animal will void his urine."

On this Mr. Percivall remarks:—"To these symptoms, as enabling us to distinguish colic from enteritis, great importance, by the generality of practitioners, has been attached, on the score of the remedies prescribed for spasm being of all others the most improper ones for inflammation; but I find, as I grow in experience, that my practice is becoming of a kind suitable to both cases, and consequently the distinction is losing much of its interest. I first made the experiment of combining my antispasmodic with a cathartic, and became so satisfied at the result, that I have, from that time to the present, continued the practice, and with the happiest effects."

The cause of colic, ordinarily, is a draught of cold water, especially while the horse's body is heated. Water from certain mineral springs has been—apparently from its impregnations—notorious for having this effect. Sudden chill of the skin is said to have produced gripes. A common dose of physic will now and then occasion it. Violent spasms have been produced from linseed or castor oil. Vetches and other green-meats will at times gripe; so will new straw, and particularly that of wheat; and likewise peas: in fact, any irritating or acidulous matters in the bowels may have this effect. Now and then, spasm is brought on by costiveness, and by hardened dung, or stony concretions.

Unless some decided check, if not a satisfactory stop, be put to the progress of the disorder within the first half-a-dozen hours, we may begin to harbour apprehensions. Ordinary cases are relieved by a single dose of medicine; many without any medicine at all. Cases that run on unrelieved to death, seldom exceed twenty-four hours in duration.

In entire horses, particularly in such as have raced or been in training, or have been kept as covering stallions, an attack of colic or enteritic symptoms is on all occasions to be viewed as, possibly or probably, connected with hernia. The scrotum should be examined without delay, and all inquiries made relative to the existence of rupture. See HERNIA, *post*.

TREATMENT.—Every farrier and groom, horse-dealer and horse-keeper, fancies himself quite as competent to treat colic as the most skilful veterinarian; and, in point of fact, providing the complaint be purely spasmodic, his remedy is likely to prove in the first instance quite as effectual. It being notorious that almost every sort of spirits and aromatics possess antispasmodic properties. The groom, being well convinced of their efficacy from experience upon his own person, as naturally runs for gin and pepper, or peppermint water, for his horse when "griped," as he does for some agreeable spirituous compound for himself. Given at the instant, it seldom does fail; for it imports less what we give than when the remedy is administered. That which is given at the outset appearing to have a decided advantage over anything exhibited later in the attack.

Opium holds the first place among antispasmodics. A very effectual antispasmodic ball, combining the three properties, narcotic, stimulant, and terebinthinate, is composed of one drachm of opium, of two drachms of Cayenne pepper or half an ounce of ginger, and of a sufficiency of Venice turpentine and meal to make a moderate-sized ball. Combine with the antispasmodic a full dose of purgative medicine. Mr. Percivall advises, in a pressing case, to give, without loss of time, the following drench:—

Decoction of aloes*	12 oz.
Tincture of opium	2 oz.
Spirits of nitric ether	2 oz.
Water, boiling	½ pint.

Mix.

Should the decoction of aloes—that admirable formula—not be at hand, we must content ourselves with a simple solution of aloes in hot water; bearing in mind that the dose is meant to be either ten drachms of Barbadoes aloes or twelve of Cape.

Spirits of turpentine, in four-ounce doses, was Professor Coleman's remedy, and is still in favour at the Veterinary College. It is dangerous without olive or linseed oil, as producing sore throat. Hartshorn, with tincture of myrrh, is open to the same objection Mr. White's formula is unobjectionable:—

Turkey opium	1 oz.
Cloves, bruised	2 oz.
Ginger, ditto	3 oz.
Brandy, Rum, or Gin	1 quart.

Exercise is often productive of a great deal of benefit after the antispasmodic remedy; it increases the peristaltic motion, causes often the expulsion of air and dung; and, should he sweat, it tends rather to relieve than to augment the spasm; however, he must go willingly, and not be urged.

A clyster composed of two ounces of Cape aloes dissolved in six quarts of soap-water or gruel, may be administered with a view of emptying the rectum; or one in which a pint of oil of turpentine is substituted for the aloes may be given with a view of relieving the spasm. But what, in a case of any danger, is better than either, is the clyster of tobacco-smoke; and the best apparatus for conducting this operation is Read's enema syringe, furnished with a metallic box for containing the tobacco, with a pierced plate across the inside for transmitting the fumes. An

* Barbadoes aloes, powdered 2 oz.
Carbonate of potash 1 oz.
Acacia, powdered 1½ oz.
Boiling water 1 pint.
Should the decoction be required to keep, two ounces of some spirit must be added.

apparatus for this purpose is figured in our plate of APPARATUS and INSTRUMENTS.

A warm bath would certainly prove a most desirable situation for our patient, could one be procured. A sackful of hay, dipped in water nearly boiling, and bound upon the belly, may likewise relieve him.

FLATULENT COLIC.

Tympany, or windy colic, is produced by the distension of the intestines by gas. It is most frequent in summer, when horses are fed with green meat, but may be produced by indigestion of any description of horse fodder. A draught of cold hard water, having sulphate of lime in suspension, will often cause flatulent colic. It somewhat resembles in symptoms the inflated paunch of ruminating animals called "hove," "hoven," or "blown," which is induced by overloading the stomach with succulent herbage, especially clover, by the fermentation of which gas is generated in such volumes as to distend the animal almost to bursting. The horse, however, unlike the cow, has no *rumen* (paunch), and cannot be, strictly speaking, "hoven;" though it is by no means unfrequent for him to be affected by tympany, or windy colic. Windy colic is frequently an affection of the aged horse. The notion that tympany is produced by crib-biting or "wind-sucking," though entertained by such authorities as Blaine and Percivall, is now obsolete. It is not the entrance of atmospheric air (which does not pass down the œsophagus in any case, though a small quantity of air is found in the intestines), but the generation of carbonic acid gas, or sulphuretted hydrogen gas, the products of decomposition. Either of these gases will destroy life by asphyxia if drawn into the lungs.

Symptoms,—Mr. Mayhew, in his lively and picturesque style, has sketched the symptoms of flatulent colic so accurately that we make no scruple of substituting them for any description we could indite. He says:—"The horse which is to be oppressed by flatulent colic, exhibits uneasiness after feeding; it hangs the head; breathes laboriously; fidgets; rocks the body, and rests first on one leg, then on the other. These symptoms are exhibited before any enlargement of the abdomen is to be detected. With the swelling of the belly pawing commences; that action is, however, far too leisurely displayed to be for an instant confounded with the same energetic movement which characterises spasmodic colic.

"The horse will stand in one spot throughout the day; even the movement of the foot, before noticed, appears to be an exertion. The eye is sleepy, the pulse heavy, wind frequently passes from the body; and in such a condition the animal remains, slowly becoming worse. Almost in the same place the horse may stand three or four days; then the abdomen is much increased in size; the animal is restless; the pulse is extremely feeble; the breathing is very fast; the pupil of the eye is dilated, and the sight is lost. A walk, as in a mill, is commenced; obstacles are run into or upset; delirium begins; weak neighs are uttered, in reply to visionary challenges; the coat is ragged; copious and partial perspirations break forth; the beat of the artery is lost at the jaw; an intermittent flutter is indistinctly felt at the heart. At last the limbs fail; the body falls; and a death struggle ensues, the creature dying in consequence of the distended abdomen compressing the lungs and preventing the breath being inhaled."

Mr. Mayhew recommends in extreme cases, puncture of the belly with a trocar, sheathed with a canula. The operation is thus performed:—Draw the skin up tightly over the place selected for puncture, and nick the integument with a sharp scalpel. Insert the trocar, push in the stylet, withdraw it, and the gas will rush out, having a probang ready to clear the canula lest it become choked. The trocar should not be larger than that used in hydrothorax. When the trocar is withdrawn, the skin, having been drawn aside in the manner above directed, at once closes the orifice by returning to its place. For ourselves, we think, so far as the stomach is concerned, that this operation is not advisable, though in inflation of the small intestines it may be ventured on. It should be remembered, that when gases are generated the intestines change their position, and, owing to the pressure, communication from one convolution to another is obstructed; thus, the trocar empties only one cell, and one convolution holds so little that its evacuation does not give the relief sought for. It is otherwise with the "hoven" ruminant. We need hardly say that no food should be given during the attack of windy colic, and that the groom should sponge out the eyes, mouth, and nostrils. Mayhew recommends the administration of tobacco-smoke *per anum* by the apparatus already described. It is worth a trial. Should the animal recover, give gruel and bruised oats, and a ball compounded of extract of gentian, powdered quassia, and sulphate of copper.

RUPTURED STOMACH.

This is sometimes the result of tympany or gorged stomach. Percivall gives several cases ("Hippopathology," vol. ii., p. 201), and others will be found in the pages of "The Veterinarian." Copious draughts of water on a full stomach have occasioned rupture. Another class of injuries—blows, falls, or strains—have lacerated this organ. As the lesion is past remedy, we shall not devote further space, except to observe that the extravasated matters have been known to be forced into the sheath, so that a hasty examination might cause rupture to be mistaken for inguinal hernia. See RUPTURE, *post*.

PUNCTURED BELLY.

A stab by a pair of scissors, a pitchfork, or some sharp instrument, in the lower, middle part, or side of the abdomen, though a disgraceful, is by means an uncommon occurrence. It is oftentimes the result of carelessness or bad temper in the person engaged in trimming or bedding down

the animal. In the section specially devoted to wounds, lacerated, punctured, or contused, the treatment will be found.

SWELLED BELLY, DROPSY, ASCITES, ANASARCA.

External dropsy, either in the form of swelled belly, sheath, and breast, or in that of swelled legs, is a frequent consequence and an occasional accompaniment of constitutional disease. Hydrothorax (water on the chest) is denoted by dropsy of the breast, extending often to the belly, and by swelled legs. Ascites is strongly indicated, in combination with certain other signs, by dropsy of the belly and sheath, such proves of an obstinate or permanent nature, or else speedily returns, after having been by remedy entirely dissipated. The swellings in these cases being the attendants or consequences of other disease, the treatment of them must form a part of that adopted for the original disorder, whatever it may happen to be. Occasionally, however, anasarca presents itself as a constitutional chronic disorder. The cellular membrane underneath the skin becomes filled with a watery fluid, the result of which is one or more diffused puffy swellings, having no defined limits, but most full in those parts of the body that hang lowest, from the circumstance of the fluid gravitating through the cells of the subcutaneous tissue into them. These swellings have a soft, doughy, or flabby feel, and pit on pressure.

The symptoms of a general attack of dropsy are, swelling of the belly, the sheath, the loose skin in the space between the arms, the breast, the sides of the face and nostrils, the arms, thighs, and legs. These are the ordinary situations for dropsical swellings; though it does not always happen that all these parts are affected. In general, the legs are only secondarily affected; the tumour in the first instance appearing in the body and arms and thighs, and from them gravitating into the legs. At times the tumefaction is, when once it has commenced, very rapid in its progress, and spreads to such an extent in the course of a few hours after its first appearance, as to render the animal almost incapable of locomotion. Although the animal, when first attacked, evinces no apparent pain or uneasiness, and seems totally unconscious and indifferent concerning what is going on, feeding and looking as lively as ever, yet, after a time, the pulse rises, the respiration becomes accelerated, the mouth hot, the eyes and nostrils reddened. A common accompaniment of the irritation now necessarily excited in the skin, is a sympathetic inflammation of the air passages. The animal coughs up, on occasions, a slimy straw-coloured sort of fluid, looking like a mixture of saliva and mucus and sero-albuminous effusion; at the same time there is, probably, a bloody froth issuing from the nostrils. Where anasarca takes this turn, unless an immediate and effectual check be put to the disorder, it is likely to end in farcy and glanders. The urine is scanty, and now and then it will happen that the serous as well as the mucous membranes will partake of this dropsical disposition; and the animal consequently be in danger of losing his life from water in the chest or belly, or even head.

Causes.—Horses that are turned out to the strawyard in the winter season, are the frequent subjects of dropsy. They leave a warm atmosphere for a cold and humid one; a generous diet for one that comparatively starves them; and they drink *ad libitum* of water which may be, but most probably is not, of the most wholesome description. The skin will certainly receive a check in regard to its perspiratory functions; the air-passages, also, will feel the effects of cold and moisture; while the digestive organs will experience more or less alteration in their economy in consequence of the change of aliment.

The TREATMENT of ascites promises little; because it is rather a symptom of visceral disorganization than of simple irritation. We are warranted, however, in attempting the removal of the fluid by exciting the absorbents, as observed in HYDROTHORAX, and by strengthening the system generally by tonics. We must, however, use no depletion. It may also be observed, that purgatives are not admissible here: on the contrary, they may be expected to occasion much constitutional disturbance. Mild blisters, &c., external friction, frequent and long-continued, are best; with gentle, repeated exercise, aided by warm clothing.

Mr. Mayhew sensibly recommends that the food should be small in bulk, but nutritious in quality; no work should be imposed; he prescribes

Strychnia	.	A quarter of a grain, worked gradually up to one grain.
Iodide of iron	.	Half-a-drachm, worked gradually up to one drachm-and-a-half.
Extract of belladonna	.	One scruple.
Extract of gentian	.	A sufficiency.
Powdered quassia	.	A sufficiency.

Make into a ball; give one at night and at morning.

Should the fluctuation and tumidity not yield, we must proceed to the operation of tapping, which offers the most reasonable chance in the complaint, when performed early.

Tapping (paracentesis abdominis) is a simple operation. The spot chosen for the opening should be upon the linea alba, midway between the umbilicus and the sheath: in the mare, between the umbilicus and pubes. This point should be chosen for the puncture, which ought to be made directly upwards; and both this and the former operation for wind must be conducted and treated upon similar principles, with the exception that in ascites the whole of the fluid may be evacuated at once, and allowed further to drain off by the simple application of a linen bandage. Should benefit be derived, endeavour to prevent a recurrence, by strengthening the general habit.

Water farcy, general œdema, dropsy of the skin, and collections of fluid within the cellular membrane, are disorders which, in their treatment, ask for no separate directions beyond those here given.

Swelled legs shall receive separate consideration, for obvious reasons.

WORMS, BOTS, AND PARASITIC ANIMALS.

Worms, most frequent in the stomach and bowels of the horse, have been found in every part of his system. In abscesses, in the mesenteric glands and artery, in the substance of the abdominal muscles, in the liver, in the windpipe, in the salivary ducts, and even in the pancreas.

The worms most generally found in the stomach of the adult horse are *Bots.* The parasite most inimical to colts is the *tænia,* or tape-worm. *Lumbrici teres,* or round-worms, most frequently found in the small intestines; *Ascarides,* a small worm infesting the large intestines; and *Stronguli,* found occasionally not only in the bowels but in the kidneys and cœliac artery of both man and horse.

The groom always pronounces the symptoms of chronic indigestion to be what he calls "a wormy condition." The consequence is, that the most potent "worm-powders," most of them so strong as to peril the life of the animal, are at once administered; with what result, in hundreds of instances, we need not say. Ignorance, "with the best intentions," is the most charitable verdict.

Bots. Our knowledge of the origin and habits of the *œstrus equi* or stomach bot, before the investigations of Bracy Clark, was *nil;* we shall, therefore, with this acknowledgment, condense from that author's "Essay on Bots in Horses," his account of this troublesome parasite.

"When the female has been impregnated, and the eggs sufficiently matured, she seeks among the horses a subject for her purpose, and approaching him on the wing, she carries her body nearly upright in the air, and her tail, which is lengthened for the purpose, curved inwards and upwards: in this way she approaches the part where she designs to deposit the egg; and suspending herself for a few seconds before it, suddenly darts upon it, and leaves the egg adhering to the hair: she hardly appears to settle, but merely touches the hair with the egg held out on the projected point of the abdomen. The egg is made to adhere by means of a glutinous liquor secreted with it. She then leaves the horse at a small distance, and prepares a second egg, and, poising herself before the part, deposits it in the same way. The liquor dries, and the egg becomes firmly glued to the hair: this is repeated by these flies till four or five hundred eggs are sometimes placed on one horse.

"The skin of the horse is usually thrown into a tremulous motion on the touch of this insect, which merely arises from the very great irritability of the skin and cutaneous muscles at this season of the year, occasioned by the heat and continual teasing of the flies, till at length these muscles appear to act involuntarily on the slightest touch of any body whatever.

"The inside of the knee is the part on which these flies are most fond of depositing their eggs, and, next to this, on the side and back part of the shoulder, and less frequently on the extreme ends of the hairs of the mane. But it is a fact worthy of attention, that the fly does not place them promiscuously about the body, but constantly on those parts which are most liable to be licked with the tongue; and the ova, therefore, are always scrupulously placed within its reach.

"The eggs thus deposited, I at first supposed were loosened from the hairs by the moisture of the tongue, aided by its roughness, and were conveyed to the stomach, where they were hatched. But on more minute search I do not find this to be the case, or at least only by accident; for when they have remained on the hairs four or five days, they become ripe, after which time the slightest application of warmth and moisture is sufficient to bring forth in an instant the latent larva. At this time, if the tongue of the horse touches the egg, its operculum is thrown open, and a small active worm is produced, which readily adheres to the moist surface of the tongue, and is from thence conveyed with the food to the stomach.

"At its first hatching it is, as we have observed, a small active worm, long in proportion to its thickness, but as its growth advances, it becomes proportionably thicker and broader, and beset with bristles.

"They are very frequent in horses that have been at grass; and are in general found adhering to the white insensible tissue or coat of the stomach.

"They usually hang in dense clusters to this white cuticular lining of the stomach, and maintain their hold by means of two dark brown hooks, between which a longitudinal slit or fissure is seen, which is the mouth of the larva. When removed from the stomach by the fingers by a sudden jerk, so as not to injure them, they will, if fresh and healthy, attach themselves to any loose membrane, and even to the skin of the hand. For this purpose they sheath or draw back the hooks almost entirely within the skin, till the two points come close to each other; they then present them to the membrane, and keeping them parallel till it is pierced through, they expand them in a lateral direction, and afterwards, by bringing the points downwards towards themselves, they include a sufficient piece of the membrane to remain firmly fixed for any length of time as at anchor, without requiring any further exertion.

"These bots, as is also the case with two or three other species, pass the autumn, winter, and spring months in the stomach, and arrive about the commencement or middle of the summer at their full growth, requiring a twelvemonth fully to complete their structure.

"*The Œstrus Hæmorrhoidalis, or Fundament Bot.*—The part chosen by this insect for the purpose is the lips of the horse; which is very distressing to the animal, from the excessive titillation it occasions; for he immediately after rubs his mouth against the ground, his fore-legs, or sometimes against a tree, with great emotion; till the animal at length, finding this mode of defence insufficient, quits the spot enraged, and endeavours to avoid it by galloping

away to a distant part of the field; and if the fly still continues to follow and tease him, his last resource is in the water, where the œstrus is never observed to pursue him. These flies appear sometimes to hide themselves in the grass; and as the horse stoops to graze, they dart on the mouth or lips, and are always observed to poise themselves during a few seconds in the air, while the egg is preparing on the extended point of the abdomen.

"When several of these flies are confined in a close place, they have a particularly strong, musty smell; and I have observed both sheep and horses, when teased by them, to look into the grass and smell to it very anxiously; and if they by these means discover the fly, they immediately turn aside and hasten to a distant part of the field.

"I once saw in a meadow or field upon the cliffs at Margate, a fly of this sort teasing a horse that was confined to a small space by a spike stuck in the ground, to which a cord was tied. He could not get away from its attack, and became quite furious, for in kicking at the fly with his forefoot, which he did vehemently, he often struck the bone of the lower jaw, creating excessive pain; for in that direction, while grazing, the fly comes to the beard of the lower lip.

"The eggs of this species are difficult to be seen upon the horse's skin or beard, owing to the agitation of the beast, and from the colour of the egg being dark like that of the skin of the horse. The animal has been generally too impatient, while undergoing this operation, to let me examine them very well. I ascertained, however, its form by pressing one of these eggs from the abdomen.

"The larva or grub of this species inhabits the stomach as the former, generally adhering to the white lining, and is disposed promiscuously in dense clusters, after the same manner; they may, however, be distinguished from them by being in general smaller, and longer in proportion to their bulk.

"The larva of this species may be obtained from almost any horse that has been much at grass the preceding year, and exposed to these flies, and will be found during the summer months sticking more or less within the verge or opening of the anus, adhering to its soft lining, and producing considerable irritation and uneasiness. Indeed, I once well remember being on a tour of pleasure in the Isle of Wight, and experiencing much annoyance from these larvæ. The little horse I had hired for the journey became so lazy and unwilling to go on, and moved so awkwardly, that I could not keep pace with my company, and I was at a loss how to proceed; on taking up the tail, I discovered three or four of these insects hanging to the rectum, and their removal instantly proved a cure."—*Bracy Clark.*

The *tænia*, or tape-worm, is classed by naturalists among the *entozoa* (Gr. *entos*, within, *zōon*, an animal); modern entomologists call this family of worms *cestoidea* (from Gr. *cestus*, a band, *eidos*, like).

The *tænia* infesting the horse is a long, flat, jointed worm, every joint of which, when broken, will from a new animal. It has been found from 20 to 50 feet in length and an inch in breadth. The colour is dirty white. Its head, which is tuberculous, is placed at the slenderest end of its body, and is said to be always directed towards, and sometimes to be actually within, the pyloric opening of the stomach. Percivall says he never met with the tape-worm in the horse, often in the dog; in the human subject it is common.

The *lumbricus* is a round worm, found oftener in the small intestines than in the stomach. Cuvier classes them among the Annelidæ, on account of their blood being red, as in the leech and earthworm, and their bodies formed of a number of rings (*annella*, a little ring, and *eidos*, like). White and other veterinarians speak of a "fluke-worm," which is merely a lumbricus which occasionally penetrates living tissues, and differs nothing in its suctorial apparatus, which, under certain circumstances, seems to be used in a sort of mechanical boring through soft and permeable tissues. The "fluke-worm" is classed by naturalists as of the order *Trematoda* (Gr. *trema*, foramen, a little opening). The *lumbricus* is often found in the dung of horses, nearly as thick as the little finger, and from three to fifteen inches in length. Gibson says, "I have seen them eighteen inches long, and larger than a man's finger." The worm is largest round its middle part, from which it tapers off to each end, where it is pointed. They are more generally white than red. A French veterinarian, Chabert, says he found fourteen pounds of them in a horse's small intestines; and balls of them are often found in aged horses' small guts, complicated with bots (if the animal has been at grass) clinging to the vascular part of the stomach itself. They are always sheathed in mucus.

Ascarides, of these, the most frequent of *entozoa*, eighty species have been described, one, the small needle-like lively parasite which we find so commonly tormenting the rectum of the horse, is the only variety we are concerned with. It is thin as a stocking needle, inhabits the large guts, and is often found in the blind pouch of the cœcum. It is sharp at one end and blunt at the other, seldom more than half an inch in length, and of a dull white. It frisks or coils eel-fashion when immersed in fluid, and is often detected escaping from the anus.

The *strongylus*, (Gr. *strongulus*, round), is an allied worm to the *ascaris*, but is distinguished by the power of eating through or perforating important structures. It is slender, from two or four inches in length, consisting of two distinct portions:—a body, constituting not quite one-half of its entire length, rather smaller than a crow-quill; to which is appended a contracted thread-like part or tail, making up the remainder of its length. When first voided, the body appears black; the tail transparent. No sooner, however, are they taken out of the dung than they vomit up their black contents, which have the appearance of writing ink; and then their bodies, like their tails, become transparent. This ejectment seems to be their last

act of life, for they never move afterwards, but gradually shrink and dry up to almost nothing. Numbers of strongyli were voided by a young horse, under the operation of physic, who had given no reason to believe he harboured worms of any sort.

Symptoms.—The best-known symptom of worms in the rectum or cœcum, is a dry yellow matter under the tail; but it is not invariably present even when worms are known to exist. When worms are irritating, there is unequal appetite and an irregular state of bowels; at one time costive, and at another loose, with glair or mucus around the dung-balls. When ascarides prevail, the horse is much disposed to rub the tail, to ease the itching of the fundament. The presence of bots is seldom detected by any distinct signs, except in the spring, when one or more may be detected half protruded through the anus; the reason of its appearance being, that the time has arrived for it to quit the state of a grub for that of a fly. The *lumbricus*, or round worm, is probably the most generally found; but it is only when it exists in great numbers, or itself becomes morbidly irritated to seek a change of situation, that it seems to trouble the animal. This symptom also applies to ascarides, in which cases both may interfere with digestion and the regular bowel discharges. The provender of the horse, although he eats heartily, does not digest healthily. The skin, also, sympathising with the stomach and intestines, occasions a staring coat and harsh feel of the hair. There are frequent attacks of slight gripes; the horse stands with his legs wide apart, and his belly hangs low. The breath is often hot and fœtid, and it is not unusual for a short dry cough to be present. Worms, however, exist without any of these symptoms. Whoever will take the trouble to visit a knacker's, and to turn over the dunghill in his yard, will find it to be composed quite as much of worms as of excrement. This dung is taken from the aged horses sent to be slaughtered, and is sufficient proof that worms are much more common than is generally supposed.

Treatment of worms.—Nature has endowed these animals with such tenacity of life, that no matters known to us will effect their destruction, though a few may answer the purpose of their expulsion. Bots are so hardy as apparently to survive immersion in oil, in alcohol, spirits of turpentine, and even powerful solutions of mineral acids. The continued use of salt mixed with the food appears, however, obnoxious to them; for sometimes under its use their hold gives way, and they are ejected. Bitters, purgatives, and the mechanical irritation of pointed bodies, as pewter, tin filings, &c., have no effect whatever upon bots; but with regard to the other parasites, rather more success may be expected from medical aid, in the form of vermifuges. It has been attempted to effect the removal of worms mechanically, by dissolving the mucus they are supposed to be imbedded in, for which purpose lime-water, oil, solutions of aloes, &c. have been injected by clyster up the rectum, and which practice is most to be depended on for the ejection of ascarides when in the rectum. This practice of washing away the mucus of the intestine, and thus depriving the intestine of the secretion given for its protection, is not to be recommended, though oil for this end would be harmless. Strong purges are given with the same intent, which may remove them also from the whole alimentary canal. Remedies have likewise been exhibited to destroy them within the body, by the mechanical irritation of their spicula; under which view tin, brass, iron, pewter, are thought remedial. The Indian caustic barley, and Indian pink, are reputed vermifuges against the teres and ascaris. The oil of turpentine has also been strongly recommended as an excellent general vermifuge; but, except for the destruction of the tænia, or tape-worm, it does not appear to deserve that character.

The mode most in favour with modern practitioners, is to give the horse having worms a drachm or two drachms of tartar emetic, for six mornings running. The tartar emetic is to be administered in the form of a ball, and to a fasting stomach. On the seventh, administer a sharp dose of aloes, to drive out the parasites, enfeebled by the previous medicines. Mr. Spooner recommends the following:—

White arsenic	5 grains.
Powdered cantharides . . .	6 grains.
Sulphate of iron . . .	2 drachms.
Tartarized antimony . . .	1 drachm.

Mix with a handful of bran, and give in a feed of corn every evening for a fortnight. Administer a dose of "physic" after two-thirds of the medicine has been given, and, as soon as it "sets," the remainder.

Under VERMIFUGES, page 247, *ante*, will be found some formulæ and remarks. Mayhew gives a scale of doses of turpentine adapted for the different ages of the horse:—*e. g.* for a three months' foal, half an ounce; for a six months' foal, an ounce; one year old, an ounce and a half; two years', two ounces; three years', three ounces; four years', and upwards, four ounces. Take one pound of quassia chips, pour on them three quarts of water, strain, beat up the turpentine with yolks of eggs to make it blend with the infusion, add one scruple of powdered camphor, and give fasting in a drink before any food, in the morning. If the tænia are expelled, a tonic (see TONICS in List) till the coat is smooth.

The tobacco smoke enema (see Apparatus in PLATE OF INSTRUMENTS, &c.,) is also used to advantage in the expulsion of ascarides.

CRIB-BITING AND WIND-SUCKING.

This curious and dangerous practice, which rapidly grows into a confirmed habit, and is taught to, or initiated by, animals who have the misfortune to be stabled with those confirmed in the vice, has been the subject of much extravagant speculation and wild theory. Ignorance has invested it with mysterious significance, and a symptom of existing acidity of the stomach, or of its distension by gases, has been made, by a *post hoc propter hoc* sort of reasoning, into the *cause* of flatulent colic and other intestinal disturbances.

The premonitory symptom of a resort to crib-biting is that of heartburn. The animal begins by licking the manger; and if there should be iron anywhere, which imparts a sense of coolness, that is particularly grateful. The licking of cold substances is a sign of disordered stomach. The act of crib-biting is thus performed:—The incisor teeth are firmly pressed against any solid substance, say the edge of the manger, he violently extends his neck, and then, after a convulsive action of the œsophagus, a portion of gas is belched up with a grunting noise. This heated air expelled, the animal draws in his breath with a sucking sound, and the horse finds relief in the process. As the animal will leave the most tempting food to go through this peculiar performance, we cannot look upon it in the light of a mere habit, but as an instinctive mode of seeking relief, sometimes practised when the first motive has ceased, and hence becoming an inveterate propensity. We find, then, that crib-biting is most prevalent among horses that pass long weary intervals in the stable, consuming a diet of "oats and hay, varied," as Dr. Kitchener facetiously says, "by hay and oats, for a change." Such an animal, in a close and impure atmosphere, and without the slightest excitement for eye, ear, or brain, may well have a disordered stomach, and fall into a solitary and, to him, agreeable pastime. Crib-biting has been cured in an early stage by a common stimulant, and this would point to a confirmation of our opinion. A lump of rock salt placed in the manger has stopped it, to which we would add another of chalk, or damp the food and sprinkle on it carbonate of soda.

The name, "crib-biting," is a blunder. The horse does not "bite" his "crib;" the manger is simply used as a point of pressure for the upper teeth, and thus the animal is enabled by pulling back to act on the muscles of the gullet, and to force a portion of the offending acid gas up a passage, which is so constructed as to prevent vomiting. The human being in a state of dyspepsia, is relieved, in like manner, by an eructation, but through a more open channel.

For the cure of crib-biting a turn out at grass is recommended. This arises from a misapprehension of the case. The crib-biter will at once make for a gate-post or rail, as soon as the fit comes on. Lining the edge of the manger with iron is evidently inefficacious, as it forms nearly as good a fixed point as before. Sheepskins rubbed with aloes or spread with tar will not keep the inveterate crib-biter from his game. A muzzle with bars across the bottom, sufficiently open to enable the horse to pick his hay, but not to fix his foreteeth on the edge of the manger, has been tried, and the horse, after some time, has been supposed to have abandoned his "habit." Let his stomach become disordered and it will be seen immediately that he is at his old trick to relieve it.

We would advise in every case the treatment of crib-biting as a case of windy colic, chronic gastritis, or of indigestion, according to the methods already laid down; and where it is evident that the practice has, which we doubt, become a mere wanton pastime, to try the muzzle, not neglecting to persevere with the medicinal remedies. Blaine says a strap which constricts the œsophagus has prevented crib-biting, which we can perfectly understand, though no cure.

Although crib-biting has been declared to be unsoundness, we have known many horses work well and freely, and their usefulness, where their work has not been fast not perceptibly deteriorated.

The injury to the teeth by crib-biting, though dwelt upon by Youatt and other writers, is merely imaginary.

Wind-sucking we take to be an imaginary variety of crib-biting—a distinction without a difference.

CONCRETIONS AND POLYPUS IN THE STOMACH.

Concretions, and especially calculi in the stomach, are not so common as in the bladder, intestines, and kidneys; and to the lesions of those organs we refer the reader. We are under obligation to Mr. Percivall for the following cases:—

"It is no uncommon circumstance for hard substances to be found within the stomachs of horses. I have seen several specimens. They were chiefly calcareous. The largest I ever saw was taken from a horse of my father's, that died of old age after having worked in a clay-mill for a number of years. I think this was nearly as large as an ostrich's egg, and not very dissimilar in appearance; it was of an argillaceous nature, and was, doubtless, formed of the fine dust of the clay which the horse was continually imbibing with his food. Its nucleus was the large end (about half) of an old nail. I believe they are always found to contain a nucleus." Thus much, on the subject before us, writes a correspondent, who signs himself J. F., of "The Hippiatrist" for 1830.

In "The Veterinarian," vol. vii., is to be found the case of an Andalusian horse—reported by M. Blavette, veterinary surgeon—who was, in addition to being a notorious crib-biter, a depraved feeder. "Neither manger nor rack, nor the fragments of the bars, escaped him: he gnawed his halter, and licked the walls, ate up all the earth he could get at, and was a confirmed roarer." For many years he had been subject to violent colics, which became latterly more and more frequent. In one of these paroxysms, at last, he died. There was found in his stomach, after death, four pounds and a half of earth and sand. He had, as was learned afterwards, escaped from his groom on the morning of the day he died, and galloped to the riding-school, where he was found eating the earth and sand composing the floor. A brass wire, about the size of a knitting needle, and eight or nine inches long, was found sticking in the intestines, through whose walls it had penetrated and had run into the lumbar muscles.

Polypus in the Stomach. Mr. Brown, veterinary surgeon of Melton Mowbray, has a preparation of a polypus which was taken out of a horse's stomach.

The subject—an old brown horse, named Sheffield—was found, early in the morning of the 1st of May, "labouring

under an attack of the bowels." The animal experienced great pain, cold sweats, quick pulse, &c. No veterinarian attended. Oily purges and frequent clysters were exhibited without giving relief. The horse died on the fifth day from the first attack. About fifteen inches in extent of "the first small gut were mortified."—"The stomach was full, but its contents were liquid, and at the lower extremity there was a pendulous substance, which was plugged into the gut, totally obstructing the passage. I am informed that the animal was a remarkably healthy one, and apparently suffered no inconvenience from the polypus, until it formed a mechanical obstruction to the pylorus. The pedicle is rather tortuous, with an artery and two veins in the centre, having an expanded origin, which becomes converged into a firm cord, one inch in diameter and three long, terminating obliquely in the body of the polypus, which is a firm flat substance, weighing seven ounces and a quarter."

§ III. DISEASES AND INJURIES OF THE PERITONEUM AND INTESTINES.

PERITONITIS.—ENTERITIS.—DYSENTERY.—TYMPANY.—INTUS-SUSCEPTION.—STRANGULATION.—HERNIA: STRANGULATED, INGUINAL, SCROTAL.—HERNIA OF CASTRATION, AND VENTRAL.—RUPTURE OF THE INTESTINES.—CALCULI ETC. IN THE INTESTINES.

PERITONITIS.

The three varieties of inflammation of the bowels are called—*Peritonitis*, inflammation of the investing membrane (peritoneum); *Enteritis*, inflammation of the muscular coat (Gr. *enteron*, a bowel); and *Dysentery*, inflammation of the mucous or internal coat (*dys*, bad, *entera*, the bowels), understood in the horse as a flux, and synonymous in veterinary practice with human diarrhœa.

Peritonitis is so little different either in its symptoms or treatment from ENTERITIS that we may defer directions to that head.

Acute peritonitis is seldom met with except as the result of injury, such as accidents in castration, puncture of the belly, an overstrain in leaping, or over-exertion. Hence the peritoneum is found inflamed in hunters who die "overmarked." Accidents, too, in operations for stone in the bladder, hernia, &c., bring it on. After wounds, an access of cold will cause gangrene to supervene: see ENTERITIS. The tendency of chronic peritonitis is to dropsy of the belly (ascites) or of the chest (hydrothorax), which see.

ENTERITIS.

The intestines are composed of three layers of substance, called coats, any one of which may become the seat of inflammation, to the exclusion—although all three are intimately connected—of the other two; or, at least, so far to their exclusion, that the others appear to be but secondarily and comparatively mildly affected. Enteritis consists in an inflammation of the middle or muscular coat—that which forms the principal substance of the gut. We have evidence of this when we slit open an enteritic intestine: although the exterior looks as red as scarlet, the interior is found to be hardly flushed; even the aspect of the exterior is likewise deceptive; for, if we strip off the external or peritoneal coat we shall discover that the redness is underneath, the raised membrane being in itself translucent, with a red bloodvessel to be seen only here and there, instead of such crowds of them as appear in the muscular tunic.

Enteritis is the "red colic" of farriers, under which name they also include dysentery. There are, however, sufficient grounds for a division of the inflammations of the bowels into enteritis—or that which principally affects their middle coat, and is generally accompanied by costiveness—and that which primarily attacks their villous surface, and is productive of diarrhœa or dysentery. Between these states there is a sufficient mark; but between inflammation and spasmodic colic the distinctive lines are familiar only to the experienced observer. When the gripes, or fret, as spasmodic colic is called among farriers, attacks a horse, it is usual and useful to give him powerful stimulants, active motion, and strong friction, all which would be extremely baneful in the red colic. A careful distinction should therefore be made between the two diseases, which may be readily done by attending to the characteristic marks of each, as particularly detailed in spasmodic colic.

Enteritis sometimes commences by a shivering fit, to which succeed heat of skin, restlessness, loss of appetite; the mouth being particularly hot and dry; the inner membranes of the eyelids, and the linings of the nostrils, being rather redder than natural. As the inflammation advances the pain increases, so as to force the horse to lie down and get up again frequently; yet, unless the pain be very acute, he seldom rolls on his back or remains stationary there; but as he will occasionally do so in particular cases, this should not be considered as a criterion between this disorder and gripes. He will kick at his belly, stamp with his feet, scrape his litter or stall with his hoofs, and look wistfully round towards his sides. The pulse in most cases is frequent, as 90 or 100, and invariably very hard, small, and wiry. The breathing is accelerated: the belly is sometimes painful to the touch, which never occurs in colic; it is also hot to the feel, and the pain, instead of remitting as in colic, is constant; the extremities being cold, while the surface of the body is often warm. The bowels are usually constipated, and if any dung be evacuated, it is small, hard, and in dry masses. The anus, if examined, will be found very hot; and if the hand be intruded up, it will be felt sometimes even internally inflamed; it also, in many cases, quivers with the intensity of the general affection. Frequently, towards the later stage, there is some tympanitis or distension of the belly, which much aggravates the general tenderness evinced on examination. The urine is

painfully evacuated in small quantities, and very highly coloured; sometimes it has much mucus suspended in it. In the progress of the disease these symptoms increase in intensity: the distress of the horse is expressed by his groans, his violent efforts to change his position, as if to fly from his malady; while perspiration, partial or general, breaks out, and is then succeeded by a chilly state, with muscular twitchings; the pulse becomes more and more hurried, intermittent, and at last nearly imperceptible; the respiration is as quick and irregular as the pulse, and occasionally interrupted by a convulsive sigh. The vital powers are now fast ebbing, and the animal sinks after a few feeble struggles, or he parts with life with more violent convulsive movements.

Treatment.—The clearest and most judicious treatment we have met with is that contained in an editorial addition by Mr. Spooner in the last edition of White's "Veterinary Art;" and as it has the further merit of brevity we here transcribe it:—"Having properly examined the case, we should immediately have recourse to bleeding, and that as extensively as possible; for this purpose, a large opening should be made in the jugular vein, or one on each side, and from six to eight quarts taken as quickly as possible, continuing the bleeding till the pulse becomes almost imperceptible. The bowels being costive, the dung should be removed by back-raking, and a copious injection thrown up. A pint and a half of linseed oil and one drachm of powdered opium may next be given, and a half pint of the oil, with half a drachm of opium, may be repeated every six hours, till the bowels are relaxed; the injections being also frequently repeated.

"The abdomen should be fomented with very hot water, which should be continued for some time; and it will afterwards be very useful to apply hot sheep-skins, just removed from the dead animal, to the abdomen, the woolly side outermost. If these cannot be procured, the fomentations should be repeated, or the abdomen may be stimulated by a blistering application.* The legs must be kept warm by flannel bandages, assisted, if necessary, by rubbing in a stimulating liniment, composed of oil and spirits of turpentine. During the continuance of pain the horse will, of course, take no food, nor is any desirable. He will most probably be disposed to drink, of which circumstance advantage should be taken, by offering him oatmeal gruel, or linseed tea, as often as he will take it.

"If relief be not obtained in the course of six hours, our prognosis will be unfavourable, particularly if, on again resorting to bleeding, we find the blood very dark and thick, and with difficulty obtained.

"A second, and even a third, bleeding should be tried, though in less quantity than at first. If the pain ceases, or greatly diminishes, the pulse becoming more distinct or moderate, we may then augur a favourable result, which opinion will be greatly strengthened by the bowels becoming gradually relaxed. If a favourable result should attend, great caution is necessary for some little time as to the diet; and soft food should be given for several days.

"When death occurs, we find, on examination, the muscular coat, particularly of the large intestines, quite black from inflammation, and the other coats likewise involved in a secondary degree."

Dysentery (Molten Grease).

This disorder is an inflammation of the internal surface of the bowels. It is caused by obstructed perspiration; the continued use of certain kinds of food; but more frequently by the injudicious administering of improper purgatives, either as to quantity or quality, by which such irritation is brought on as ends in inflammation. Dysentery is commonly accompanied with purging, whereas enteritis is almost always associated with costiveness; neither is the pain so acute in dysentery, consequently the horse seldom expresses his uneasiness by rolling or stamping; the pulse is also quick and small, but is seldom very hard, even from the beginning. However urgent may be the symptoms, and whatever the pulse may denote, no blood must be withdrawn in this disorder; for it is inflammation of the mucous membrane, and after all we can do to support the horse, he will hardly have strength to get through the attack. Stimulants should, however, be applied to the bowels, as in inflammation of the intestines, properly so called. The stable and the clothing also should be warm, and means should be taken to keep up the circulation in the extremities by hand-rubbing and bandaging. The following drink may be given every two hours:—

Prepared chalk	1 ounce.
Laudanum	2 ounces.
Liquor potassæ	1 ounce.
Tincture of catechu	½ ounce.
Tincture of ginger	1 ounce.
Tincture of capsicums	2 drachms.
Water	1 pint.

Mr. Spooner's prescription is more simple.

Powdered opium	1 drachm.
Powdered catechu	2 drachms.
Prepared chalk	1 ounce.

In thick gruel made from wheaten flour, or in boiled starch.

Throw up frequent injections of rice-water, and have a pail of thin cold gruel in the manger, which, however, should be repeatedly changed, though most likely the poor animal will drain it almost as fast as it can be prepared.

The reader is referred to the preceding section under the heads Diarrhœa and Costiveness.

* "Mr. Mavor has introduced some apparatus, whereby the steam from hot water may be applied to the abdomen for an hour together; this is likely to prove of great service in cases of enteritis, as well as in inflammation of the chest."—"Veterinarian," vol. xii., p. 198; "Veterinary Medical Association."

Tympany.—A reference to our observations on windy colic, p. 448, will save repetition.

INTUS-SUSCEPTION OF THE BOWELS.

Strangulation, intervagination, volvulus, or intus-susception—for by these names a twisting, knotting, or unnatural torsion of the bowels is called—is more frequent than has been supposed. Fatal cases of this disorder having been often treated as colic, and *post-mortem* examination neglected.

Intus or Intro-susception means the slipping of one portion of intestine into another—commonly into the one behind it. In the human subject, especially in children, this appears to be an accident by no means uncommon, and one that happens and rights itself again without any knowledge on the part of the person in whom it occurs. The two most frequent descriptions of strangulation will be best understood by a drawing. We give them from Percivall :—

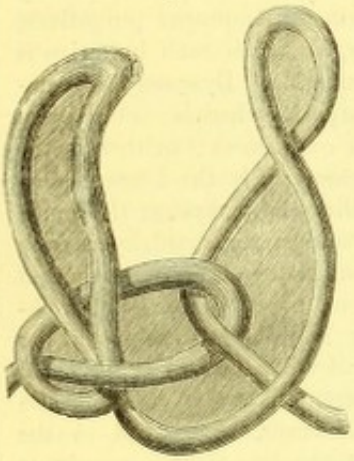


Fig 1.

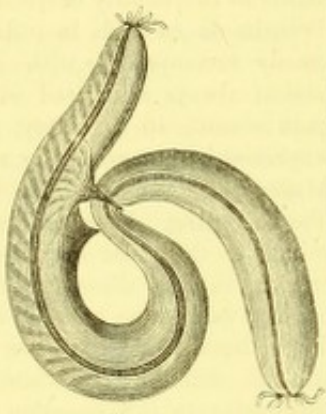


Fig. 2.

The first represents a strangulation of the small intestines, the second, a strangulation of the rectum. The spasmodic action of the ileum long continued, may be succeeded by an inverted action from the cœcum towards the stomach, more powerful than the natural action ; and the contracted portion of the intestine is thus forced into a portion above it that retains its natural calibre ; and the irritation caused by this increases the action, until more is forced in, and an obstruction is formed which no power can overcome. Even the natural motion of the bowels will be sufficient to produce intus-susception, when the contraction in the ileum is very great. There are no symptoms to indicate the presence of this, except continued and increasing pain ; or if there were, all our means of relief would here fail.

There is another singular consequence of colic. Although the ileum is enveloped in the mesentery, and its motion to a considerable degree confined, yet under the spasm of colic, and during the violence with which the animal rolls and throws himself about, portions of the ileum become so entangled as to be twisted into nooses and knots, drawn together with a tightness scarcely credible. Nothing but the extreme and lengthened torture of the animal can lead us to suspect that this has taken place, and, could we ascertain its existence, there would be no cure.

The Symptoms.—Internal stricture and strangulation of intestine are, in general, violent to a degree, though the same in kind as result from colic, or, rather, enteritis. The poor sufferer paws, and lies down, and rolls, and looks at his flank, and pants, in horrible agony ; his belly becomes tympanitic, tense, and enlarged ; and his pulse is quick and small, 70 or 80, but not thready. For the first three or four hours, all that we do appears of no avail. Afterwards a calm takes place, and we are apt to think our remedies have worked it ; if, however, we again examine the pulse, we shall find our patient evidently sinking ; perhaps, at the time, all over in a tremor and cold sweat. This deceitful calm is nothing but the too certain precursor of mortification. The animal commonly dies in convulsions.

HERNIA (RUPTURE).

The signification of the Greek word, *'ernos*, a branch, is too narrow to express properly what we understand by rupture in its varieties. We shall here confine ourselves to a displacement of the intestines from the abdominal cavity, either through some of the natural openings, or through artificial ones, as the effect of accident.

The places where these protrusions commonly take place in the horse, are, the groin, the navel, the sides of the belly, and the diaphragm. It is these differences in situation that constitute the different sorts of hernia :—that protruding at the groin, called inguinal ; the same extending through the canal and descending into the scrotum, called scrotal ; that at the navel, umbilical ; that apparent upon any part of the belly (the navel excepted), ventral ; the one passing through the diaphragm, diaphragmatic.

The parts protruded in hernia are commonly either the intestines or the omentum, or both. Every viscus, however, even the thoracic and cerebral, is liable to hernia.

Hernia is again divided into reducible, irreducible, and strangulated. When the contents of the tumour admit of being returned into the abdomen, the hernia is said to be a "reducible" one ; when, either in consequence of their bulkiness, or their adhesion to the sac containing them, or to each other, that is found impracticable, the hernia becomes an "irreducible" one. Should there be constriction at the mouth or contracted part of the sac, which in inguinal hernia is at the internal abdominal ring, to that degree that the circulation is either impeded or altogether arrested, the hernia is said to be "strangulated."

The hernia most frequent, as well as most important, is *inguinal*. To which, on both these accounts, it will be necessary that we should give our fullest consideration. Many of the following observations become equally applicable to the other kinds of hernia, a circumstance that will tend still further to abridge our description of the rest. The reader who would pursue the subject is referred to the

translation of M. Girard's treatise, by Mr. W. Percivall, and to a paper on hernia, by Mr. Simonds, in the "Veterinarian," vol. xi.

Inguinal hernia, as we have just said, is the most common, of which the *scrotal* (when the bowel descends into the scrotum) is most frequently observed in the stallion. *Bubonocele*, or that of the groin, is a very rare form of disease, but is occasionally witnessed in geldings. In the former, the intestine accompanies the spermatic cord by the inguinal canal through the abdominal rings into the scrotum: in the latter the bowel alone lodges in the groin. The ruptures we have named may be considered as the only ones common to the horse. Hernia is more frequently on the right than on the left side; and scarcely ever appears in mares. However, *ventral* hernia or rupture of the muscles of the abdominal sides, and protrusion beneath the skin of a portion of intestine, is sometimes found in either sex, and perhaps occurs more frequently in the female.

The *causes* which produce hernia are various, but all arise from violence of exertion, or the effects consequent upon external injuries. With us the efforts used in racing, and the leaps taken in hunting, are causes, as we may readily suppose; when we consider that the dilatation of the abdomen, restrained as it is by weight and tight girthings, must press backwards the intestinal mass. Rearing and kicking also, and being cast for operations, particularly the rising up after castration, have all brought it on. Blows with a thick stick, or from the horn of a cow, may likewise induce it.

The Symptoms of strangulated hernia are in this respect very similar to acute enteritis; there is the same uneasiness, shifting of position, getting up and lying down again. The horse rolls in the same manner, and in turning on his back sometimes seems to get a momentary respite from pain; yet it is but momentary, for the suffering is not one of remission; it is constant. This serves as one distinguishing mark between it and spasmodic colic, with which it has been confounded. In stallions, the testicle on the ruptured side is drawn up to the abdomen, and is retained there, with only momentary fits of relaxation, the scrotum often drops with sweat. Towards the last, the pulse is quick and wiry; the horse paws, looks at his flanks, but seldom kicks at his belly. We assure ourselves of hernia by an oblong tumour in the groin, of larger or smaller bulk; hard or soft, as it may contain either fæces or gas, in which latter case it will also be elastic. When the tumour is raised by the hand, or pressed, a gurgling sound is emitted; or if the horse be coughed, it will be sensibly increased in dimensions. The Schneiderian membrane is often injected, and the horse gazes at his groin or scrotum.

Treatment.—Supposing the animal to be a stallion, we first examine the hernial sac. In this both hands are employed; one is introduced into the rectum, the other into the sheath. The one within the rectum must seek the internal ring; while the other, pursuing the course of the cord on the side affected, is to be pushed up to the external ring; and thus, in the natural state, the opposed fingers may be made nearly to meet, and so estimate the size of the opening. However small the protruded portion of gut, the practitioner will be able to detect, and even to reduce it. This exploration may be made in the standing posture; but it will be conducted with more facility and certainty if the animal be cast, which is the preferable mode of proceeding.

Bleed and partially paralyse the parts by administration of chloroform; lessen the volume of distension by dashing the parts with cold water; or, if the horse be already cast, by spreading ice over the belly.

Next, endeavour to return the displaced gut. The horse is thrown upon the opposite side to that disordered; and after one hind leg has been drawn and fixed forward, as for castration, he is to be turned upon his back, and in that position maintained by bundles of straw, while other bundles are placed under him to raise the croup. With both arms well oiled, the operator will now commence his exploration, taking the precaution of emptying the rectum as he proceeds. As soon as he shall have ascertained that it is a case of hernia,—having assured himself the gut protruded through the ring is undergoing neither stricture nor strangulation,—he may endeavour to disengage the hernial part, by softly drawing it inward within the cavity, at the same time pushing it in the like direction with the hand within the sheath. Should he experience much difficulty in these attempts, he is to desist; violence being too often the forerunner of strangulation and gangrene. He must bear in mind that, although the reduction is effected, unless it be followed by immediate castration, it does not always prove a cure. The protrusion recurs after a time, and occasionally even the moment the animal has risen. If the hernia should be reduced by taxis,* and it is not intended to castrate the horse, apply a well-wadded pledget, or folded cloth to the part; this may be retained with a bandage crossed between the legs from side to side, and fastened by one part under the belly to a girth; and also, passing between the legs, it may be again made fast to the back portion of the same girth. The intention of this is, to prevent the protrusion of the gut by the exertion of rising; and consequently it should be removed as soon as that danger is over.

Mr. Rogers (after M. Girard) recommends a *bistourie caché* as an operating instrument, and from his paper on "Hernia" we extract a description of the operation for scrotal hernia.

We will suppose the horse thrown as described in the last paragraph, and the examination made. The operator takes the testicle of the affected side in both hands, and, manipu-

* Taxis (from the Greek *taxis*, order,) means merely the putting back of the intestine in its place in the cavity of the belly: this is called "reduction by taxis."

lating it so as carefully to bring it in close contact with the scrotum, leaves it in the left hand. Tightening the skin, and guided by the raphe, he makes a free incision through the integuments, and then through the tunic, which latter he dilates to the extent of three or four inches by means of the scissors or scalpel, first introducing one of his fingers as a guide. If the operator has a knowledge of the parts, he need not be afraid of opening the scrotum by free incisions, made with caution. On opening the scrotum, a quantity of serum, depending on the length of time the strangulation has existed, will escape.

If the operator takes the testicle firm in his hand, there will be little danger of wounding the gut.

After having opened the scrotum, by putting aside the testicle, he may generally obtain a view of the intestine.

He next attempts to introduce the index finger of his left hand into the stricture; but this is sometimes difficult, as the spermatic cord becomes occasionally enormously enlarged, the stricture preventing the return of blood by the veins, but allowing it to proceed to the testicle by the arteries. In such a case it is an advantage first to castrate, and so get this distension out of the way.

Having carefully passed the finger into the stricture, he then introduces the bistoury, and, having taken great care to avoid the intestine, very carefully dilates the stricture; but this is to be done with the greatest caution, so as just to enable him to return the gut and no more, for if he much enlarges the opening he will, in all probability, have a return of the hernia, and lose his patient. Having reduced the hernia and removed the testicle, he dresses the scrotum with turpentine liniment, and allows the horse to rise.

Treatment of strangulated hernia in geldings.—Inguinal hernia taking the same course, is susceptible of the same terminations, and requires the same treatment, as in stallions. The operator (the horse lying upon his back) extends the hernial sheath with one hand, while he manipulates with the other; or, should this fail, by instructing his assistant to hold up the hernial mass from the belly, so as to take its pressure off the ring, and thus give him an opportunity to renew his efforts with more effect. In some cases, the introduction of one hand into the rectum becomes necessary. The reduction of the hernia should be followed up immediately by the application of the clams, if we unite with the reduction an attempt at permanent cure of the hernia; taking care, at the time, to draw out the part of the scrotum to which the vaginal sheath is adherent, and to push up the clams as close as possible to the belly; they are then to be closed, as for castration.

Of *congenital hernia*, our limits allow of little more than the mention; nor need more be detailed, as its consequences are seldom injurious. It appears that inguinal hernia commonly exists in the fœtus in utero. Chronic or permanent hernia, our observations being limited to geldings, we see little of. Castration, however, with the armed clams, is the evident remedy.

RUPTURE OF THE INTESTINES.

There are a number of cases in veterinary books, of rupture of the intestines, especially of the colon. A rent of the ileum nine inches in length, at the part where the mesentery is attached, is recorded by Mr. Spooner. The mesentery was also split. It has been said that rupture of the stomach or intestines is an effect of colic; we suspect that the rupture having taken place by some accident, or disorganization of the parts, the symptoms of colic supervene, and hence the cause is mistaken for an effect.

CALCULI IN THE INTESTINES.

Stones in the intestines of the horse are not unfrequent. They are occasionally of enormous size. Mr. Spooner has one, round as a cricket ball, and weighing six pounds, found in the colon of a miller's horse. They often occasion dangerous colics, by accidentally altering their situations. Whenever, therefore, colics occur frequently without any apparent cause, they often prove, after death, to be referable to irritation from these displacements.

It is evident that this is an evil we have little power to combat; if a horse, by passing a stone with his fæces, indicates a constitutional disposition to separate chalky matter from his food, and afterwards to concrete it by the mucus of his bowels, the removal of a stone actually formed is hopeless. The abdominal calculus generally has a nucleus, or centre, consisting of a nail or stone. It is composed of the triple phosphates, is generally round, and is easily recognized by its external surface bearing a polish so bright as to seem the creation of art. Others are composed of the fine hairs which cover the substance of the oat, and some, called dung-balls, are formed by the fæces becoming impacted. The first is usually found within the small intestines, the two last invariably in the hinder bowels.

CHAPTER XXIX.

DISEASES AND INJURIES OF THE LIVER, SPLEEN, AND GLANDS.

§ I. DISEASES OF THE LIVER.

HEPATITIS (INFLAMMATION OF THE LIVER).—JAUNDICE.—ENLARGEMENT OF THE LIVER.—RUPTURE OF THE LIVER.—BILIARY CALCULI.—WORMS AND HYDATIDS.

THE liver of the horse is less frequently diseased in early and middle life than in man and many other animals. Oxen and sheep, having a gall bladder and cystic duct, which the horse has not, are more liable to biliary obstructions. Cows are specially the subject of liver disorder, called by herdsmen and cow-doctors by the characteristic name of "the yellows."

The liver of the horse, then, is seldom *primarily* affected with inflammation; but hepatitis is induced when this immense gland participates in other abdominal inflammations or injuries. When the liver is involved, there is the additional symptom of the yellow or biliary tinge in the schneiderian, the buccal, and the conjunctival membranes of nose, mouth, and eye respectively. Blaine thus describes the disorder:—

The chronic or torpid state of the disease, which is very common among high-fed and slightly-worked carriage and brewers' horses, may be unsuspected till the animal is suddenly seized with gripes, or otherwise shows signs of being seriously ill. These symptoms are caused by the rupture of the fibrous case of the liver, called Glisson's capsule, and the escape of blood into the peritoneum or serous covering of the huge gland. It is then almost too late to try calomel. A few days' quiet, and a dose to open the bowels, will be all that can be ventured; and the horse is returned to its owner, with a caution to work him gently and feed him sparingly for the future. Such cautions, however, are rarely long attended to. Nevertheless, the peritoneum stretches, and at the same time thickens in substance, containing, and at the same time restraining, the fluid that is poured into it. Another rupture in time takes place, and the same measures are repeated; however, the peritoneum at last gives way. If the rent should be large, the animal may suddenly fall dead. If small, he is apparently labouring under a severe fit of colic, but the dilated pupil, the inability to bear the head lifted up, and the yellow tinge of all the visible membranes, declare the seat of the disorder; and the examination after death shows the cavity of the abdomen full of thin black fluid. It is a curious fact, and one upon which we shall comment hereafter, that in liver-complaint, the horse is often lame of the right foreleg, as if (which is the case in man) the pain extended to the shoulder. What does the inquiring reader think of the following case given by Percivall?

"The horse belonged to the Artillery, at Woolwich, and was lame in the off foreleg, through which ultimately he became so disabled, that he with difficulty projected the limb even in walking. No cause whatever being discoverable, and the lameness continuing in defiance of all that had been done by way of remedy, it was deemed advisable to destroy the animal. The limb was dissected; but every part appeared healthy. His body was then opened, and, strange to say, a thorn of considerable length was found sticking in the substance of the liver." Hunters kept in stable are subject to hepatitis; which may arise from liberal feeding, injuries to the right side, gall-stones, and mischief in the immediate neighbourhood of the liver in which this gland sympathises. The brain is always disturbed when the liver is congested.

TREATMENT.—In the first instance, four to six quarts of blood should be abstracted; and this immediately followed by ten drachms of purging mass in a ball, or twelve drachms in solution; the operation of which may be accelerated by the occasional administration of a clyster. Calomel, and indeed every other preparation of mercury, being a stimulant to the liver, is to be scrupulously avoided. As soon as we perceive the physic to be setting, should there be occasion for it, we may take away another gallon of blood; and at the same time, after having had the hair shorn off, apply a blister to the right side, extending it from the borders of the ribs as far forwards as the place of girthing. The first dose of medicine once "set," we may resume our operation on the bowels by giving daily the following ball, omitting it only at such times as purgation shall have recommenced:—

Take of Purging mass . . .	2½ drachms.
Powder of digitalis . .	1 drachm.
Powdered nitre . . .	3½ drachms.
Soft soap, sufficient for a ball.	

Should the blister not have taken proper effect, twelve hours after its application, it may be repeated. In case the disease appear to be merging into the chronic form, the

insertion of two or three setons through the skin of the right side is a commendable practice.

Mr. Cupiss, to whom we are indebted for a very clever essay ("Veterinarian," vol. xii.,) on liver diseases in the horse, describes three other affections under the names of *unnatural enlargement, decayed structure*, and *unhealthy secretion*. The second may be included as one of the sequelæ of hepatitis, the third as general biliary fever, or a form of jaundice.

JAUNDICE.

The remarkable yellowness of the skin, eyes, and mouth in this disease have obtained for it the name of "Yellows."

The Symptoms of jaundice are the same as those of hepatitis. It has been said that vetches and green food produce jaundice; we do not believe it. Its treatment is, like enteritis, by alteratives. Try the following:—

Calomel	½ drachm.
Aloes	2 drachms.
Powdered gentian	2 drachms.
Castile soap	2 drachms.

Form into a ball, and give night and morning until the bowels are actively purged; then continue only so much of the same, for a week or ten days, as will keep the bowels lax, not in a purging state. If the symptoms be such as bespeak chronic inflammation or incipient consolidation, blister the right side. In cases where costiveness is not present, but, on the contrary, a relaxed state of the bowels appears, give the following:—

Calomel	1 scruple
Blue vitriol	½ drachm.
Gentian, in powder	3 drachms.
Oak bark, in powder	3 drachms.

Make into a ball, and give night and morning, unless the calomel should affect the mouth, in which case give only once a day. Should the looseness increase on this plan, add powdered opium, a drachm to each ball. In all cases of yellows, a change of food is proper, and generally necessary. In winter, spear the corn, or give carrots; in summer, soil, or give green grasses; but, in such case, avoid exposure to the night air, making use of moderate clothing so long as the calomel is continued.

ENLARGEMENT OF THE LIVER.

Mr. Cupiss says of enlargement of this gland:—

"Unnatural enlargement of the liver sometimes takes place. It is swollen to two or three times its natural size. It presents an appearance of general congestion; it becomes gradually filled with a black bloody fluid. The progress of this variety of liver disease is uncertain, generally slow, and almost invariably fatal.

"The symptoms are, an enlarged and tense abdomen; the bowels sometimes constipated, at other times relaxed; there is sometimes considerable thirst; the pulse is accelerated to 100 or more, loud and thumping, and easily mistaken for a primary affection of the heart.

"The most effectual treatment will consist in a cautious administration of laxatives, accompanied by diuretics and counter-irritants. To this tonics may succeed. In my opinion, the ioduret of iron, in doses of half a drachm, two or three times every day, would be preferable to any other medicine.

"One post-mortem examination presented the liver about three times its natural size, and consisting of a mass of coagulated blood."

RUPTURE OF THE LIVER.

As there is no curative treatment for this lesion, we shall dwell on it briefly. The age and habits and condition of horses disposed to this accident are such as conduce to and indicate some morbid condition of the liver. Enlargement and degeneration of substance alike conduce to rupture. Since the stall-fed ox is so prone to disease of the liver, is it not reasonable to suppose the stall-fed horse should be subject to some similar disorder? Chronic hepatitis is a disease so obscure and insidious in its course, that horses in general have it without any knowlege on our part of its existence. In fact, we know nothing about it until the subject of it comes to die, perhaps from ruptured liver, and we find the gland clay-coloured, softened, and so rotten in texture that it will hardly bear handling without falling to pieces.

The rupture in most cases happens all at once; but the hæmorrhage from it would appear as if it became partly—nay, in some cases perhaps completely—stanched, and then relapsed. In a case that occurred to Mr. Siddall, the horse had been ill, and subject to frequent faintings for upwards of three weeks before he died; which appeared afterwards to have been caused by small ruptures of the peritoneal covering of the liver in different places, of all which he rallied, not sinking until the grand rupture had happened.

A grey coach-horse, belonging to his late Royal Highness Prince Albert had been unwell the day before—heaving at the flanks, and off his feed—when Mr. Siddall was sent for to attend. His respiration was now short and accompanied with sobbings, and particularly when moved, though comparatively tranquil while standing alone undisturbed, except now and then, when a sort of paroxysm came on. Extremities cold; pulse frequent and small, and easily compressed. Sclerotic coat and buccal membrane blanched; tongue covered with frothy saliva; breath stercoraceous; fæces scanty and dry. Medicine and gruel were prescribed. The next morning the groom found he had eaten his mash, and thought he appeared more cheerful. Soon afterwards, however, while doing something upstairs, over the stable, the groom heard him fall, and in a very few minutes after he breathed his last.

In the above case, the horse survived forty-eight hours after the rupture.

The immediate cause of the rupture appears to be either

excessive distension, or some effort of respiration or bodily exertion, or some injury. In a case of enlargement followed by rupture, the liver had acquired the weight of sixty-two pounds; was intensely black; and from a rent in its lower border three gallons of blood had escaped.

BILIARY CALCULI, WORMS, AND HYDATIDS.

Biliary calculi, from the structure of the liver in the horse, and his want of a gall-bladder, are not so frequent as in the ox or cow. Urinary calculi will be noticed under the BLADDER AND KIDNEY.

Worms are said to have been found in the liver of the horse; we never met with any. In the sheep they are not uncommon.

Hydatids are sometimes hid in the horse's liver. In sheep they are so common that rot was at one time attributed to them by the cow-doctors.

§ II. THE SPLEEN AND GLANDS.

SPLENITIS.—CANCER OF THE SPLEEN.—ENLARGEMENT AND RUPTURE OF THE SPLEEN.

SPLENITIS (or inflammation of the spleen), we know only in *post mortem* examinations. In this compendium we have merely to record the fact that no veterinarian doubts that the spleen is the occasional seat of inflammation; but in what its symptoms differ from ordinary colic, we know not. Mr. Cartwright, in the "Veterinarian" for 1836, describes a case which he confesses he treated "as obstruction of the bowels," in which the spleen—the only viscus diseased—proved "double its usual size, gorged with blood, and black as jet. Its natural tough texture was quite broken down, and it was soft, and in a manner approaching to gangrene." There appears the singular coincidence between this and a case recorded by Mr. Blaine, that both patients died on the fourth day.

The French veterinarians elaborately describe splenitis and its symptoms, but, as we said before, they do not differ from those of colic.

CANCER OF THE SPLEEN has several cases recorded under the name of *carcinoma melanosis*—black cancer. In one of the cases in the "Veterinarian" for 1837, Contraband, a dark brown stallion, eight years old, was treated for disease of the kidneys, and died. The spleen weighed, with the cancerous tumours on the gastric side of it, 102 pounds, and was sixty-eight inches circumference: the portions of spleen remaining were of all colours. Mr. Huntley, veterinary surgeon, relates a case where "the spleen weighed fifty pounds, and was a mass of scirrhus; and the pancreas in a similar condition, weighing more than thirty pounds. Emaciation was the only actual symptom of this frightful state till the animal, a mare, died suddenly.

RUPTURE AND ENLARGEMENT OF THE SPLEEN.

This formidable lesion is occasioned by enlargement, spasm, or accident; often the presence of the first renders an accident fatal that would not otherwise be so. Interesting cases are related in Percivall's "Hippopathology," vol. ii., p. 331, and in various volumes of the "Veterinarian," to quote which would overload our pages. One case, in which Mr. Cunningham, veterinary surgeon, found a ruptured spleen weighing ninety-two pounds, is recorded in the "Veterinarian" for 1855, p. 72.

Disorders of the glands, naturally, range themselves under several diseases. specific and general, as glanders, farcy, indigestion, enlargements of structure, inflammation of tissues, &c.

CHAPTER XXX.

DISEASES OF THE URINARY ORGANS, AND OF THE ORGANS OF GENERATION, IN THE HORSE AND MARE.

§ I. THE URINARY ORGANS.

NEPHRITIS (INFLAMMATION OF THE KIDNEYS).—ABSCESS, SOFTENING, INDURATION (SCIRRHUS), AND ENLARGEMENT.—DIABETES.—ALBUMINOUS URINE.—BLOODY URINE (HÆMATURIA).—CYSTITIS (INFLAMMATION OF THE BLADDER).—SPASM OF THE URETHRA.—URINARY CALCULI.—TAPPING THE BLADDER.

The kidneys and bladder are the chief parts of the urinary apparatus. The ureters and urethra being merely channels for the fluid, which is elaborated by the former organs, and received and retained by the latter until such time as becomes convenient for its ejection. The exemption of horses from venereal affections, and their less liability than men to generate stone, contracts the list of their diseases of these organs. Indeed, were it not for injury—inwardly as well as outwardly inflicted—we should probably hear but little of them. Over-exertion, particularly under heavy burthens, is one grand cause of kidney disease; medicine and food possessing diuretic properties constitute another; bearing which in mind, it will at all times become a leading desideratum in the treatment, to take care to remove or avoid the repetition of such influences. The kidney of the horse is a peculiarly susceptible organ. It is easily acted on; and many—indeed most—medicines that we are in the habit of using take some effect or other upon it. Mr. Percivall says, this is one reason why so very few medicines will purge horses; the majority of them being so readily carried out of the system through the kidneys. A fact strongly corroborative of this opinion, is that of a copious flow of urine of a dark colour being frequently observable in horses who have been but slightly affected by doses of physic they have taken, and who, notwithstanding the little or no purgative effect they have experienced, have shown afterwards quite as much temporary weakness and loss in condition as if the physic had worked their bowels. This the same authority sets down as a reason why mercury produces salivation with such comparative tardiness and uncertainty in horses. This susceptibility of the kidney, in veterinary medicine and dietetics must never be lost sight of. It is of vast importance in practice, and renders our treatment in many cases different from what surgeons would pursue under similar circumstances; we being able to effect so much more through the agency of these organs in the system of the horse than is to be accomplished in that of the human being. The veterinary surgeon, in fact, must often effect that through the medium of the kidneys, which the human surgeon does through the agency of the skin and bowels.

Nephritis (Gr. *nephroi*, the kidneys), or inflammation of the kidneys, as a primary disease, is not very common with the horse; but by its fatal tendency, it becomes important. Small as these organs are, they are most essential to life, and the quantity of blood passing through them is very great; therefore, we cannot wonder at their aptitude to inflame, nor the great derangement that inflammation occasions the machine.

Inflammation of the kidneys is not now so common, because horse owners are not so much the slaves of the groom's and their own ignorance. In the words of Mayhew: "Urine balls are no longer kept in every loft. Nitre—one ounce of *sweet-nitre* (that is, an overdose of *harsh* saltpetre), may be yet permitted by some horse-owners, who regard it as a charm for every ill. It is true that such a dose of a powerful diuretic is four times the strength which science would prescribe; yet certain people, we hope only in remote parts, yet are happy in the conviction that 'an ounce of *sweet* nitre can do no harm.' It is fortunate the urinary organs of the horse are so little disposed to take on disease, or half the horses in England would be disabled by inflammation of the kidneys."

The causes are, exposure to cold, standing in the rain, water dropping on the loins we have known bring it on; a heavy awkward rider by his motions, or even the action of the psoæ muscles in great exertion, may bruise the kidneys; and occasionally it may be caused by a sympathetic inflammation. Mow-burnt hay, musty or even kiln-dried oats, in common with other diuretic substances, which under the name of staling or urine balls, are such favourites with every groom, may produce it. It may terminate in resolution, suppuration, or gangrene.

Symptoms.—Dull appearance; pain, expressed by looking at the flanks; urine made frequently and in small quantities, with much effort or groaning; often red or bloody, and as the inflammation increases almost wholly suppressed; still attempts are made by the bladder to evacuate, and the mucous secretion from the organ and urethra only are pressed out with much pain. Pulse at first rather hard,

frequent, and somewhat full; but, as the disease advances, it becomes smaller, oppressed, and intensely quick. The animal stands with his legs wide apart, as though going to stale, and shrinks when the loins are pressed. If it be an entire horse, the spermatic glands are alternately drawn close to the belly, and pendulous or relaxed. To distinguish it from inflammation of the body of the bladder, or from spasm of the neck of that organ, the horse should be examined by passing the hand up the rectum; when, if the inflammation exists in the kidneys, the bladder, whether it contain anything or not, will not be hotter than the surrounding parts, or more tender: but should the affection be confined to the body of the bladder, it will be surely found empty, but very hot and painful to the touch; if, again, spasm of the neck of the bladder, as sometimes happens, should be the seat the disease, no heat or tenderness will be felt, but the bladder will be found distended with urine. The horse shows much disinclination to move, straddles wide behind, and his back is "roached."

Treatment.—This must be directed to the equalization of the arterial action. Back-rake, and examine carefully by inserting the hand up the rectum, and feeling for heat and tumefaction of the diseased organ. Throw up frequent clysters, consisting of cold water, in every gallon of which one ounce of sulphuric ether, and one ounce of crude opium, are dissolved, both with a view to promote a soluble state of bowels, and to act as a fomentation to the inflamed organs; and if any costiveness be present, give a purgative without any diuretic substance intermixed. It should, because aloes contain resin, consist of linseed oil, a pint and a half, in which a drachm of chloroform is mingled; and one half of this may be repeated in six hours, if the animal display no improvement. It will be prudent also to endeavour at exciting an external inflammation on the loins. The administration of cantharides is here questionable, from a disposition in them to stimulate the kidneys. Turpentine, for the same reason, should not be applied; but no such fear prevents the use of liquor ammoniæ, in the manner before directed, when treating of enteritis; neither can any objection be formed to the application of a simple mustard poultice, which may be renewed every two hours; and if a newly-stripped sheepskin be laid upon the place the liquor ammoniæ or mustard poultice has occupied, the activity of each will be increased. In acute pain, give belladonna extract, half a drachm, and crude opium, two drachms, thrice a day, in linseed meal and honey. Without giving violent sudorifics, which would increase the action of the heart and arteries, we should attempt to moderately determine the blood to the skin and the limbs by clothing, friction, and bandaging up the extremities; as well also by nauseating the stomach with white hellebore. Injections of warm linseed tea may be thrown up every two hours, and a pail of the same placed before the horse; he will want no other provision during the attack. Diluting liquors are among the best means of lessening inflammation, for which reason a pail of tepid gruel should be kept constantly in the manger. These cases, however, generally last some time, during the whole of which the efforts should be continued, and exertion only relax as death, from known and well-marked signs, appears certain.

Percivall says: "should the inflammation not abate, keep the bowels soluble and the skin supple by the following:—

Purging mass	1 drachm.
Tartarised antimony . . .	1 drachm.
Carbonate of soda . . .	3 drachms.

Mucilage to make a ball. If this produces purging, reduce the purging mass to half a drachm, or discontinue.

Abscess, Softening, Induration, and Enlargement of the Kidneys

Most of these are preceded by acute nephritis. The first, abscess, is sometimes the result of accident. The French veterinarian Hurtrel d'Arboval, relates the case of a mare who fell into a hole, and was got out with difficulty, it being supposed she had received a spinal injury. Her urine was turbid, with streaks of blood. After a time a tumour appeared in the right flank, which was opened, and discharged an immense quantity of pus: the wound did not heal, but a fistula formed. The horse sunk. After death the right kidney was found to be four times its natural size; the pelvis, greatly distended, contained three pints of pus streaked with blood. The left kidney was also enlarged, and its pelvis filled with a quart of limpid urine. The bladder was thickened and inflamed, and contained merely a sediment of urine.

Mr. Cartwright, veterinary surgeon, records a case where the kidneys were light blue, in a complete state of putrefaction, and "the finger would pass through their substance like so much mud."

Induration, or scirrhus, also follow on injuries or inflammation.

The symptoms of kidney disease are fœtid, bloody, or filamentous urine; a small irregular pulse; recurrence of sweats, especially in the flanks; these ceasing, the patient falls, and convulsions close the scene. The gait of the horse, and his wide mode of standing, are characteristics of these disorders. The animal, too, can bear no pressure on the loins. In some cases he will resist in evident agony any attempt to press his back, at others he will sit down on his hinder parts like a dog, and there is obstinate retention of both urine and fæces.

The treatment is included in that of nephritis.

Diabetes.

Diabetes, polyuria, or profuse staling, has been divided into a number of distinct disorders according as the composition of the urine exhibited different constituents or proportions. Thus we have *diabetes insipidus* (watery diabetes,) *diabetes mellitus* (sugary diabetes), &c. We shall here merely speak of excess of urine, as inflammation is already mentioned as the cause of deficiency.

Simple augmentation of the urinary discharges, without any material change in the composition of the urine, is the effect of a multitude of causes, some alimentary, others medicinal, others again of a nervous nature. Every horse-keeper knows how certain kinds of hay and corn cause horses to stale more than they ought to do, and that drinking a large quantity even of plain water will produce the same result. Medicines called "urine balls," or diuretics, are given for the especial purpose of increasing the urine. But nervousness will likewise do it, fright, or anxiety of any kind almost, will make a horse stale inordinately. How frequently do we see hunters at the covert side, when the hounds are about finding, staling or continually stretching themselves out to do so; and a horse having wounds will commence staling the moment the twitch is put on, from the remembrance that some painful cutting or dressing had followed this, to him, unpleasant operation.

Profuse staling can only be regarded in the light of disease when it amounts to much more in quantity than is natural, and continues for that length of time that the well-being of the animal is evidently affected by it.

The cause for this must in general be sought for in the food or the water. Dark-coloured, highly fermented, or mow-burnt hay; kiln-dried oats, or such as have speared or become musty from lying long in heaps; barley that has malted, and water having some mineral impregnation, are each and all injurious agents, notwithstanding they are consumed in many cases with impunity.

The kidneys, too, may be subject to this excess of secretion from the tampering of the groom with diuretics. Mayhew advises the following test, in his amusing but practical style. "Take into the stable two slips of blotting paper. Dip the ends of one of them into the interspaces of the brick floor where some of the urine is retained. Smell the piece: if it smells like violets, that is proof positive that turpentine has been given to the animal. Dry the other piece after dipping; should that, when dry, and a light is applied, prove to be touch-paper, the evidence is conclusive: sweet nitre has been given to the animal. Should both these tests fail, the groom is innocent; other diuretics are unknown in the stable."

The symptoms, in ordinary cases, attendant upon this immoderate flux of urine are—insatiable thirst, with, unless this be satisfied, a refusal to feed as usual; unhealthy appearance of the coat, dispiritedness, inability to bear fatigue, loss of flesh, and debility.

The quantity of urine voided in some of these cases is so great as to be quite incredible. The stall is deluged with the flow. In an account of the disorder as it occurred at one time in France, M. Lassange informs us, "the horses attacked voided five or six pints of perfectly clear urine every hour.

The urine is thin, aqueous, and perfectly transparent. Carbonate of lime, sulphate of soda, muriate of soda, benzoate of soda, and phosphate of lime, amounting altogether to one-eighth of the fluid, and seven-eighths of water, make up the healthy urine of a horse; but in simple diabetes the water forms more than ninety-five per cent. of the fluid.

Treatment.—Should the animal be attacked during the spring or summer season, a desirable change would be from the stable to the grass-field; or, when this cannot conveniently be done, soiling may be practised with advantage. Should the water appear to be the cause, and there be no means, or very great difficulty of obtaining any other kind, we may put a piece of chalk into the pail with a view of neutralizing the obnoxious impregnation.

The medicines most serviceable in this disorder are astringents and tonics. Mr. Percivall's prescription is composed of sesqui-carbonate of iron and prepared chalk, of each half an ounce, made up with syrup, and given once a day. Mr. Castley gave powdered galls, alum, and bole armeniac, each one ounce, ginger one drachm, in a quart of beer: half at night and half in the morning. Mr. Stewart speaks in laudable terms of opium. He recommends daily a ball consisting of three drachms of opium, and of catechu, gentian, and ginger, two drachms of each, made up with a little tar.

Should fever exist, such medicines, of course, become inadmissible. In their place moderate blood-letting and purging must be practised. In case the urinary disorder outlive the febrile one, which it will not often be found to do, recurrence may be had to the opiate and astringent medicines.

A pail of linseed tea, made by pouring boiling water on whole linseed, and letting it stand till lukewarm, should stand within reach. Attend to the skin, and employ friction if the horse takes it kindly. A ball daily of one drachm of iodide of iron, with linseed meal and honey; or a drink of phosphoric acid, one ounce to a pint of water, is extolled, and rightly, by Mr. Mayhew. The iodide of iron acts as a tonic, and reduces thirst.

Albuminous Urine.—Bloody Urine.—Hæmaturia.

Albuminous or serous urine is a symptom of kidney disease, which it is well to be acquainted with. The water becomes of a deep straw colour, and thick as a solution of gum water. With a test of bichloride of mercury it will precipitate a copious milky flocculence, resembling white of egg, which may be coagulated by heat or a little vinegar and prussiate of potass. The symptoms, as in other kidney disorders, are straddling behind and "roaching" the back. Though sometimes the straddle is made backward and the spine curved in, with an expression of intense pain. Stimulants, mustard plasters, sponged off before destroying the hair, are first employed, then abstinence from exercise, and, finally, opium in repeated doses, are our only dependance.

Hæmaturia, or *Bloody Urine*, is a complaint often met with, and our first suspicion is that a strain, blow, or other injury should be looked for. The blood may come in clots

or mixed with the urine, or show itself in its pure form only upon coagulation.

The TREATMENT is guided by the circumstances of the origin of the attack. Examine the kidneys by the rectum, and sweat the loins and pelvis; then let the animal rest without any disturbance or irritation, and administer gently two drachms of *acetas plumbi* in half a pint of cold water; then, in a quarter of an hour, give the like dose of the acetate of lead, with one ounce of tincture of opium. Repeat these till four doses are given, when, if the patient is not benefited, take four drachms of the ergot of rye, and infuse in a half pint of boiling water, when cool add one ounce of laudanum, and four of dilute acetic acid. Throw pails of cold water from a height upon the loins, and inject cold water *per anum*. Should the hæmorrhage cease, and the kidneys not be enlarged or hardened (scirrhous) give the following:—

Extract of catechu . . .	1 ounce.
Oak bark infusion	3 pints.
Alum	1 ounce.
Sulphate of iron	1 ounce.
Muriatic acid	6 drachms.

This quantity to last the day, administered at four, five, or six periods, as most convenient.

URINARY CALCULI—STONE IN THE BLADDER.

We believe these to be much more talked of than seen. Renal calculi are unfrequent, but vesical or cystic calculi (stone in the bladder) are more common. A reference to Percivall ("Hippopathology," vol. ii., pp. 356—373) will put the inquiring reader in possession of what English and French veterinarians have done in investigating the varieties of calculi, and the diseases produced by them, or of which they are the products. Mr. Morton, late Professor of Chemistry, at the Royal Veterinary College, has published a volume on "Calcular Concretions," which exhausts the subject.

The symptoms of renal calculus are not certain. The urine may or may not become purulent, opaque, gritty, or bloody. The first of these symptoms occurring when we have convinced ourselves there is *no* stone in the bladder, may lead us to suspect renal calculus, especially if the animal shrinks from slight pressure on the loins. Our only treatment is hydrochloric acid in the water, in hopes to arrest the increase of the deposit.

The chemical composition of calculi in horses is nearly uniform, consisting of carbonate of lime (common chalk,) and carbonate of magnesia in varying proportions, mixed up with albumen and mucous secretion. There is in the Museum of the Veterinary College a stone found in the bladder of a horse as large as a man's head; the animal for many years had been accustomed to stale every ten minutes, and was known by the peasantry through the country he lived in as "the Pissing Horse."

Stone in the bladder is denoted like other kinds of stone by altered conditions of the urine and difficulty and irregularity in its discharge. The water, when flowing freely, will sometimes be stopped suddenly, and great pain come on, small emissions being effected by violent straining. The back is oftener hollowed than "roached," and in some cases the point of the penis is constantly exposed. The horse often stops short, especially in going down hill, from a sudden spasm, or in hopes to relieve the bladder.

In order to make certain of the presence of stone in the bladder, an examination by the rectum is necessary. A firm substance will be felt near the neck of the bladder, which generally contracts pretty firmly upon it. The size, form, and outline of the stone can be ascertained by the experienced surgeon.

Lithotomy or lithotrity is the remedy for this disease, as well as urethral calculus—the one being the cutting down on the stone (Gr., *lithos*, a stone, and *temno*, to cut), the other breaking or comminating the stone (Gr. *lithos*, and *tero*, to break). Of the first we have a large number of recorded cases from the time of Lafosse downwards. A single case, as related by Percivall, will convey a clear idea of the operation, for further details of which the technical class-books of veterinary surgery must be consulted.

"On the 26th Feb. the animal appeared to be in a favourable state for the operation of lithotomy, which was performed by securing him upon his back, with the hind legs drawn forwards to the shoulders. The penis being drawn out, a three foot whalebone staff was introduced as far as the perinæum, and the urethra opened by an incision about three inches in length; a grooved sound was then passed straight into the bladder, and the stone was most distinctly felt, and heard on being struck. It was attempted to be extricated without cutting open the pelvic portion of the urethra and the neck of the bladder, being readily grasped with the forceps, assisted by pressure made upon the calculus by the left hand introduced into the rectum; but being too large, these parts were laid open by a lateral incision made with a strong, curved, and probe-pointed bistoury. It was then, by the same means, but with considerable force, brought gradually forward to the perineum, when it was forcibly contracted upon, and a further extension of the external incision was necessarily made to effect its removal. The hæmorrhage was not very great or alarming, but it was thought best to secure a perineal vessel with a ligature.

"The calculus is of the mulberry kind, very rough, of a depressed oval form, weighing nearly three ounces; it has no distinct nucleus. Dr. Prout, having obligingly undertaken to analyse it, found it composed principally of the carbonate of lime, some phosphate of lime, and a little phosphate of magnesia.

"The horse, immediately after the operation, became tranquil and cheerful, and the pulse fell by evening to the healthy standard, of 32 per minute, and so continued until noon the following day, when, being rather agitated by

numerous visitors, it rose to 38, and by night to 45. Four quarts of blood were taken from the jugular vein, a mild purgative given, and frequent clysters.

"Feb. 28.—Pulse 40; in the evening, 44. Bowels relaxed.

"March 1.—Pulse 44. Purgative and clysters repeated.

"March 2.—Pulse 42; and so continued until the 8th, when it declined to 38, and subsequently to 32, at which it continued this day (the 18th), three weeks since the operation. The bowels having been kept open by aperient doses of aloes and by clysters. The urine was evacuated partly by the orifice until this time; but the wound is now healed, and it flows through the whole length of the urethra without the least impediment. The horse is exercised daily, and is fit to be discharged."

In cases of urethral calculus, that is, of a stone passing from the bladder and becoming fixed in the urethra by its muscular contraction, it has been found possible to extract it without an operation, by the dilatation of the passage by mechanical means, aided by relaxing lubricatory injections and fermentations; in all these cases hydrochloric acid should be administered. Mr. Spooner observes: in the case of urethral calculus, "lithotomy consists merely in laying open the canal along its median line and from behind forwards: it is to be performed with a bistoury directed by one of the fingers of the left hand. In this manner, M. Dufils, veterinary surgeon at Bourdeaux, in 1821, extracted a stone from a mare, which was lodged in part in the meatus urinarius; whereby she, who was before the subject of frequent colics, became at once restored to ease, and speedily afterwards to health. In the centre of the stone was found an almond, forming its nucleus. At the time it was shown to us, M. Dufils assured us that it had lost much of its weight and volume, proving thereby that these calculi contain a large proportion of fluid, the evaporation of which evidently brings on this diminution." *

CYSTITIS (INFLAMMATION OF THE BLADDER).

Inflammation of the bladder is said, but not proved, to be more common among mares than horses; but of all the causes of this affection none can compare with the powerful diuretics in general use with every stable-man or groom. The symptoms are frequent—nay, continual—emissions of small quantities of urine, voided with much straining, during which the dung commonly is passed. The bladder will be felt by the greased hand passed gently up the rectum, hot, tender, and contracted into a firm substance of about the size of a cricket-ball.

The treatment is the same as for nephritis, and equally as urgent; every precaution pointed out when treating of inflammation of the kidneys, should be rigidly adopted; in addition to which, warm water, in every gallon of which a quarter of a pound of gum arabic and an ounce of crude opium have been dissolved, may be injected into the bladder by Read's syringe with an elastic catheter attached.

SPASM OF THE NECK OF THE BLADDER.

We have preferred the old name of this attack, though it is not so correct as spasm of the urethra, inasmuch as it is not the neck of the bladder, but the urethra which acts in this case in the retention of urine. It is distinguishable from inflammation of the kidneys by the large secretion of urine held in the bladder, and the consequent endeavours of the horse to empty it. The true nature of the disorder is discovered by passing the hand up the rectum; the bladder will be found distended; the distension may indeed be felt in the front of the pubes. The retension of urine, however, is the principal symptom, although in spasm of the neck of the bladder there may be a small quantity of urine evacuated at different times; for after the bladder is distended, there will be, by the force of the accumulation, a few drops now and then squeezed out. But in this disease frequent or copious staling will not take place, whereas in the previous disease it will be continual.

As to the *Causes* of this complaint we know little; but it may be reasonably supposed that the spasm of the part is occasioned by morbid irritation, and our opinion of the probable termination must depend on our being able to empty the distended bladder, and restore the lost tone of the organ. Every effort must be made to accomplish this, or the animal may perish under irritation; he may sink through gangrene of the distended bladder supervening, or he may, as he usually does, die of rupture of the bladder, in consequence of the kidneys continuing to secrete urine but the spasm offering an obstacle to its emission. Attempt therefore to accomplish the ejection by introducing the hand up the rectum, and gently pressing the fundus of the bladder forwards, which may force the passage. If this fail, the urethra must be opened by a catheter. In a mare, the catheter may be easily passed up, and the water drawn off; but in the horse, to effect this, a flexible catheter must be introduced, and gently guided forward. When a horse is affected with spasm, the penis is generally much retracted, but with a little patience, aided by a handkerchief wrapped round the hand, inserted up the sheath, this may be overcome. The part is then given to an assistant to hold firmly, while the practitioner inserts the point of the catheter, which he pushes forward with his right hand, while he places his left beneath the anus, in order to turn the tube by manipulation when it shall have reached the perinæum. The rest is straightforward work; only be careful to make

* A case has recently come under the attention of the writer, in which a stone was removed from the urethra by operation with success. This case was complicated with perineal abscess and stricture of the urethra, and was followed, as well as attended, by a remarkable disposition of the horse to earthy depositions in the urine. This latter disposition was treated with hydrochloric acid, in doses of 2 drachms, given in solution, with much advantage. The stricture was removed by caustic, carefully applied to the part. When the calculus in the bladder is too large for removal, it may be softened or dissolved by acid injections.

steady, continued, rather than sudden or violent pressure. After the urine has been evacuated, inject a gallon of cold spring water, with which an ounce of tincture of gall-nuts has been mixed; and if this last is at the time, or shortly afterwards, ejected, no fears need be entertained about the lost tone. If it is not cast forth, draw it off, and inject another gallon, and continue till the bladder freely contracts. At the same time you may give a clyster, composed of two quarts of cold water, with two ounces of sulphuric ether, and the same quantity of laudanum, which may be repeated for three times. Mild food and good water, both procured from a new source, are all that is required to perfect the cure, excepting it may be thought proper to give a dose of physic upon recovery.

Strangury, Stricture, &c., may be passed with the remark that, to draw off a horse's urine, it was formerly thought that, in the male, you had no resource but to cut through the perinæum into the urethra. We now know that a flexible catheter can be passed by a skilful veterinarian. Should the cutting be thought necessary, it is performed by a full-sized whalebone staff, flattened and ground at the end, passed through the penis till its extremity is felt by the other hand protruding in the perinæum. In this situation it is cut down upon sufficiently to admit the straight (or female) metallic catheter into the bladder, when the distended bladder is emptied, and the desired relief given.

§ II. DISEASES, &c., OF THE REPRODUCTIVE ORGANS.

SYPHILIS NON-EXISTENT IN THE HORSE.—URETHRITIS.—PHYMOSIS AND PARAPHYMOSIS.—VAGINITIS AND LEUCORRHŒA (WHITES).—SCIRRHOUS TUMOURS.—OBSTETRICS.—EMBRYOTOMY.—CASTRATION.

Extensive and important as the variety and modes of treatment of the diseases of the sexual organs are in human surgery, the absence of those vices in the lower instinctive animals to which proud reasoning man is prone, fortunately renders this branch of veterinary science comparatively meagre. The practice of castration, too, makes disorders of the testicles nearly a blank, except to veterinarians practising in breeding or racing establishments, where entire horses are more frequent. Even here disease is rare. Older writers, and especially Continental veterinarians, in love with systematising, have set down diseases akin to syphilis, and described cases to bolster up their theory. We may safely dismiss them, and that too with the authority of one of their own greatest writers and practitioners. Hurtrel d'Arboval, in his veterinary dictionary—"Dictionnaire de Médecine, de Chirurgie, et de Hygiène Vétérinaire," Paris, 1838,—repudiates with disgust the imputation that the horse is the subject of syphilis, and expresses his surprise that the authorities at the College of Alfort should have admitted it into their pathology. He shows that *lues venerea* is a disease peculiar to man, and can have but one specific origin. If an animal could contract the disorder, it must be from a crime of man of too revolting a description to be more than alluded to. D'Arboval continues, "I have not passed through a long course of practice without meeting with cases which biassed minds might have taken for syphilis. I have had occasion particularly to observe and to treat irritations, inflammations, paraphymoses, discharges, ulcerations, &c. I have even remarked an obstinacy in some of these genital affections, with sympathetic swelling of the inguinal glands, and of one or both testicles, without, for all that, entertaining any notion of the disease being syphilitic. So far from it, I have always been contented with simple antiphlogistic treatment, modified as circumstances required, and I never had cause to repent of not having introduced mercurials." To this we need only add, that although cases of *urethritis* (inflammation of the urethra) have occurred, with a flow, or *gonorrhœa* (Gr. *gone*, seed, *reo*, to flow), yet it has been what Cullen calls in his "Nosology," *gonorrhœa pura vel benigna*. D'Arboval declares its causes to be, foreign substances within the urethral canal, too frequent acts of copulation, diuretics or balls of cantharides often given by injudicious grooms to excite the stallion, ascarides within the rectum, and inflammation of the bladder, causing retention of urine.

The treatment in all these cases is simply antiphlogistic,—tepid, bland, and mucilaginous drinks, with nitre, green meat, and, if that is scarce, mixed with sound straw, together with fomentations and clysters; and, if the pain be intense, both fomentations and drenches may be rendered narcotic In entire horses, leeches may be applied to the testicles, or local bleeding practised. If there be any foulness, dilute acetate of lead or dissolved alum may be used as an astringent and discutient.

Phymosis (Gr. *phimos*, a bridle) is a contraction of the orifice of the sheath, which prevents "drawing," or protrusion of the penis. *Paraphymosis* (Gr. *para*, beyond, *phimos*, a bridle) is, on the contrary, a contraction of the sheath when the penis is protruded and swollen, preventing its being drawn back again, and thus bridling or strangulating the glans penis. Both of these occur from blows, kicks, contusions, or wounds. In the first, a troublesome disease ensues, from the animal urinating within the sheath. In the second, which has been seen after accidents in attempts at copulation, a kick from a vicious mare—or worse a blow from some human brute with stick or whip upon the yard while in a state of erection,—the treatment is similar. Cold lotions to abate inflammation; local scarifications, producing free evacuation of blood. If there are concealed ulcerations, or purulent collections in phymosis, we must cut through the prepuce, and slit it far enough back to insure its retraction, then treat the disorder as in cases of abscess or ulcerations elsewhere described. In paraphymosis, remember, all cuts must be made lengthwise, and along the upper part and sides of the penis, to avoid the urethra, and that they cannot well be too long, as they shrink up on the part

recovering from its distension, and retiring within the sheath.

Amputation of the Penis by ligature and the knife will be found described, with cited cases, in Percivall's "Hippopathology," vol. ii, pp. 385—388.

Vaginitis and Leucorrhœa.—These, to use the words of Percivall, is no more than *catarrh of the vagina*, an inflammation of the same sort as may attack the nose, the bladder, or any other mucous canal. Mares who are not allowed the horse, invariably have derangements of this kind during the spring season, when "horsy." At times it is white like whey, at others yellow and almost purulent in character. The discharge collects, and comes away, when the lips of the vulva are opened, with a gush. A cooling drink, or a ball, as follows, may be given :—

Acetate of lead	1 drachm.
Opium	1 scruple.

Linseed and turpentine to form a ball.

An astringent injection five or six times a day :—

Decoction of oak bark . . .	½ pint.
Sulphuric acid	1 drachm.

Mix.

Or,

Sulphate of zinc	4 drachms.
Distilled water	1 pint.

Sprinkle wheaten flour on the external organ and the inside of the thighs after the injection.

Scirrhus of the Vulva is recorded in the books, but we have never met with it. The treatment would be excision of the tubercles, and rubbing the parts with ointment of iodine. If it spreads to the udder, the animal should be put out of its suffering.

Diseases of the Ovaries are too obscure, and hitherto too little investigated by the veterinarian, to deserve more in a compendium like the present than a record of their occasional existence.

OBSTETRICS.

Parturition with the mare is generally a natural and unassisted act. Cases of protracted and difficult parturition do, however, occur ; and in these instances the veterinary practitioner should be *au fait* to the position of affairs, and the intelligent horse-master should not be under the tutelage of the farrier or the often pretentious groom. We shall here quote the simple and practical observations of Blaine in his "Outlines of Veterinary Art," edit. 1854, p. 365. "The principal cases that occur arise either from weakness in the mare, or from a disproportion between the fœtus and the mother. False presentations are also to be witnessed, but chiefly of the back and croup : that of the back requires much labour, but the foal is to be delivered, the hind legs being presented, without turning in the womb being necessary. When, either from debility of the mare, or disproportion in the size of the foal, a natural birth is despaired of, the practitioner, having introduced his arm, and having ascertained that the presentation is a natural one, should draw the feet gently forward, and then endeavour to place the head between them. If the head only is met with, seize it by the muzzle and draw it gently onward, searching for the feet, and drawing them one after the other in the line of the head ; which manipulations are, of course, only to be attempted during the throes of the mother. So soon as the head and legs are got near the external orifice, enclose each foot within the loop of a rope, then, holding both ends so attached, endeavour to liberate the foal by steady not violent pulling, timing your pull with each throe or labour-pain, unless by debility or protraction they have ceased. When this is the case, try to revive them by the administration of stimulants, especially infusion of the ergot of rye, in two-drachm doses every twenty minutes. Should this not effect the object within the hour, proceed to extract the foal, longer delay may lose both mother and offspring. The blunt hook is sometimes used on these occasions where the hand cannot be introduced : it is a powerful aid with those who can direct it skilfully."

When the obstruction arises from an unnatural presentation of parts—that is, of other parts than the head and fore-feet, as of the loins, the croup, and one leg, the other being doubled backward—it is evident we should endeavour to change the position to the natural one (of the head) if practicable. If not, we must bring the hinder feet forwards, and endeavour to make the extraction by this method. Lastly, if all these means fail, we must proceed to lessen the fœtal mass by cutting out the embryo.

Embryotomy.—When, from weakness, a very narrow pelvic opening on the part of the mother, or monstrosity on the part of the foal, no efforts can bring the fœtal mass away entire, it must be dismembered. A knife made for the purpose, having the blade concealed, with the haft lying within the hollow of the hand, is to be taken up into the vagina. We are told that, occasionally, hydrocephalus in the colt prevents the head from passing Such a case will detect itself by the volume that will be felt on examination, and which will be easily lessened by plunging the point of the knife in the forehead, and evacuating the contents by pressing the skull in ; when, laying hold of the muzzle, the head may be brought through the pelvic opening. But it is usually the natural size of the head which forms the obstruction ; in which case the head itself must be removed. When the head has been dissected off and brought away, it will be necessary probably to contract the volume of the chest, which will not be difficult, by cutting the cartilaginous portions of the ribs, detaching the thoracic viscera, and then crushing or kneading the empty chest together ; after which, the rest of the body will offer little obstruction. When the head cannot be got at, the limbs must be de-

tached; after which the body, and at last the head, may be drawn out entire, or reduced for that purpose.

CASTRATION.

In England, the practice of castration may be said to be almost universal; the exceptions being a small number of horses kept for racing purposes and covering, and a few entire horses used in draught and for "black jobs," where the stallion crest is considered to add to the majestic appearance of the animal. Length in the arms and wider-spread angles of the limbs are asserted to be obtained by early castration; certainly the docility and steadiness of the animal are vastly improved. Hernia, founder, and some skin disorders are less frequent with geldings than entire horses.

The best period for castration depends much upon the breed of the horse and the class of work for which he is intended. If there is no object in obtaining a heavy and arched neck and a prominent crest, then the earlier the animal is castrated, the safer and simpler is the operation. From the fifteenth day to the fourth month is the most eligible period, and "foals castrated early grow larger than those cut later," says Mr. Brettargh a veterinarian of extensive experience. He adds:—"Colts are foaled with their testicles within the scrotum, which remain there, in ordinary cases, until the fifth or sixth month, when they are taken up between the internal and external abdominal rings, and there they remain until the eleventh, twelfth, or thirteenth month, all depending upon the degree of keep, as in some that are particularly well fed the testicles can at all times be found within the scrotum."

Colts, therefore, can be castrated any time between the first and fourth month; and this period is preferred by some persons, from the little disturbance it occasions to the constitution. Some breeders of horses castrate at twelve months; others object to this period, because they think the animal has not sufficiently recovered the check experienced from weaning, before this new shock to the system occurs. In the more common sort of horses, used for agricultural purposes, it is probably indifferent at what time the operation is performed; this consideration being kept in view, that the earlier it is done the lighter will the horse be in his fore-hand; and the longer it is protracted, the heavier will be his crest, and the greater his weight before, which in heavy draught work is desirable. For carriage horses it would be less so, and the period of two years is not a bad one for their castration. The better sort of saddle horses should be well examined every three or four months; particularly at the ages of twelve, eighteen, and twenty-four months; at either of which times, according to circumstances or to fancy, provided the fore-hand be sufficiently developed, it may be proceeded with. Waiting longer may make the horse heavy: but if his neck appear too long and thin, and his shoulders spare, he will assuredly be improved by being allowed to remain entire for six or eight months later. Many of the Yorkshire breeders never cut till two years, and think their horses stronger and handsomer for it. Some wait even longer, but the fear in this case is, that the stallion form will be too predominant, and a heavy crest and weighty fore-hand be the consequence; perhaps also the temper may suffer.

In regard to season and weather, the operator should—where he can—object to castrate either during very cold or very sultry weather, or while the horse is shedding his coat, or in the season when, or situation where, flies prevail. These precautions will especially demand attention when our subject is an aged horse, or one that has been highly groomed or fed. The time to be preferred is late in the spring, after the horse has shed his coat, and before the flies have made their appearance.

The colt should be prepared for castration by being kept on short diet for a few days and his system slightly lowered, but by no means to a state of debility.

There are several methods of castration, the commonest with us is that of castration by cauterization. On the Continent, the general practice is by the "caustic clam," by two methods, the "covered" and "uncovered." Castration by torsion has also its advocates and practitioners, we shall therefore add it to our list.

A preliminary observation should be made previously to casting, to see that the horse is not suffering from a rupture: such cases have happened; and as in our method we open a direct communication with the abdomen, when the horse rises it is not improbable that his bowels protrude until they trail on the ground. Hernia as a consequence of castration may easily occur by the uncovered operation, as it makes the scrotal sac and abdominal cavity one continuous opening. It is not to be wondered at, therefore, if the violent struggles of the animal should force a quantity of intestine through the rings into the scrotal bag. Should we be called on to operate on a horse which already had hernia, it is evident we ought not to proceed with it unless the owner be apprised of the risk, and willing to abide by it.

As unbroken young horses are the most usual subjects of this operation, and as such often have not yet been bridled, if a colt cannot be enticed with oats, &c., he must be driven into a corner between two steady horses; where, if a halter cannot be put on, at least a running hempen noose can be got round his neck; but whichever is used, it should be flat, or the struggles, which are often long and violent, may bruise the neck, and produce abscess or injury. When his exertions have tired him, he may be led to the operating spot. Here his attention should be kept engaged while the hobbles (see Plate XX) are put on, if possible; if not, a long and strong cart-rope, having its middle portion formed into a noose sufficiently large to take in the head and neck, is to be slipped on, with the knotted part applied to the counter or breast; the long pendent ends are passed backwards between the fore-legs, then carried round the hind fetlocks; brought forward again on the outside, run under the collar-

rope; a second time carried backward on the outer side of all, and extended to the full length in a direct line behind the animal. Thus fettered, says Mr. Percivall, his hind feet may be drawn under him towards the elbows. It has been, however, often found that, at the moment the rope touches the legs, the colt either kicks and displaces the rope, or altogether displaces himself; but his attention can generally be engaged by one fore-leg being held up, Rarey fashion, or by having his ear or muzzle rubbed, or even by the twitch. The rope may now be carried cautiously round each fetlock, which then acts like a hobble; and the rope may be gradually tightened. This last, however, is a very questionable method, and the others, therefore, ought to be tried before it is resorted to. In either way, as soon as the rope is fixed, with a man to each end of it behind the colt, let them, by a sudden and forcible effort in concert, approximate his hind-legs to his fore, and thus throw him. Before the colt is cast, however, it should be endeavoured to ascertain that he is free from strangles and hernia.

Being satisfied that no hernia exists on either side, proceed to cast the colt, turning him, not directly on the left side, but principally inclining that way; and if possible let the croup be very slightly elevated. It is usual to place him directly flat on the left side, but the above is more convenient. Next secure the near hind-leg with a piece of hempen tackle, having a running noose; or, in default of this not being at hand, make use of the flat part of a hempen halter, which should for safety be put on before the hobble of that leg is removed; as may be readily done if the hobbles having shifting or screw D.s are made use of. Every requisite being at hand, the operator, having his scalpel ready, should place himself behind the horse, as the most convenient way to perform his manipulations. Firmly grasping the left testicle with his left hand, and drawing it out so as to render the scrotum tense, he should make an incision lengthways, from the anterior to the posterior part of the bag. The resistance of the cremaster muscle has to be overcome before the testicle can be forced to the bottom of the scrotum; and this is the more readily accomplished if the animal's attention be engaged. The incision may be carried at once through the integuments, the thin dartos expansion, and the vaginal coat of the testicles, with a sweep of the scalpel. But with one less dexterous at the operation, it will be more prudent to make the first incision through the scrotum and dartos only, to the required extent; and then to do the same by the vaginal coat, thus avoiding wounding the testicle, which would produce violent resistance, and give unnecessary pain. Cases have occurred, when the tunica vaginalis was divided, that no testicle followed; firm adhesions between this coat and the tunica albuginea having retained it fast. In such cases the scalpel must be employed to free the testicle, by dissecting it away from the vaginal sac. When no such obstruction occurs, the testicle, if the opening be sufficiently large, will slip out; but the operator must be prepared at the moment of so doing to expect some violent struggles, more particularly if he attempt to restrain the contractions of the cremaster, and by main force to draw out the testicle. Preparatory to this, therefore, the twitch should be tightened; the attendants, especially the man at the head, must be on the alert; and the testicle itself, at the time of this violent retraction of the cremaster, should be merely held but not dragged in opposition to the contraction. If the clams (see Plate XXI.) have been put on over the whole, according to Mr. Percivall's method, they will assist in retaining the retracting parts; but they must not be used with too much pressure. The resistance having subsided, the clams must now be removed; or, if they have not been previously in use, they must now be taken in hand, and having been prepared by some tow being wound round them, should be placed easily on the cord, while time is found to free from the grip of the pincers the spermatic tube, which is seen continued from the epididymis. The Russians, Mr. Goodwin informs us, cut it through when they operate. Humanity is much concerned in its removal from pressure, because of the excess of pain felt when it is included. It is necessary, before the final fixing of the clams, to determine on the part where the division of the cord is to take place. Mr. Percivall says, "If it be left too long, it is apt to hang out of the wound afterwards, and retard the process of union;" on the other hand, if it be cut very short, and the arteries happen to bleed afresh after it has been released from the clams, the operator will find it no easy task to recover it. The natural length of the cord, which will mainly depend on the degree of the descent of the gland, will be our best guide in this particular The place of section determined on and marked, close the clams sufficiently tight to retain firm hold of the cord, and to effectually stop the circulation within it. There are now two modes of making the division: the one is to sever it with a scalpel, and then to sufficiently sear the end of it so as to prevent a flow of blood. The other, and in some respects the preferable method, is to employ a blunt-edged iron, which is to divide by little crucial sawings, so that, when the cord is separated, it shall not present a uniform surface, but ragged edges, which will perfectly close the mouths of the vessels. This done, loosen the clams sufficiently to observe whether there be any flow of blood; gently wipe the end of the cord also with the finger, as sometimes an accidental small plug gets within the vessel; this had better be removed at the time. Retain a hold on the clams a few minutes longer; and while loosening them gradually, observing to have an iron in readiness, again to touch the end of the cord, if any blood makes it appearance; satisfied on this point, sponge the parts with cold water. No sort of external application is necessary, still less any resin seared on the end of the cord, which can only irritate, and will never adhere. On the after-treatment much difference of opinion has existed, and even yet exists. The powerful evidence of accumulated facts has now convinced us of the necessity and propriety of some motion for the newly cas-

trated horse, as a preventive of local congestion; such practice is common in most countries, and seems salutary in all. Hurtrel d'Arboval, thus impressed, recommends the horse, immediately after the operation, to be led out to walk for an hour; and it is a general plan in France to walk such horses in hand an hour night and morning. Mr. Goodwin, in proof of its not being hurtful, informs us that whole studs of horses brought to St. Petersburg to be operated on, are immediately travelled back a certain portion of the distance, night and morning, until they arrive at home. We have, therefore, no hesitation in recommending a moderate degree of motion in preference to absolute rest.

The French method of castration is advocated by Mr. Goodwin, who quotes its description from Hurtrel d'Arboval. "Castration by means of the clams is the method in general use, if not the only one now employed; it is the most ancient, since it was recommended by Hierocles among the Greeks. It is performed in two ways, the testicle being covered or uncovered. In the former, the exterior of the scrotum, formed by the skin and dartos muscle, is cut through, and the testicle is brought out by dissecting away the laminated tissue, the gland being covered by the tunica vaginalis; the clam is then placed above the epididymis, outside the external peritoneal covering of the cord. In the uncovered operation, the incision is made through the serous capsule of the testicle; the tunica vaginalis being divided, the testicle presents itself, and the clam is placed well above the epididymis, on the cord. The operation, performed in either way, requires us to provide ourselves with a scalpel, a pair of clams, a pair of long pincers, made purposely to bring the ends of the clams together, and some waxed string. The clams may be formed of different kinds of wood; but the elder is considered the best, and generally made use of. To make a clam, we procure a branch of old and dry elder, whose diameter should be about an inch, and whose length should be from five to six inches: of course, the dimensions must at all times be proportioned to the size of the cord we have to operate on. At the distance of half an inch from each end, a small notch, sufficiently deep to hold the string, must be made, and then the wood should be sawed through the middle lengthways. Each divided surface should be planed, so as to facilitate the opening of the clams, either when about to place them on or to take them off. The pith of the wood is then to be taken out, and the hollow should be filled with corrosive sublimate and flour, mixed with sufficient water to form it into a paste. Some persons are not in the habit of using any caustic whatever; then, of course, scooping out of the inside of the clam is not necessary: notwithstanding, the caustic, inasmuch as it produces a speedier dissolution of the parts, must be useful, and ought not to be neglected." The addition of the caustic, however, Mr. Goodwin objects to with great reason, remarking, that unless it be a very strong one, and therefore dangerous to employ, it cannot be of any use to parts compressed and deprived of circulation and life. He further informs us that he has operated in six cases in succession with the same effect, without any caustic matter whatever. An experimental case of Mr. Percivall's terminated fatally: by the use of caustic, the cord was greatly inflamed, as high as the ring, which unquestionably produced the unfortunate result. "The covered operation," continues Mr. Goodwin, "is the one that I am about to advocate, and which differs only inasmuch as, that the scrotum and dartos muscle must be cautiously cut through, without dividing the tunica vaginalis. It was Monsieur Berger who was accidentally at my house when I was about to castrate a horse, and who, on my saying that I should probably do it with the cautery, expressed his surprise that I should perform the operation in any other way than on the plan generally approved of in France. Being a stranger to it, he kindly consented to preside at the operation, and, after seeing him perform on the near testicle, I did the same on the right, but of course not with the same facility. After opening the scrotum, and dissecting through the dartos—which is very readily done by passing the knife lightly over its fibres—the testicle, and its covering, the tunica vaginalis, must be taken in the right hand, while the left should be employed in pushing back the scrotum from its attachments; and, having your assistant ready, as before, with the clam, it must be placed well above the epididymis, and greater presure is, of course, necessary, as the vaginal covering is included in the clam."

Mr. Goodwin further observes, that in Russia he has seen hundreds of horses operated on, even after the human fashion, with safety; and he remarks it certainly produces less pain, the animal loses less flesh and condition, and is sooner recovered than when operated on by the actual cautery.

Castration by torsion is advocated, among others, by Messrs. Daws, Simonds, and Wardle, and is thus described by Mr. Daws:—"The operation of castration by torsion is performed as follows:—An incision through the scrotum on one side is first made with the scalpel, sufficiently large to admit the free escape of the testicle; the vasa deferens is then divided with the same instrument about an inch above the epididymis. By pursuing this plan, the resistance of the cremaster muscle will be defeated; and the testicle, with its vessels, will lie in a quiet state until the conclusion of the operation.

"A longitudinal incision is now to be made through the tunica vaginalis reflexa, and a portion of the spermatic artery laid bare, and freed from its adjacent attachments. The torsion forceps is then to be applied to the artery, which should be divided in that portion immediately below the grasp of the instrument, the thumb and index finger of the left hand pressing back the blood in the vessel. The artery is then to be twisted by the forceps, held in the right hand, until the elasticity is destroyed, and it will no longer recoil, but remain curled up in a knot. The torsion forceps may then be removed with safety, and the remaining portion of

the cord should be divided, and returned within the scrotum. Should the hæmorrhage from the artery of the cord prove at all troublesome, it may be arrested in a similar manner. The number of twists will depend upon the size of the artery, from four to six revolutions being sufficient for small, and eight or ten for larger vessels. The effect which torsion produces on the vessel, independent of destroying its elasticity, is a laceration of its internal tunic, the edges of which become speedily agglutinated by means of plastic lymph: a clot of blood plugs up the end, so that the obliteration is rendered doubly secure." This description is followed by numerous cases, in which this method of operating has been practised by the three practitioners before mentioned with success.

Castration by ligature is a painful, barbarous, and very dangerous practice; and consists in enclosing the testicles and scrotum within ligatures until mortification occurs and they drop off. It is practised by some breeders on their young colts, but it is always hazardous, and disgracefully cruel. The substance of the testicle in some countries is also broken down either by rubbing, or otherwise by pressure between two hard bodies: this is practised in Algiers instead of excision, and tetanus is a frequent consequence of it. In Portugal they twist round the testicle, and thus stop the circulation of the gland. Division of the vasa deferens has been performed, it is said, with success on many animals; and is proposed as a safe and less painful process than the emasculation of the horse. It consists in a longitudinal section through the scrotum, dartos, and vaginal sheath, so as to expose the cord, from which the vasa deferens is to be separated, and severed from the vein.

CHAPTER XXXI.

DISEASES AND INJURIES OF THE SKIN.

MANGE, ITCH, PRURIGO.—RINGWORM.—SURFEIT.—HIDEBOUND.—LICE.—LARVÆ IN THE SKIN.—MALLENDERS AND SALLENDERS.—MELANOSIS.—WARBLES.—SITFASTS.—GALLS.—WARTS.—WATER FARCY.—ABSCESS (PURULENT AND SEROUS).—ULCERS.

UNDER this head we propose to consider the diseases and injuries of the integument and the cellular membrane.

The structure of the three coats of the skin and of the hair have been described, *ante*, pp. 192—193.

MANGE.—ITCH.—PRURIGO.

Mange, the form in which, in hairy animals, the *itch* makes its appearance, is the most contagious of a loathsome class of diseases.

The irritation has been shown by microscopic observation to depend upon the presence of minute insects called *acari*. The mange insect of the horse is of a different species to that of the human itch-insect, yet it is abundantly proved that itch may be caught by man from a mangy horse, dog, or other hair-coated animal. Though mange is, in the vast majority of instances, the result of contagion, yet poor living, neglect of cleanliness, and a lowering of the vital system generally, will produce it spontaneously, and it will then spread ruinously, even to better-conditioned animals.

The most remarkable characters of mange are, the annoying itch it creates, and the bare scabby places it occasions on the skin. A mangy horse will rub himself against any part of the stable or yard where he may happen to be. He will even rub himself against his companions, should he be at grass or strawyard with others; and by frequent and violent rubbing, will irritate and excoriate the diseased places, and thus considerably aggravate the malady. Though no part of the skin can be said to be exempt from mange, the places it commonly occupies are the neck, shoulders, withers, sides, thighs, and head. On removing with a brush the incrustations, or rather the kind of scaly dust produced by the dried pustules, and examining it attentively in the sun or any warm place, a person may distinguish, even with the naked eye, little organised, transparent, shining bodies moving about; these are *acari*—insects belonging to the same family as the *sarcoptæ* of human itch. There is almost always to be discovered, in places within the substance of the skin, more or less *larvæ* of these animalcules. In the horse, the insect is large enough to be seen without the aid of a lens, in its travels over different parts of the mangy animal's body.

SYMPTOMS.—The symptoms of mange are seldom noticed till the disease is established. They are very simple: the animal is observed to rub himself uneasily, and then, on examination, the hair is found loose and coming off; and

the multitude of minute pimples leave no doubt of the nature of the case. Mange being suspected, its existence may also be readily ascertained by inserting the fingers among the roots of the hairs of the mane, and slightly scratching the parts. The horse will extend his neck and head, and continue motionless so long as the hand remains upon its crest.

TREATMENT.—Though mange is principally treated by local remedies, yet constitutional ones,—cleanliness, warmth, malt-mashes, carrots, beet-root, speared corn, &c.,—will materially assist and expedite the cure. As in human itch, sulphur is most relied on. When ointment, liniment, or wash is to be applied, should the weather be fine, place the animal in the sunshine for an hour; if not, put it in a warm stable, clean the coat sedulously till the scurf is removed, and allow nothing to be used for other horses that has touched the animal—brushes, combs, cloths, or even halter or harness. Then rub in, with the hand or a piece of flannel, either of the following, missing no part from the nose to the end of the tail.

MANGE OINTMENT.

Sulphur vivum (yellow sulphur) . .	6 ounces.
Linseed oil (or Olive oil, 12 oz.; and oil of tar, 4 oz.)	1 pound.
Oil of turpentine	2 ounces.

Mix.

If the colour of the horse is desired to be preserved, add some soot for a black or brown animal, or bole armenian where the colour is bay or chestnut. Yellow sulphur and antimony, in a dose of six drachms the two, may be mixed with the food.

ANOTHER OINTMENT.

Strong mercurial ointment . .	4 ounces.
Soft soap	2 pounds.

Mix.

LINIMENT FOR MANGE.

Glycerine	12 ounces.
Creosote	2 ounces.
Oil of turpentine	4 ounces.
Oil of juniper	2 ounces.

Soak the coat thoroughly, and the third day after wash thoroughly off and dry the animal, letting him stand an hour in the sun, if possible. Rub down, and apply the liniment once again, washing off as before. Or a lotion may be used as follows:—

LOTION FOR MANGE.

Corrosive sublimate . . .	1 drachm.
Spirits of wine	1 ounce.

Tobacco-water, 1 quart, made from 2 ounces of tobacco.

Though mercurial preparations cure mange, they are not so certain in operation as sulphur. Percivall says, Barbadoes tar and linseed oil, simmered a few minutes in an old kettle, surpasses all more compound remedies. Some powdered hellebore root, say half the quantity of the yellow sulphur, mixed with that mineral, is an improvement on our first recipe.

A common *prurigo* or itchiness sometimes occurs in spring, which makes the horse rub himself violently and remove patches of his coat. It is merely heat of skin, and may be relieved by a wash of glycerine and rose water, or a liniment of creosote and oil, with a cooling drench of

Liquor arsenicalis . . .	1 ounce.
Tincture of muriate of iron . .	2 ounces.
Water	1 quart.

In four doses.

RINGWORM.

Ringworm, though not common among horses, does occasionally present itself.

Although we have little or nothing to apprehend from "tetter," it often turns out a very intractable disorder when we try to cure it; and especially when it has become inveterate through negligence or long standing. It is ascribed to a variety of causes, constitutional as well as local. It is very apt to make its appearance, in the spring and autumnal seasons, among horses that have suffered from exposure and bad keep, and will attack many at the same time.

TREATMENT.—Unacquainted with the specific organic disturbance to which tetter owes its existence, our "remedies," as they are called, are empirical. We must attend to the general health and condition of the animal, and take care that his diseased skin is well washed with soap and water, as often as required; without which the dressings cannot take proper effect. Should the bare places exhibit inflammatory action, we must foment, and (if practicable) poultice them, and bleed and purge the animal. Sulphur ointment, empyreumatic oils, corrosive sublimate in weak aqueous solution, &c., are recommended. At the Alfort Veterinary School, good effects have been derived from the use of the liquor plumbi in combination with nitric acid.

Creosote and simple cerate, and an ointment of the nitrate of lead, with the liquor arsenicalis as a drink, may be tried. A solution of copperas applied with a sponge are known to have perfect success.

SURFEIT.

The appearance of surfeit is a quantity of round, blunt, heat spots on the skin, which occasionally proceed to exudation and form small scabs. The horse has generally an unhealthy coat, or hidebound, or is in a plethoric state. It is a consequence of excessive feeding. Prurigo may be looked upon as the simplest form of surfeit.

The TREATMENT must be such as tends to relieve plethora, and to remove any inflammatory disposition that may exist in the system; at the same time the eruption itself should be as much as possible encouraged. In cases of simple

evanescent eruption, nothing more is required, in general, than the substitution of a mash for a corn diet—green-meat, if it can be procured, for hay—chilled water, warm clothing and bandages, and additional walking exercise. Should the eruption evince a permanent character, or should it shew a disposition to relapse, it may become requisite to bleed and purge moderately; and these evacuations may be followed up by cooling febrifuges—antimony and nitre—mingled in powder with the animal's mashes. The following is good:

Nitre	3 drachms.
Sulphur	4 drachms.
Black Antimony	2 drachms.

Mix with bran and give in the corn.

D'Arboval truly remarks, however, when the lumps on the skin are bursting and discharging, the time for evacuating remedies seems to have gone by. We may then content ourselves with a cooling regimen, and the exhibition of alteratives; and sponge the surface with warm water. Though, "should the skin require excitement," the same author recommends "frictions with camphorated spirits."

HIDEBOUND.

When a horse's hide or skin sticks to his ribs, as it were, and cannot be drawn out or moved, as in the healthy state, he is said to be hidebound. It indicates great weakness and poverty, and sometimes a diseased state of the mesenteric vessels, and consumption. It is generally occasioned by ill-usage, and bad or insufficient food, and cannot be removed without proper feeding and good treatment. One of the great causes is turning the animal out in a straw yard.

The following powder may be given daily in the food, the effect of which will be, by stimulating the stomach and bowels, not only to assist digestion, but also to affect the skin by sympathy:—

Cantharides, finely powdered . .	5 grains.
Pimento	2 drachms.
Sulphate of iron	2 drachms.

If the horse refuse this powder in his food, it may be made into a ball with treacle, and given for a week or a fortnight. Or a tonic alterative drink may be given. See Tonics in List.

LICE.

The vicinity of a henroost is often the cause of this annoyance. These parasites cannot be destroyed by the same means as those of the horse, which die when anointed with oil or grease, and washed off. When lice occur with hidebound, they generally disappear with the disease.

LARVÆ IN THE SKIN.

Mr. Mayhew has given not only a verbal description but drawings of this pest of horseflesh; and from him we condense the following:—

These annoyances are another result of turning an animal out to grass, the fly whence the trouble is derived never entering the stable. The insect rejoices in the freedom of the field; and man, by turning out his horse, finds the creature a fitting spot for the deposit of its eggs. The warmth of the animal hatches the larvæ; no sooner is it endowed with life, than, with the instinct of its kind, it burrows into the skin. The integument of the horse, however thick it may appear, is soon pierced by the active little maggot, which, thus snugly housed, retains its lodging until the following spring. During the winter, a small lump denotes its abiding place; but as the second summer progresses, a tolerably large abscess is instituted. The interior of the abscess, of course, contains pus. Upon that secretion the insect lives and thrives.

Such swellings are acutely painful, and prove the sources of much annoyance. They mostly occur upon the back. The saddle cannot be laid on one of these tumours; and, as the spine supports much of the harness, the proprietor has the vexation of beholding his horse rendered useless; for suffering, should service be exacted, occasions the creature to excite displeasure; besides, the pranks thus provoked by torture often continue after the cause has been removed.

Upon the summit of the abscess appears a black spot. It is at this spot the larva receives the air needed to support a dormant existence. This fact being known to certain people, the knowledge is employed to destroy the parasite. The swelling is first slightly greased, and then a drop of melted tallow is let fall upon the breathing place. By such means, the insect is effectually suffocated, and assuredly dies.

Others employ a darning needle as the instrument of execution. The needle is thrust through the central spot into the swelling, for three-eighths of an inch. The larva thereby is pierced, and the life certainly is sacrificed.

Neither methods occasion at the time the slightest pain to the horse. In either case the maggot dies; but the business, unfortunately, is only rendered worse by killing the source of evil. The dead body putrefies. A foreign and corrupting substance, beneath the skin, may enlarge the abscess to many times its original dimensions. After all, the system has to cast forth the irritating matter; and for that purpose inflammation, with its attendant fever, must be perfected. Much suffering is thus occasioned, and the proprietor is, for several weeks, forced to forego the employment of a valuable servant.

The safest, the surest, and the quickest manner of eradicating these parasites is, with the point of a lancet, slightly to enlarge the central opening; and then, with the finger and thumb applied on either side of the swelling, to squeeze out the intruder. The abscess rapidly disappears; and it only requires a few dabbings with the solution of chloride of zinc, one grain to the ounce, to close the wound. However, the best manner to avoid such annoyances is, not to turn the horse out, and treat a domesticated as an untamed quadruped.

MALLENDERS AND SALLENDERS.

When a scurfy or scabby eruption at the posterior part of the bending of the knee appears, it is termed mallenders: and when a similar one appears at the bend of the hock, it is called sallenders. Neither of them lame or do much harm; but sometimes, when neglected, they degenerate into a foul ichorous discharge, a little more troublesome, and always unsightly. Both of them are easily removed by washing with soap and water, and by applying the following:—

Camphor	1 drachm.
Subacetate of lead (sugar of lead) .	½ drachm.
Mercurial ointment . . .	1 ounce.

Mix.

Tonic and alterative drinks should be given. This is Mayhew's ointment for the disorder:—

Animal glycerine	1 ounce.
Mercurial ointment . . .	2 drachms.
Powdered camphor . . .	2 drachms.
Spermaceti	1 ounce.

Mix and rub in gently.

Crown Scab, and Rat Tails.—These are of the same nature as mallenders, and may be cured by the same means. They generally, however, leave a blemish, consisting in a loss of hair, and a thickening of the cuticle. Crown scab occurs on the coronet, and rat tails in lines on the back part of the leg, extending from the fetlock upwards.

MELANOSIS.

This curious disorder, which seems exclusively to attack horses that have once been grey, consists of a black deposit in the cellular tissue, and occasionally in other parts of the body. In India it has been called "tail-disease," from the remarkable fact of a tumour or excrescence being almost always present at the root of the tail. Mr. W. C. Spooner gives a case in White's Farriery, p. 258, of a white Arabian who was destroyed with melanosis. Melanosis is defined by Laennec as "a pathological production deposited upon the surface, or in the substance of an organ, of a darkish or blackish colour, having no analogy with the healthy tissues of the body." The disease, which was described by Brugnini in 1781, as being hereditarily transmitted among the horses of Chevasso, and which he termed hemorrhoids, was evidently melanosis; it was usually developed around the root of the tail and the anus.

Some years later, in 1784, the same disease was observed at Bresse Gollety. Latournelle transmitted an account of it in 1809. He says, "there supervened in a young stallion on the second year of his covering, black 'boutons,' or buds, around the anus. They soon extended to the scrotum and sheath. They were placed between the skin and muscles at first as large as a small nut, and they increased until they attained the size of a pullet's egg; they did not suppurate, and were insensible to the touch. In a short time all the cellular tissue was similarly affected, and the animal died. When cut into, a matter like the grease of a cart wheel flowed out. All the progeny of this stallion which had the same colour was similarly affected; those which were black, bay, roan, or iron grey escaped."

The opinions of most writers as to the composition of the melanotic substance, agree that its black colour is owing to the presence of a large quantity of carbon. Many persons are of opinion that the black principle is an aberration of the pigment destined by nature to be deposited elsewhere, as the rete mucosum, the choroid, or the hair. It is said that persons with light hair, and elderly persons whose hair is white, as well as light grey or white horses, are most commonly the subjects of this disease. As horses thus affected are usually slaughtered, we may dismiss the subject by saying that a glycerine wash to cleanse the skin, and the administration of iodine to promote absorption, seem the most likely palliatives, where the animal is desired to be preserved.

GREASE AND CHAPPED HEELS.

These important disorders we shall postpone from this chapter to that where we treat of the diseases of the hinder foot.

WARBLES, SITFASTS, AND GALLS.

Warbles are enlarged bursæ inflamed by the pressure of the saddle. Open them with a sharp-pointed knife, thrust in, and cut outwards. Then, to prevent inflammation, take a piece of lunar caustic, and apply it freely till the sac is burned out. Wash and sponge with chloride of zinc and water, and keep a rag wet with the lotion over the wound.

Sitfasts are very annoying. They are a patch of horn, somewhat like a corn on the human foot. They are not simple corns, however, as they have an ulcerated margin. They are tedious and sometimes obstinate. The knife and lotion, as above, offer the best chance: it is more humane, too, than the slow process of rubbing in blistering ointment. Bran-mashes and a tonic drink (*Liquor arsenicalis*—see List), may be given.

Harness Galls.—Poultice till the swelling has subsided or suppuration come on. If the matter has not sufficient vent, open the channel of discharge. Dress with digestive ointment, and finish with an astringent application (C. or E. in List.)

WARTS

Are best removed by tying a ligature round them; or, with scarcely any pain, by applying every day, with a camel's hair pencil, a small portion of strong acetic acid; or they may be cut off with a knife or scissors, and the root touched with any caustic body. There is sometimes seen a sprouting luxurious species, whose roots are larger than their heads, so that a ligature is not easily passed around

them; these are best removed by touching their surface daily with the following paste. The following application will seldom fail to remove such as cannot be conveniently got at by the knife or ligature, dressing with it once a day:—

Sulphuric acid . .	a sufficiency of each.
Powdered sulphur . .	

Make into a paste, and apply a little to the wart. Blaine recommends:—

Muriate of ammonia . . .	2 drachms.
Powdered savin	1 ounce.
Palm oil	2 ounces.

WATER FARCY, ŒDEMA, ANASARCA.

Water farcy is quite another disease from farcy (already considered, p. 412, SPECIFIC DISEASES), in causes, symptoms, or effects. Gibson thus describes it:—

"Water farcy is of two kinds; one the product of a feverish disposition; the other is dropsical, and of that kind which in man resembles the anasarca, where the water is not confined to the belly and limbs, but shews itself in several parts of the body, with soft swellings which yield to the pressure of the fingers, as is usual in all dropsical habits. This last kind usually proceeds from foul feeding, or from the latter-grass and fog, that often comes up in great plenty with long-continued rains, and breeds a sluggish viscid blood."

TREATMENT.—However much practitioners may differ on the questions of the origin, specific nature, and organic seat of this disease, there exists little variation of opinion concerning the most efficient mode of treatment. Gorged with blood, distended—to bursting even—by internal effusion, hot, tense, and tender as the limb evidently is when first attacked, nobody can hesitate for a moment to draw blood: and this ought to be done to an amount that will sensibly impress the system. Abstract two gallons from a horse in condition; one even from a subject not so; and follow the bleeding up by the immediate administration of the following ball:—

Take of Purging Mass . . .	9 drachms.
„ Calomel	1 drachm.

Mix and make into a ball.

Anasarca is noticed under SWELLED BELLY, &c., p. 449, *ante*. *Œdema* will fall naturally under SWELLED LEGS.

ABSCESS.

As connected with the skin, we here consider abscess generally: its particular treatment will be found under POLL EVIL, STRANGLES, and other diseases wherein it occurs.

By abscess, in its most extensive sense, we mean any collection of fluid which interposes between parts in a kind of sac. In its limited sense, the word represents a collection of pus formed by a quick process of suppuration, and contained within a closed sac. When a purulent abscess forms, the following process takes place. An injury, generally a bruise, is received: part of the vital body is crushed or dies, and nature is desirous to repair the loss, and to cast off the dead substance. The minute vessels of the part are stimulated to effuse coagulable lymph within the cellular tissue; the consequence of which is distension or swelling; that here, as elsewhere, produces tenderness and heat, and, when the hair allows us to detect it, a reddened blush. The effusion around the immediate part which is dead, thickens, grows vascular, and ultimately forms a closed sac. Arrived at this state, the tumour may take on various changes by peculiar processes within it. The suppurative one is supposed to ensue all over the internal sides of the sac, where, by a change in the action of the inflamed vessels, pus begins to be secreted. It then presses against the adjacent muscles, causing these structures to be absorbed: and it is fortunate that, by an apparent conservative law of animal life, such absorption is most active towards the surface of the body, thus aiding the evacuation of its contents, which can be effected without prejudice to the constitution.

The treatment of abscess.—In the early stages of such tumours, endeavour to forward them, through the application of warmth and moisture, both of which are gained by a poultice. A blister may likewise be applied to the surface, and a poultice over that, when it is very important to draw the abscess forward. Horse poultices, on account of their magnitude, are generally formed of bran, upon which boiling water is poured, and the whole well stirred together; or a very good poultice may be formed of hay, soaked in hot water, any excess of moisture being squeezed out afterwards. About a gallon of substance is sufficient for one application. Being assured that maturation is completed, the thickness of the integuments, and the fear of the extension of the suppurative process inwards, make it always prudent to form an artificial opening in the more dependent as well as prominent part of the tumour. This may be done by direct section. Incision is effected by the abscess knife: but in every case the opening should be sufficient to give a ready exit to the matter which has formed, and that which may subsequently be secreted. In some situations, as where the natural outlet has appeared on a place we do not desire it should point in, or where the abscess does not point upon the precise spot we could have wished, it may be prudent to make an incision in the natural prominence, and insert a seton through the place we could desire the fulness should have occupied. It is, however, necessary to be careful in making the incision when it dips downwards, that it is made in the course of the muscular fibres, and not in the direction of considerable branches of nerves or blood-vessels.

Nothing further need be done for the eradication of an abscess than the establishment of a free depending orifice. Putting the finger into the opening and stirring it round, is unnecessary, to say the least of it. All injections are ob-

jectionable, to speak of them in the mildest terms. Should, however, the sac of an abscess display an indisposition to contract after its contents have been evacuated, apply a blister over it, and when the effects have somewhat abated, support the pendent parts by means of bandages.

Serous Abscess.—As a termination of inflammation, and, in the form of Strangles and Poll-evil, purulent abscess is considered. There is a second kind, called serous abscess.

The ordinary situations for these swellings are upon the outer side of the quarter or thigh, in front of the stifle, and upon the breast, the shoulder, and the arm. They are occasionally of considerable volume. They are usually egg-shaped, flattened upon the surface, and have a soft, elastic, fluctuating feel. When punctured, they emit, with considerable force, a limpid, straw-coloured, aqueous fluid, like the serum of the blood.

Treatment.—Percivall's practice is clear and decisive. He says it is time lost to set about attempts at dispersing or resolving these tumours. The most summary mode of getting rid of the swelling, is to plunge a lancet into it and evacuate it. Were we, however, to do nothing beyond this, we should find in a day or two that the tumour had become as large as ever. Evacuate it a second time, and the fluid still will speedily re-collect. To make a cure, we must either follow up the evacuation by throwing into the cavity with a syringe one of the following injections, or else pass a seton through the sides of it.

Take of White vitriol	. . .	1 scruple.
„ Distilled water	. . .	1 ounce.

Mix.

Take of Lunar caustic	. . .	5 grains.
„ Distilled water	. . .	1 ounce.

Mix.

After the injection, or even after the withdrawal of the seton, which should only be retained until a laudable pus is produced—a compress and roller (should they be applicable) will be found much to assist the granulation and cohesion of the sides of the cavity.

ULCERATION.

An ulcer is a sore arising from imperfect granulation, secreting an unhealthy, impure, thin, irritating (sanious) pus; these imperfect granulations cannot fulfil the purpose of building up muscle (flesh) or tissue, while absorption goes on and a loss of substance ensues. Granulation ceases to build up regularly; absorption removes irregularly, and hence comes an uneven surface, more or less a hole, with hard irregular edges, called an ulcer. In most cases, ulcers are attended with great irritability of system, which must be attacked by opium or generous digestible food. The general treatment of ulcers is to cleanse by means of a poultice, then stimulate, and keep up the system by a nutritious diet.

Ulcers are often found of a greater extent internally than externally, when the fluid which is secreted by them absorbs in different directions, forming narrow pipes, the sides of which are scirrhous, from which issues a glairy discharge. These pipes are called sinuses by the surgeon. In general cases, the longer an ulcer has lasted, the more difficulty there will be to bring it back to a healthy state. The external means employed for this purpose are usually stimulating injections, or incision. Ulcers are apt to be treated by farriers erroneously, by plugging up the sinuses. When the caustic penetrates farther than was intended, sloughing away the diseased and the healthy parts, the true remedy is equally simple and effective, namely, to slit them up, and then to lay within the divided pipe a piece of tow, saturated with some caustic solution. By this means the scirrhous lining will be cast forth, and that which was a sinus will be converted into a simple wound.

FISTULÆ.

There are three fistulous disorders in the horse, which more particularly demand notice, and to these we shall confine our attention. 1, *Fistula of the Parotid Duct.* 2, *Poll-evil.* 3, *Fistula of the Withers.*

FISTULA OF THE PAROTID DUCT.

The outward sign of this disease is an unnatural outlet for the saliva in some part of its passage. A recent wound of the duct itself shows little more than an opening wet with moisture, except when feeding, at which time the saliva will pour or spirt from the aperture like blood from an artery. The edge of the opening becomes ulcerous and soon changes to a true fistulous ulcer, the pipe itself, in old cases, becoming as hard as cartilage. The digestion, too, becomes deranged, from the loss of that valuable secretion the saliva, which is squirted out through the fistula instead of being conveyed, as when the duct is whole, into the mouth to be mixed with the food and conveyed from thence to the stomach. The position and function of the parotid gland have been already described. The fluid expelled is semi-transparent, afterwards tinged with pus from the ulceration, and occasionally coloured with thin blood.

The *causes* of fistula of the parotid duct are generally accidental injury, or abscesses resulting from strangles; hay seeds, and particles of hard food entering the opening of the duct during mastication, have produced it. These afterwards swelling, obstruct the egress of the saliva, which accumulates; the confined secretion produces agony, inflammation, and abscess, which nature relieves by bursting; the pent-up secretion pours forth, and fistula is established.

Treatment.—In olden times the horrid torture of the "budding iron" was resorted to. The late Professor Coleman and his disciples proposed to apply the iron "at a dull heat over and over again, to create an eschar" which should "plug up the orifice;" and the "heat starting up reparative inflammation beneath it," the opening "would be effectually closed," by the time the roasted living flesh would

be sloughed off! We pass from these useless barbarities to the modern practice. This we greatly owe to Mr. Gowing, veterinary surgeon of Camden Town, whose name we feel proud to record in connection with this painful disease and its cure. Mr. Gowing's treatment may be thus described:—A firm, agglutinating liquid is formed by dissolving gun cotton in sulphuric ether, which is called collodion. Upon applying this liquid to the surface of the body, the vital warmth occasions the ether rapidly to evaporate, leaving the cotton in an altered form, sticking firmly to the part.

Mr. Gowing first applied some mild caustic to the wound, till the orifice presented the reddened appearance he desired it should assume. He then places above the opening a bulky pledget, sufficiently large to thoroughly close the wound, and sufficiently solid to resist the solvent powers of the saliva. A piece of cork, cut to the required shape, answers the purpose admirably. Over this, to bind it to the part he wished it should close, he passed some cotton thread, the ends of which he fixed to the hair of either side by a liberal allowance of the liquid we before alluded to. This he repeated several times, till the plug was held firmly to the place by the cross bands of cotton. He repaired this dressing from day to day as it was necessary, having the horse's head tied up, and supporting the animal entirely by fluids. After a few days had elapsed, the horse was allowed to lie down; and a short time subsequently the bandage was removed, when the orifice was effectually stopped. This is a far better, and a far more effectual plan than any of the old measures once fashionable, but now we trust, on account of their barbarity, discarded. Treated after the above method, should the first trial not succeed, a second can be made; and this plan may be repeated an indefinite number of times, without inflicting suffering amounting to positive torture.

Should it be more convenient, a solution of gum mastic in spirit of wine, or a solution of India-rubber in sulphuric ether, will answer the same purpose as the collodion.

We may add that the horse should be allowed no food that requires mastication, and his head should be fixed by pillar-reins during the process of cure; and make his bed of tan, not straw, lest he should eat it.

POLL-EVIL.

This loathsome and troublesome disease consists in a deep abscess, with sinuses or pipes, working outwardly to an ulcerous sore, preceded by swelling and inflammation in the poll or nape of the neck, just between the ears, towards the mane.

The causes of poll-evil mark it as discreditable to the stable where it occurs. Mechanical injury from blows, bruises, &c., are the ordinary origin. Farm horses and cart horses are most frequently the subjects of poll-evil. Their coarse, ill-made, stiff and hard head-collars or bridles chafe their polls, and cause them to be continually rubbing the part. The halter or bridle, from constant friction, begets a mangy affection of the skin about the nape of the neck, from the itchy annoyance of which the animal endeavours to relieve himself, by rubbing his poll against the manger, occasioning that part to inflame, swell, become excoriated, and generate among the roots of the hair foul ulcerations Or, it may happen that the roof or beams of the stable, or the threshold of the door, may be so low, that the horses are daily hitting their heads against it. Or, worst of all, the brute who drives the team may be fond of exercising the butt end of his cart-whip in preference to the lash. Hanging back in the halter (to which stalls with a great slope from the manger to the drain much dispose the animal), by impeding the circulation, produces numbness and itching. The horse rubs his head violently against the travis or division of the stall, a bruise of the fleshy substances, between the hard woodwork and the bones at the base of the skull ensues, and a deep-seated abscess results. The first cause, therefore, of poll-evil is wilful, neglectful, or purely accidental external injury.

Tenderness on pressure on the poll or nape of the neck, and the peculiar stiff and crouching manner in which the animal carries his head, indicate poll-evil. The symptoms of course depend upon the extent of the disease and the stage the inflammation and abscess have reached. You may find a solid tumour, or a matured abscess, or it may have advanced to the ulcerative stage, exposing cavities and sinuses horrible to behold.

Treatment.—The knife and caustic tents of chloride of lime are our great resources in poll-evil. In the early stage of abscess, whether deep or superficial, open the parts freely, and then we may hope to induce the healing process in due time. Should the abscess not be fully formed, we should use our best endeavours to ripen it; which will be best attained by a mild blister rubbed in as often as required, till the fluctuation is felt either on one side or the other. The next object is to procure a speedy evacuation of the contents, and a depending orifice for its future passage, that no sinuses may form. This may be done by the introduction of a seton, first inserting the needle in the middle of the tumour, and passing it out at the most depending part. In case the tumour is a central one, and its limits extend equally over the neck, do exactly the same by the other side. But when, from improper management, matter has not only formed, but has been suffered to remain, or has only evacuated itself by a superficial opening, either natural or artificial, and not from one in a depending situation, in such cases the healthy secretion of pus always ceases, and, instead of it, a thin ichorous discharge succeeds. The ulceration also extends further; sinuses form in every direction, and even the bones of the cervix (nape of the neck) become absorbed. The ravages which this disease makes are truly dreadful. It has been known to disease the occipital and parietal bones, burrowing around the ear, and has insinuated pus into the parotid gland, as well as into the spinal canal, or the brain itself. Under any

appearance, a very strict examination must be made, which is best done when the horse is cast, having his head elevated by a bundle of straw, and turned towards the light. Enlarge the lateral opening so as to admit of a free examination, by means of the finger, of every part liable to be injured. Carious bones must be laid bare, scraped, and then exposed to the caustic effect of a strong solution of chloride of zinc. Hardened callous edges must be removed, and the smaller sinuses laid open, so as to form one continuous cavity. If all this be not thoroughly done, it will happen, that, when the whole seems on the point of healing, a new tumour will suddenly appear, and frustrate all our hopes. In this way the expert operator, well acquainted with the anatomy of the parts, will combat the worst cases.

We have mentioned caustic tents; these are recommended by White and other practical men, and denounced by Mayhew, who relies solely on the knife. We have many well-authenticated cures by means of caustic pledgets of chloride of lime; the sinuses being examined carefully from time to time with a probe, carious bone freely scraped, and, if there be exostosis, the piece removed. The horrors of boiling injections, of forcing hot irons up the sinuses, and plugging them with arsenic—for these are among the tortures of country farriers' "remedies"—we hope never again to see or hear of.

In the fifth volume of the "Veterinarian," Mr. A. Gray relates a case of successful treatment of poll-evil, in which pressure by means of splints greatly aided the cure. He thus describes their application and the result:—"When the mare was sent to me, I proceeded to examine the extent of the disease. I found two deep sinuses, one on each side of the neck, the bones of which could be distinctly felt with the probe. After cleaning away the matter, I took a scalpel, and laid both orifices open in an oblique direction downwards; then, having fomented the parts with warm water, I dressed the wounds with tincture of myrrh and aloes; and, in order to apply pressure to the parts (for in this I founded all my hope of success), I had two pieces of wood prepared, about twelve inches long and three broad, thicker in the middle than at the edges, which were rounded off, and also a long flannel bandage, four inches broad. I then placed two pledgets of tow next the wounds, putting on the pieces of wood one on each side, and then applied the bandage over all, and as tightly as I could, without impeding deglutition. It is necessary, while putting on the bandage, to keep the nose extended, in order to adapt the bandage more perfectly to the part, and apply it more closely. I removed the bandage night and morning, and had the parts well fomented and dressed with the tincture. In the course of four weeks the mare was well."

FISTULA OF THE WITHERS.

Continuous and undue pressure of the saddle, either by its misfit or the improper management of a careless groom or incautious rider, and this evil repeated day by day and at frequent intervals, establishes an inflammatory tumour. This generally originates in one of the bursæ in connection with the tall dorsal spines (see Skeleton, Plate I.). This should be immediately laid open, and subsequently treated after the manner explained under the head of Warbles. When this is not done, the whole hardens, suppuration generally takes place within the part, and the strong fascia on the back prevents the pus escaping. The pus becomes virulent, being confined: it absorbs, thus creating numerous pipes, and a case of fistulous withers is established. Should the attention be called to a case that has proceeded to a fistulous state, treat exactly in the same manner as with poll-evil. Instances have occurred where the matter has penetrated under the scapula, and made its way to the point of the elbow or the front of the breast. In these cases a depending orifice should be made, and a seton introduced through the whole extent of the sinus; for which purpose seton-needles of sufficient length, with their points guarded, to prevent them injuring important vessels, are manufactured (see Plate of Instruments). Occasionally the disease extends and involves the dorsal spines. The stench will offer disagreeable proof when the bones are affected. When the bones are diseased, slit up the fistula, and scrape them, until a healthy surface is exposed; after which, the milder lotion of chloride of zinc and water may be used. But when the cartilage that tops the spines is affected, without delay saw it off, leaving a healthy surface of bone. When the sinuses, likewise, are slit open, to cut from within outwards produces less pain, which in surgery is a consideration. After the incision has been made, lay into the opened sinus some tow, saturated in the strong solution of chloride of zinc, which, after twenty-four hours, may be removed, and the wound subsequently dressed with the milder lotion.

Mr Mayhew recommends, when the sinuses burrow from the withers towards the chest or elbow, and cannot be opened up by the knife, that an elastic probe, having been passed down the sinus, should be dipped in a small quantity of powdered bichloride of mercury, and repeatedly pushed down it, until you have used up the whole of the salt.

CHAPTER XXXII.

LAMENESSES, DISEASES, AND INJURIES OF THE FORELEGS AND FEET.

THE SHOULDER.—THE ARM AND ELBOW.—THE KNEE.—THE LEG.—THE PASTERNS.—THE FETLOCKS.—THE FEET.

Before entering on the diseases and injuries of the foreleg, the reader may refer with advantage to the description of the bones (*ante*, pp. 184, 185), and of the muscles (pp. 190, 191); and Anatomy, Plates VIII., X., and XI., with their letterpress descriptions.

The causes of lameness in the horse are so various, and often so obscure, that we may almost say that a hasty and confident opinion on the nature and origin of lameness is a sign that the man consulted has little judgment or knowledge of the difficulty of the question before him. Rashness, self-conceit, and a desire to obtain an undue reputation for acumen, may be almost invariably assumed as regards these positive gentlemen, who deliver oracular opinions on matters which demand sound knowledge, careful investigation, and deliberate reflection, even from the most experienced. Above all things we would warn the horse-owner against people who have "secrets" for curing lamenesses. They are generally ignorant and dishonest barbarians, with neither humanity nor principle, and we always look with extreme suspicion on those who recommend their advice or services to be called for. Shoeing, as a cause of lameness, is now hardly known, however convenient a stalking-horse the farrier's shortcomings may be to a drunken or careless groom. Where the smith is really in fault, the mischief is obvious enough; where the causes lie deeper, the skilful veterinarian or the well-read anatomist alone can trace them.

In the present chapter we propose to arrange the several disorders and injuries as follows:—*The Shoulder: The Arm and Elbow: The Knee: The Leg: The Pasterns: The Fetlocks: The Feet.*

THE SHOULDER.—SPRAIN OF THE SHOULDER.—BLOWS.—SHOULDER LAMENESS.—RHEUMATISM.

Sprain or Strain of the Shoulder.—When the farrier finds himself at a loss to point out the exact seat of lameness, he generally takes refuge in the convenient generality of "sprain of the shoulder." The occurrence is rare, but when it does occur is easily detected. The tenderness of the muscle itself, inside the shoulder, and its inflammation, together with the peculiar action of *dragging the toe along the ground*, then dropping the knee suddenly, are indications of sprain of the shoulder. Its causes are a side fall, or a wrench, by which the forelegs are suddenly stretched apart so widely as to sprain either the muscles or ligaments, probably both. In this case the animal cannot move down the slightest declivity without intense pain, from the weight being thrown upon the shoulders; and, in the attempt, swings round the leg in a peculiar manner, endeavouring so to accomplish the movement as never to call upon the shoulder muscles to elevate the scapula. If the foot be laid hold of, raised, and brought into a straight line, the seat of pain will be indicated by the suffering animal. Again, pressure on the serratus muscle* will cause the horse to shrink. Of course, if lameness has its seat in the arm or foot, neither of these tests are even noticed by the patient. A deceptive appearance of shoulder sprain occurs when, viewing a lame horse from the front, we find the muscle of one shoulder wasted, imparting an appearance of swelling to the sound limb; this resulting from the lame limb having been saved from exertion by the suffering animal, and therefore diminished in volume. In this case the sound limb is condemned as the seat of lameness, and treated, or ill-treated, accordingly. Never, therefore, omit both the tests above mentioned.

White says: "There is one kind of shoulder lameness which is consequent on an injury of the great synovial cavity, or bursa mucosa, through which that great tendon passes which arises from a protuberance on the lower part of the shoulder-blade and slides over the large grooved process at the head of the shoulder bone. This large grooved process is covered with a slippery cartilage, as in other

* The shoulder-blade is united to the chest by muscle alone. Here is a large muscle, with remarkable tendinous fibres, and of immense strength (the *serratus major*, greater saw-shaped muscle), attached to the chest and to the extensive smooth internal surface of the shoulder-blade, and by which, assisted, or rather strengthened, by the muscles of the breast, the weight of the body is supported, and the shock of the widest leap or the most rapid motion is sustained. Had there been a bony union between the shoulder and the body, the vital parts contained in the chest could not have endured the shock which they would occasionally have experienced; nor could any bone have long remained whole if exposed to such violence. The muscles within the shoulder-blade act as powerful and safe springs. They yield, as far as necessary, to the force impressed upon them: by their gradual yielding they destroy the violence of the shock, and then, by their elastic power, immediately regain their former situation.—*Youatt.*

synovial cavities, to prevent any friction while the limb is in motion. I have seen shoulder lameness that appeared to depend upon a rheumatic affection of this part. The manner of the horse's going, when this part is the seat of lameness, is very remarkable. In endeavouring to trot, and sometimes even in walking, the fore leg suddenly gives way or bends, and it is only by a considerable effort that the horse can save himself from falling. I had a filly under my care for this lameness, which fell down several times in walking. The remedies I employed were, passing a seton over the point of the shoulder, and blistering all round it pretty freely. This, and confining her some weeks in a box, effected a cure."

The general TREATMENT of shoulder sprain should be to bleed freely from the plate vein (see BLEEDING, *post*), just opposite the elbow joint. Three to five quarts is not too great a quantity. Bathe frequently and copiously with a lotion consisting of half-a-pint of tincture of arnica in a gallon of water. Should the case be recent, and the symptoms not violent, bathe with cold water only; and in either case, when the inflammation subsides, change the cold water for hot.

In this manner, keep the shoulder wet for a week or longer, when, every sign of active disease having departed, a blister may be applied. With regard to the manner of applying the blisters in these cases, the late Mr. Blaine speaks very confidently; he says:—"I would recommend the following practice, which I have long pursued in these cases with invariable success. As soon as the more active inflammatory symptoms are abated, I proceed to raise an artificial inflammation by the free use of stimulants, generally of the liquid blister, in the following manner:—Mix six ounces of common oil with two or three ounces of liquid blister, and with this rub the whole affected part twice a day until the swelling and inflammation it will bring on prevent the use of more. In two or three days these will subside, when it should be repeated, until the same effects again prevent the application. In this way keep up a mild inflammation for a week or ten days, according to the original violence of the affection: in general cases, the subsiding of the second swelling will leave the horse sound. This will be found a much more efficacious mode of practice than the common blister; but it must be more particularly remembered, that I know of no affection so liable to return as this; consequently, although the horse may appear sound, it will be very dangerous to put him to immediate work."

There are awful barbarities in old books, professing to relieve this or the next-mentioned affection—rheumatism; among them, "swimming the horse," as it was called. Imagine a horse plunged in river, pond, or sea, with a sprained shoulder, and called on to "swim" with a ruffian on his back. Hinds, in his "Veterinary Surgery" (Whittaker, 1829), tells a story of one Dennis Lawler, a Dublin farrier, who was great in this line of "cure." He tells us, "His method was to ride his horse to a convenient depth of water in the bay, and then, jumping forward suddenly on the animal's neck, thus souse it head-foremost to the bottom. The feat caused great marvel at the time; but not so the total disappearance, upon one occasion, of the performer. Poor Dennis is supposed to have received a kick to the bottom, and that his body drifted out to sea. At any rate his Howth friends saw no more of him." Without quite wishing the fate of poor Dennis to every horse-swimmer in shoulder-sprain, we trust never again, as we have done, to witness this cruelty.

SHOULDER LAMENESS.—RHEUMATISM.

To this head we have preferred to refer Rheumatism, a disease which many writers have denied as existent in the horse. Its presence, however, in the muscles of the shoulder, and occasionally of the loins, is too often recognisable not to place its existence beyond doubt, if not beyond controversy.

Of acute rheumatism, well-marked cases are occasionally encountered, which are traceable to the effects of cold or moisture. The leading characters are alike in all; the attack being ushered in by universal stiffness, but more particularly of the fore extremities. Sometimes the case is attended with considerable tumefaction in front of the breast.

Rheumatism is remarkable for "flying about" (*metastasis*, as it is termed by the surgeon). Sometimes it attacks one or two joints, then another member, shifting from the shoulder to the knees and hocks, and back to the shoulder. These being its favourite points of attack in the horse.

The TREATMENT consists in first decreasing the food to so much only as will support life and diminish fat. Then give the following ball night and morning, until the bowels are freely opened, when it is to be withheld till purging has ceased, and then recommenced:

Powdered colchicum . . .	2 drachms.
Calomel	1 scruple.
Opium	1 drachm.
Aloes	1 drachm.
Powdered capsicums . . .	½ drachm.

In the mean time the swollen parts may be freely fomented with very hot water, and afterwards well rubbed with soap liniment, to every pint of which a quarter of a pint of liquor ammoniæ has been added.

Should the above ball not succeed, try the following drink, which, in some cases, is even more effective:—

Iodide of potassium . . .	1 drachm.
Sulphuric ether	1 ounce.
Cream of tartar	4 drachms.

Give night and morning in a pint of gruel.

Chronic Rheumatism may be the sequel of the acute; in some cases it appears as the immediate consequence of exposure to cutting winds, humid atmosphere, &c.; and is

indicated by stiffness and tenderness of the parts it attacks. When the extremities suffer, it is not unusual to observe some tumefaction, but always great disinclination to move. It occasionally visits the loins, but is most common in the fore quarters. Sometimes one extremity and occasionally both are affected, when sudden metastasis will often remove it to the other parts; these cases were well characterised by the old term of "flying lamenesses."

The TREATMENT of chronic rheumatism does not materially differ from that recommended to be followed in cases of the acute description, excepting that strychnia, in doses of a grain, gradually increased to three grains, has occasionally been attended with benefit.

THE ARM AND ELBOW.

FRACTURES.—PUNCTURES.—CAPPED ELBOW.

The *arm* extends from the *elbow* to the *knee*, and consists of two bones; the front long bone, the *radius;* and the short hinder bone, the *ulna*.

The elbow joint is sometimes punctured, either accidentally, or through the brutality of the groom or carter. The swelling is often rapid and extensive, and fatal inflammation may ensue. Rest, and the closing of the wound, are the most important considerations.

The elbow is sometimes fractured. If the animal be placed in the hands of a skilful veterinarian, although the chances of cure are certainly against the horse, yet the owner need not despair. Absolute and long-continued rest, and that produced by means of slinging (see Plate XXI.), will be indispensable.

Capped Elbow, or *capulet*, is in its treatment similar to *capped hock*. These enlargements about the elbow are either the consequence of a violent blow, or from the calkins of the shoes injuring this part when the horse sleeps with his legs doubled under him. If a seton be passed through the tumour, it will sometimes rapidly diminish, and even disappear; but if it be of considerable magnitude, the skin should be slit open along the middle of the swelling, and the tumour dissected out.

THE KNEE.

BROKEN KNEES.—OPEN JOINTS.

This important and complicated joint is the seat of the most frequent and the most deteriorating of accidents to which this powerful animal is liable; in most instances from the incautiousness, the severity, or the incompetency of the driver or rider, or the requirements of ostentation and fashion in severe bearing reins, monstrous blinkers, and the like, rendering the horse comparatively helpless and blind, and punishing him for every false step, hesitation, and blunder.

We will suppose the horse has fallen, no matter how, the question is the treatment of the injury.

TREATMENT.—If called in while the wound is recent, the first thing is to sponge the knee clean from any grit, dirt, or extraneous substance; and even in this simple operation there is much difference in the right and wrong way of using the sponge. Slopping, smearing, and wiping should be eschewed; the immediate wound not touched in ordinary cases, but the sponge saturated with warm water squeezed dry *above* the laceration. The sponge will thus not become charged with dirt, and do the very mischief it is intended to relieve, nor will the water in the pail be fouled with grit (most important trifles are these), but the foreign matters clean washed away, the animal saved much pain, and the parts cleared for surgical examination. Let the horse get easy and calm after the washing, take him to his stall, give him a feed of corn, and water him.

Place the palm of the hand over the joint, and ascertain if there be much heat or swelling. Should no synovia appear upon the surface, it is prudent to avoid probing; it can "merely gratify curiosity," says Blaine, "and a surgeon has no business with any such meddling impulse; the welfare of his patient should be his single thought, and experience should tell him that the dimensions, depth, and magnitude of the wound are not at first to be ascertained. Such knowledge is not to be acquired till the slough has taken place." In this we agree; we have often seen the probe recklessly used; we believe to the aggravation and extension of the injury. When the joint is ascertained to be open, the injury must no longer be treated as a common wound. Our prognosis in such case will depend on the extent of the wound, particularly that in the capsular ligament, and on the circumstance as to whether inflammation has been set up in the cavity of the joint.

Our object must now be to close the joint as quickly as possible, and thus prevent the escape of synovia, or joint oil; unless we succeed in doing this, the inflammation of the knee will greatly increase, and the discharge of synovia become augmented in quantity, partly coagulating as it escapes from the knee, and hanging in large flakes from the wound; the animal, from the pain experienced, keeps the knee in a bent position, or paws with the foot continually. A vast deal of fever is excited in the system, which in some cases wears out the animal, and produces death. In other cases, bony substance is thrown out round the joint, which at length closes the wound, but destroys the motion of the joint and renders the animal useless.

It is, of course, important that the animal should be kept perfectly quiet, and the leg as straight as possible. If the horse can be slung conveniently, it will vastly facilitate the cure; for he must not lie down, lest he opens the wound. Mr. Turner's method is excellent in severe cases of open joint. The wound being cleansed, he prepares a paste of wheaten flour and table beer, mixed with a little bole armenian, which he spreads thickly above and below and round the knee. A pledget of tow is then wound round the joint and covered with some stout brown paper, and over all a cotton stocking. Outside the stocking is another layer of the paste,

and a calico roller bandage, six yards long, is passed outside, all wound round with a gentle and continuous pressure; then another bandage of the same length the contrary way. The horse having been dressed is then bled, and a laxative is administered; the dressing is not removed until the joint is closed. It is understood that the horse is slung. If the leg swells from pressure of the bandages, he makes small cuts in each layer on each side the knee, but never in front. In six or seven days, should there be a great accumulation of fluid within the bandages, an incision will afford it a way out, and another dressing of the paste, with a similar bandage, applied. The horse is to be kept suspended a week after the joint is closed, when the paste is removed, the knee washed, and the usual wound dressing applied. If there is still swelling above the knee, bathe with cooling evaporating lotion, but don't allow it to wet the dressings. A very superior splint or knee-cap may be now made by moulding gutta-percha, softened in hot water, to the shape of the knee.

With respect to concealing the after blemish, no power of earth can make the hair grow on a scar. It is not skin, and it cannot be covered with the appendage only to be seen upon true skin. But the cicatrix will with time become less. Often the wound, which on first healing appears rather large, in the course of three months will be all but imperceptible. Any application of blisters, be they mild or strong, can but increase the blemish it is their intention to remove. Let the scar alone. If you have thrown down a horse, no veterinary surgeon can be sure he shall afterwards stand upon perfect limbs. You must, therefore, take the consequences without complaint, and be grateful that you have, in the effects of time, some hope left when science has abandoned you.

Broken Knees without opening of the Synovial Cavity.—Occasionally broken knees prove to be mere skin injury, with slight contusion. Undue and too early exercise may force these into permanent thickening of the part, with injury to the free motion of the joint, whereas an extra rest and fomentation would complete a cure. When, therefore, a cut has taken place without injury to the cavity of the joint, the wound having been washed, bring the edges of the integument as closely together as possible by strips of adhesive plaster, as already directed; or, if the wound be extensive, it would be well to sling the horse. A cure by the first intention, or adhesive process, can only be hoped for in this way. If heat and tumefaction come on, use the lotion composed of arnica and water, two ounces of the tincture to a quart; and, after applying the arnica and water night and day for forty-eight hours, if the skin be broken, exchange the lotion for one composed of chloride of zinc and water, in this way a cure may often be established, without injury to motion or blemish to the animal.

STRAIN OF THE KNEE-JOINT.

The knee-joint is seldom strained, so well is it secured by ligaments. It, however, occurs to young horses and colts in training, the seat of injury being the side of the knee, by slipping outward on the turf. Bleeding from the arm, warm fomentations followed by cold lotions, and a little iodine ointment when the inflammation has gone, are advisable.

THE LEG.

SPLINTS.—INJURIES.—SPRAIN OF THE FLEXOR TENDON.—WIND-GALLS.

This we consider as the part between the knee and the fetlock, consisting of the cannon-bone in front, and the two splint-bones behind, and is the seat of that common calamity of the horse—

Splints.—These are exostoses or bony tumours, formed by inflammation of the periosteum, and are found in three positions: on the inner side of the leg, close under the knee-joint; half way down on the inside; and sometimes on the front of the cannon-bone, in which last position they would more properly be called "nodes." Splints are formed by the animal being worked too soon or too severely. Inflammation follows, and a bony instead of a ligamentous deposit takes place. A bony union, too, is set up between the two smaller bones and the cannon-bone, and hence the ease of motion is impaired. In the young and vigorous horse, however, other elastic principles are called into action, and the ease of action is not strikingly deteriorated; though at some distant period the mischief will crop out in stiff joint or splints in an aggravated form. The disposition to bony deposit, moreover, seems a spreading complaint, and is not confined to the space between the larger and smaller bones of the leg. A tumour, at first callous, afterwards bony, is formed with a part of its base resting on the line between these bones. This is a simple splint, and is invariably found outside the small bone and inside the fore-leg, and outside the hinder one.

When a splint is not situated immediately under a tendon, or contiguous to ligamentary matter, it occasions no lameness. The veterinary practitioner should, therefore, in his consideration of the consequences in these cases, be guided in a great measure by the situation of the splint. If placed in front, it is productive of much less injury than when placed behind; for, as already pointed out, in this latter case, the swellings may press on the ligaments, or interfere with the flexor tendons. For the same reason also, a splint placed at the lower end of the cannon is still more prejudicial than when situated higher up the leg. It is not uncommon to attribute that lameness to a splint which is dependent on other causes. A fully developed splint never lames, unless it interferes with a tendon or ligament. A splint, in the course of formation, however, may produce the most acute lameness, and often does so in young horses

A splint, also, by its situation, may excite inflammation in the ligaments and tendons themselves. As a splint is neither more nor less than a conversion of fibro-cartilage into bone, once formed, it can never be entirely removed; nevertheless, from the absorption common in later periods of life, the splints often diminish in bulk, or, as farriers call it, "wear away."

TREATMENT.—As we have just said, "a splint once is a splint always." Periosteotomy, or division of the skin which covers the bone, is the modern treatment for splints. It may be thus described. The horse is cast, and the leg straightened and properly secured. A small opening is then made just below the splint, sufficient to introduce a long, narrow, convex, probe-pointed knife (see Plate XXIII., INSTRUMENTS), the edge of which is on the convex side. This knife is passed under the skin, and by drawing it backwards and forwards the periosteum is completely divided. A small opening is then made through the skin above the splint, and a narrow seton passed from one orifice to the other, after which a bandage is placed on the leg and the horse released. The seton is moved daily and dressed with digestive ointment, and at the end of a week removed and the wound allowed to heal. Our own dictum on splints which do not involve lameness, is to let them alone; or, if the horse goes slightly stiff, to apply a little tincture of cantharides, which may be repeated if benefit is derived from it.

In the olden time, dreadful measures were adopted with splints, most of which left matters worse than before; of these we may speak when we come to spavin and ring-bone. Among these were "thumping with a hammer, rubbing the swelling with a stick, piercing it with a gimlet or hot iron, and pressure by means of sheet lead, blistering, 'sweating' with acrid 'oils,'"* &c., &c.

We have mentioned nodes in conjunction with spiints; of these Mr. Spooner says:—"Bony tumours form on various parts of the cannon bone; but, though sometimes large and offensive to the eye, they rarely produce lameness. They are more frequent with hunters than other horses, from blows in leaping. Iodine ointment is the best treatment. They also occur by the side of the sesamoid bones. When near the suspensory ligament they often cause severe lameness. Should they arise from strains of the ligaments they are more obstinate, and blistering or even firing becomes necessary. In the latter case, persevere with the iodine ointment.

STRAIN OF THE FLEXOR TENDONS, OR "CLAP" OF THE BACK SINEWS.

This serious injury is of frequent occurrence, owing to the violent exertions to which the horse is too often urged. The structure and relation of the parts implicated in the injury will be understood by a reference to page 191 *ante*, where the muscles of the foreleg are described, and to Plates II. and VIII., ANATOMY, where they are delineated.

There are, of course, degrees of this injury, and the terms a strain of the flexor tendon, a sprain of the back sinews, a "clap" of the back sinews, a bad break-down, may be taken as mere progressive expressions of the degree of mischief inflicted by one and the same kind of accident. In the case of "break-down," however, it is a rupture of the suspensory ligament, as will be noted hereafter.

When the strain is slight, we may not discover the injury for some hours, when the animal, without being positively lame, will go in an unusual manner, as if slightly cramped or stiff. Pass the hand gently down the affected limb, and a small swelling will be felt, and tenderness on pressure be shown. Do not listen to any fellow who tells you "Oh! he will work sound." As Mayhew shrewdly says, "The many horses seen in the London cab-ranks with fore-legs permanently contracted, bear witness to the result of such very knowing treatment." To which we may add the thousands of cases where complicated and permanent disease destroys the wretched animal from first neglect. Where there is strain, bind a linen roller round the leg tightly, and wet it diligently with cold water day and night; examine the limb every morning; give four drachms of aloes and a very small suggestion of nitre, to cool the system. Pressure may be gently and conveniently applied by a broad vulcanized India-rubber band, and a wetted piece of spongio-piline. Of old, the farrier was ready with his firing-iron even in cases of sprain: the veterinary surgeon has in the interest of humanity driven him out.

When the sprain is more severe, bleed copiously from the arm; put the horse where he may be quiet, and have a high-heeled shoe placed on the foot of the affected leg; a good form of this is figured letter H, Plate XIX. Cold applications, in the very early stages, particularly when the swelling is considerable, will tend to unload the vessels; and the same indications will be followed by immersing the whole limb in spring water. In two or three days, change this plan for formentations or embrocations. Any treatment more stimulating than this in the early stages tends to increase the deposit of lymph, and to organize it into a permanent tumour. But when the active stage of the inflammation has subsided, then mildly stimulating applications are proper; and they should be accompanied here with due friction and bandaging. The recovery from a severe case is usually very slow; the parts being ligamentous, do not readily reinstate themselves; the after-treatment must, therefore, fully accord with this view, which is that of giving sufficient time; and in most cases it ought to be some weeks after the horse may seem sound before he is put to full work. It is better, in the most favourable cases, to give a few weeks' rest, using, as already recommended, a vulcanized India-rubber bandage and spongio-piline, saturated with water. A lotion of muriate of ammonia, 1 oz., pyroligneous acid and spirits of wine, 2 ozs. each, camphorated spirit,

* Blaine, *Outlines of Veterinary Art*, edit. 1854, p. 411.

2 drachms, and cold water, 1 quart, may be applied. Where the induration remains obstinate, repeated blisters, applied as recommended by Mr. Blaine in shoulder lameness, are the best means of reducing the tumours.

SPEEDY-CUT.—OVERREACH.

The inside of the leg, immediately below the knee, and up to the head of the inner splint bone, is liable to the injury called "speedy-cut." A horse lifting his legs high in a fast trot, strikes this part with the hoof or edge of the shoe. Occasionally, bony enlargement is the result, preceded by great heat and tenderness; and sometimes the pain from the blow is so great that the horse drops as suddenly as if shot. Care is necessary that with such horses no part of the shoe projects beyond the foot. In our plate of Shoes will be found a special shoe to prevent speedy-cut, and under SHOEING the subject will again occur. The term *overreach* is also applied to a blow inflicted on some part of the fore leg by the hind foot; frequently it strikes the flexor tendon, and produces inflammation and tumour. We shall have something more to say of this when we come to the pasterns, to which we shall also defer the subject of "break-down."

THE PASTERNS AND FETLOCKS.

BREAKING DOWN (RUPTURE OF SUSPENSORY LIGAMENT).—CUTTING.—RINGBONE.—GROGGINESS.—SPRAIN OF THE COFFIN-JOINT.

BREAKING-DOWN.

This accident, as already observed, is not strain of the back-sinews, though that is bad enough as a disablement. The distinction should be made, for the sake of the accurate local application of remedial measures, and the correct observation of the progress of amendment. "Break-down," then, is a rupture of the suspensory ligament of the leg, or of those passing from the sesamoid bones to the pasterns. The treatment is the patten-shoe, as already mentioned under sprains—or, more commonly, a pistol-shot. With valuable racehorses, where *work* is not demanded, breaks-down have been followed by a stud-life, and nature has partly repaired the rupture, the intervening space of the severed ligament filling up with granulations.

Sprain of the fetlock-joint arising from injury to the ligamentous and tendinous connexion of these parts, has sometimes been mistaken for a common swelling, and the horse exercised to "take down the enlargement." Hence incurable deposits of coagulable lymph, forming stiff joint. The treatment should be the same as in other cases of sprain.

CUTTING.

We have already mentioned "speedy-cut" as a blow inflicted on the inside and lower part of the knee joint, when the animal is urged to a very fast pace. Some carriage-horses (the bearing rein must with these be dispensed with) strike the fetlock of the fore foot, and produce lameness, often without external wound: when fatigued or weak, the lameness is increased. Mr. Morecroft advises the raising of the outer side of the shoe so as to make it much higher than the inside. He says:—"When a horse is at rest, he supports his weight equally on both feet; but having the inner heel and quarter raised when one foot is elevated, he must be supported obliquely on the other, and hence have a tendency to fall outwards; to prevent which, he brings the moving foot nearer to the supporting one, by which he strikes it; but by raising the outer instead of the inner branch of the shoe, we necessarily give it a disposition to lean inwards, which will induce the horse to throw or incline the moving foot farther from the supporting foot."

Mr. Goodwin describes an improvement of the common boot, as it is termed, for defending the fetlock joint, when cutting cannot otherwise be prevented, which may be had at Mr. Long's, veterinary instrument maker, Holborn, London.

Mr. Spooner adds on this point: "The best boot for cutting the leg, is made with leather fitted to the leg and laced, the leather being double at the part struck by the other foot.

"In some instances it is found that a boot buckled round the hoof that cuts, and softly stuffed, prevents injury from the blow, when other methods fail.

"For cutting the fetlock, a piece of cloth tied round above the joint and doubled down over it, answers the purpose."

RINGBONE, OSSIFICATION OF CARTILAGES.

This is a formation of bone (or exostosis) surrounding the whole or a part of the circle of the coronet, and involving the joinings of the large and small pastern bones. The situation of ringbone is marked on Plate VIII. From the great mobility of the pastern joints and the shocks to which, despite their admirable contrivance, the ligaments are exposed when man overtasks the animal machinery, inflammation is induced, followed by the deposition of bony matter. Sometimes ringbone begins as high up as the superior articulation of the larger pastern bone; oftener about the joint formed by the two pastern bones; and sometimes it involves only the lower pastern bone. The lateral or side ligaments are those that are oftenest or soonest affected; ringbone is then discovered, in its earliest state, by a rounded hard projection on each side, immediately above the coronet. The hind legs are not so subject to ringbone as the fore legs.

Ringbone is always accompanied by lameness at the commencement: but the extent of the after lameness depends on the degree in which bony tumour interferes with the action of the joint. In some cases it goes off altogether, particularly in the hind feet, where the concussion is not so great and the inflammation is not generally so intense. In the fore feet, which support more of the weight of the

body, and are liable to severer injury, the bony deposit is usually greater, and commonly involves one or both of the pastern joints. Lameness, and of an incurable nature, is the result if side bones also exist, or the ring should extend under the cartilages; and it not unfrequently happens that the coffin joint, being surrounded by unyielding bone, is entirely lost.

TREATMENT.—Local bleeding (from the toe), and evaporating lotions, should be first employed; the inflammation being removed, setons should be inserted, or the part should be stimulated. All, however, will often fail; for the incessant action of the parts, and the pressure on them, render it very difficult to arrest the progress of the inflammation. In a confirmed case of ringbone, especially when the joint is lost, it would be the height of cruelty to subject the poor animal to the useless torture of the iron; and when side-bones and ringbones exist together, neurotomy (see *post*, "OPERATIONS") is the only means to afford relief.

Professor Sewell recommends periosteotomy in case of ringbone, as well as splints; which refer to for method of effecting.

Ossification of the lateral cartilages is known as "false ringbone." It is produced by concussion, and is most frequent among heavy horses driven on London pavement. When unattended with lameness, leave alone; when it appears in lighter horses, blistering, iodine ointment, a cessation from active work, and sometimes firing, may be necessary.

GROGGINESS.—KNUCKLING, ETC.

This is a frequent tremulous motion of the fore leg, with a bowing of the knee, and some degree of knuckling of the fetlock; while upon the slightest tap behind the knee the joint yields. There is an evident loss of power and energy in the limb; and though in some measure a natural defect, it is often a proof that the horse has been hardly worked, and it is probable that he can endure little more exertion.

The various structures which compose the limb have been overtaxed; they have become weak; their debility preventing the animal from giving to the leg that fixed position which the member otherwise would assume. There is little remedy for it but stimulation, or the constant application of cool lotion with comparative rest, while the horse enjoys the salutary and bracing, and not sufficiently appreciated, influence of cold on weakness of the legs and feet.

SPRAIN OF THE COFFIN-JOINT.

The lameness is sudden, and the heat and tenderness just about the coronet. Bleed at the toe, physic, and foment; blister if obstinate. This accident is often confounded with shoulder-lameness, and consequently wrongly treated. It is then the precursor and cause of ringbone.

THE FEET.

LAMINITIS.—FEVER IN THE FEET.—ACUTE FOUNDER.—CHRONIC FOUNDER.—PUMICED FEET.—SAND-CRACK, SEEDY-TOE, FALSE QUARTER.—QUITTOR.—CONTRACTION.—TREAD.—PUNCTURED SOLE.—CORNS.—THRUSH.—CANKER.

The sensible laminæ, or fleshy plates on the front and sides of the coffin-bone, are full of blood-vessels, and therefore, like other highly vascular parts, liable to inflammatory action.

When it is recollected what the laminæ, which are interposed between the hoof and the coffin-bone, have chiefly to sustain, the violent concussion to which the feet are exposed when in rapid action, it will not appear surprising that intense inflammation of these parts sometimes ensues. Besides this, there is no structure in the body of the horse so exposed to other causes of inflammation as the foot. After the animal has been ridden far and fast, while he is reeking hot, he is occasionally plunged up to his belly in pond or river. Almost every groom immediately washes the feet of his horse; while very few of them take the pains carefully to dry the dripping members. What is so likely to follow as inflammation? A horse may have been travelling many a mile up to his coronets in snow; and when he arrives at his journey's end, instead of having the warmth gradually restored to his feet by half-an-hour's good hand-rubbing, he is put up to his knees in straw, or his legs are immersed in warm water. Is it not reasonable to expect that fever in the feet will follow this sudden change of temperature? In other cases, there may be a metastasis, or change, of the place of inflammation: the animal is recovering from inflammation of the lungs, and suddenly the feet are attacked; and that without any fault of the surgeon or the groom.

Inflammation of the laminæ can scarcely be mistaken. The horse is continually shifting his posture; yet without violent action. The feet are constantly moving; but they are moved as gently as possible. When the hand is passed down to them, the heat of the feet is evident enough. Generally, however, the horse, tired of shifting his place, and yet retaining the pain, lies down, and can with difficulty be induced to rise again. All the characteristics of general inflammation are exhibited. The pulse is hard and fast—the breathing sharp and quick—the skin harsh—the mouth hot—and the ears cold. But there are also signs which indicate the seat of the disease; for, besides the hoofs being unnaturally hot, the arteries of the legs throb; while the horse often points to his feet as the seat of pain, by looking at them, and resting his muzzle upon them.

The treatment of inflammation of the feet must be prompt.

Other inflammations may possibly, to a certain degree, brook delay; but here not a moment is to be lost. The in-

flammation must, if possible, be made to terminate in "resolution;" for, if the next process, and in some inflammations, a salutary one, commences—if pus is thrown out within the foot—the hoof will inevitably come off.

Without a moment's delay the horse must be bled, taking blood from the toe; but it is not always safe to wound a part during the existence of acute inflammation within it. The jugular may in that case be opened, and the stream allowed to flow till the pulse falters. If in five or six hours the pulse regains its inflammatory character, the coronet may be punctured in several places. A third bleeding, but of a local character, may be justifiable; yet it should be remembered that such excessive depletion retards the recovery, although it may check the primary disease.

A full dose of physic should be administered; and injections should be thrown up to quicken its action. Sedatives and febrifuges combined should also be freely given; not only to allay the general fever, but also to subdue the vascular excitement as well as to deaden the pain. The following ball should be repeated every second hour until the pulse intermits:—

Digitalis	1 drachm.
Opium	2 drachms.
Calomel	½ drachm.
Colchicum, in powder	1 drachm.
Nitre	3 drachms.
Emetic tartar	½ drachm.

Make in a ball with treacle.

We would desire to do something to the feet, but often the horse obstinately stands and will not suffer them to be raised or touched. If the shoes can be removed, they ought to be taken off; and the soles, should it be possible, be pared. The feet then should be put into poultices; or constantly fomented. If, however, the horse resists, these things had better not be attempted. Moisture is necessary to soften the horn of the hoof, so as to allow the inflamed parts to expand; and the low temperature is required to reduce the inflammation. Ice is of great service, if it can be constantly applied; but if only for an hour or two, with an intermission during the night, it does more harm than good. It should only be applied when the inflammation is high; but when that is the case, and the foot is very hot, a lump or two of ice constantly kept in the poultice will be of great service. Wet cloths can be placed upon the legs; and these can be kept constantly moist with the coldest water. The straw should be removed; and its place supplied with damp tan, or even sawdust, which may be moistened, and will be less heating to the animal's feet. The body should be clothed—a sheep's skin placed upon the loins; even if the horse will eat, only a few spare bran-mashes should be allowed; but water ought to be constantly before him.

When the first symptoms abate, the coronets and legs may be blistered; but this ought not to be done until the acute stage has passed. A seton, however, may at the commencement be placed in the chest; and often, when thrust through the diseased frog, seems to be attended with benefit.

The practitioner will carefully look out for the worst symptoms, as well as those of amendment. When separation begins to take place at the coronet, between the hoof and the hair, it indicates that the process of suppuration is established by exudation; and, that process once thoroughly set up, it will go on, in defiance of all that can be done to stay it. It will be useless further to punish the horse; but some relief may be obtained by surrounding the feet with poultices. Another hoof will in process of time be produced; but it will be smaller and weaker than the first, and liable to inflammation.

It is seldom that intense inflammation of any kind terminates without effecting some change of structure. Disunion to a very considerable extent between the horny and fleshy laminæ is a frequent consequence; and the result of that is, that the coffin-bone is no longer retained in its place; but sinks backwards and downwards. A malformation which no surgery can remove is the result. The sharp edge of the coffin-bone rests upon the sole, and often pierces through it. This is an incurable state of the foot. The attempt at forcing up again the coffin-bone betrays ignorance of anatomy, and of the progress of disease. When the coffin-bone begins to recede from the crust, the hoof follows it to a certain degree; but its structure limits this, and another process commences in order to fill up the vacuum: an unnatural quantity of plastic matter is secreted by the sensitive laminæ; the crust thickens, and inclines inward as the coffin-bone retires: it has sometimes been observed more than two inches in thickness. Nature is, as it were, attempting still to maintain the union between the parts.

What power applied to the sole can force back the coffin-bone, pressed upon and kept down by this thickness of horn? or what power can be applied to the external sole without bruising the internal and sensitive one? Lameness, which no art can relieve, ensues; it is lasting and incurable. The horse should be destroyed; but many animals in this state are forced to do slow work; and, by the whip, compelled to move in agony.

CHRONIC FOUNDER.

Lameness often appears in a chronic form, but is always distinguished, no matter in what state it may exist, by the peculiar manner of going which it induces. The horse with inflamed laminæ endeavours to cast all his weight upon the heels; in order to spare, as much as possible, the wall with which the diseased part is connected. The gait is peculiar, and the toes pointing upwards denote the condition of the animal.

Chronic laminitis may be the consequence of the acute disorder; more frequently it comes on gradually; and is at all times difficult to remove. Setons through the frogs, with repeated purgatives, and a course of alterative medi-

cine, have answered best, although too often this form of the disease resists every treatment.

Laminitis may appear in one or all of the legs.

Most frequently the two fore feet are attacked, and the animal then brings his hind legs under him, as much as possible, with the intention of taking the weight from the affected members. When only one foot is attacked, the other is always ultimately the seat of poignant lameness, and what once was the healthy limb becomes the most diseased; because the animal, to spare the lame leg, continually casts his whole weight upon the sound one. The horse with laminitis in one leg, should be destroyed. With all four limbs attacked he may recover, but when laminitis appears in one only, he has no chance of being relieved, and it is mercy to shorten his sufferings.

PUMICED FEET.

When, from inflammation, the sensible horny little plates which were separated by the heat and swelling do not unite again, their elasticity is lost, and the coffin-bone, no longer supported, comes down and renders the foot convex, or rounded outwards: this is a "pumiced foot." The crust of the hoof also falls in at the front, leaving a hollow of a remarkable character in the middle and front of the fore foot.

The treatment of this disorder can only be palliative, and no skill is competent to effect a re-union between the separated fleshy and horny leaves, or to restore to them the strength and elasticity of which they have been deprived, or to take up that hard horny substance which very speedily fills the space between the crust and the receding coffin-bone. Some efforts have been made to palliate the disease, but they have been only to a very slight extent successful. If horses, on the first appearance of "flat foot", were turned out in a dry place, or put into a box for two or three months, sufficient stress would not be thrown on the leaves to increase the evil, and time might be given for the growth of horn enough in the sole to support the coffin-bone; yet we much doubt whether these horses would ever be useful even for ordinary purposes. The slowest work required of them would drive the coffin-bone on the sole, and gradually the projection would reappear, for no power and no length of time can again unite the separated leaves of the coffin-bone and the hoof. All that can be done in the way of palliation is by shoeing. Nothing must press on the projecting and pumiced part. If the projection be not great, a thick bar shoe is the best thing that can be applied, but should the sole have much descended, a shoe with a very wide web, bevelled off so as not to press on the part, may be used. These means of relief, however, are only temporary, the disease will proceed; and, at no great distance of time, the horse will be useless.

SAND-CRACK.—SEEDY-TOE.—FALSE QUARTER.

Sand-crack is a well-named disorder. It is a solution of continuity of the horny fibres of the hoof in the direction of their growth, that is from above downwards. It is consequent upon a dry, brittle state of the hoof, and attacked the horses of the British cavalry and artillery when in Egypt to a great extent. These fissures are much more frequent upon the fore than the hind feet; but they are sometimes seen on cart-horses in front of the hinder foot, from the violent strain put upon this part in drawing heavy loads. They are mostly on the inner side of the fore foot, where the weakness of the quarters, when accompanied by brittleness, renders it liable to separation. As a sand-crack generally extends to the sensitive parts, it requires that the horse should be taken from work for a time. If the sand-crack shows no signs of active suppuration, although it have completely penetrated the horn, and a little blood or serous moisture shows itself at the edges, but only under the effects of motion, proceed to pare away the horn around it; and next, by means of a camel's-hair pencil, introduce within the edges a small quantity of the solution of chloride of zinc, as recommended for thrush. Bandage the hoof up moderately tight for two days, then again examine the fissure; when, if the oozing be altogether stopped, and no inflammation appear, proceed to draw lines of a moderate depth with a sharp firing-iron; one very little above the upper limit of the crack, another just beyond the lower limit also, and afterwards bandage as directed below. If preferred, these lines of separation may be made with a rasp, or fine drawing-knife; but the iron is best, as the seared line of distinction is stronger or more perfect, while the melted horn binds the edges together. But in case no moisture at all has appeared at the crack, then the insertion of any caustic matter is unnecessary, and the treatment for this kind of fissure is very simple. The measures necessary for such an injury will be as follows. The horse being shod with a bar shoe, and the hoof either pared away in a line with the crack; or otherwise the shoe chambered, so that the horn immediately under the fissure may not be pressed on: proceed to bandage up the foot, so as to fulfil the following intentions. Bring the divided edges of the fissure together, and completely retain them there, in such a manner as totally to exclude moisture from entering the opening. Whatever mode will answer these purposes best may be adopted: some shoemaker's wax, melted and applied all over the hoof, may be bound round, while yet soft, with some three yards of tape, fastened with a hard knot, the knot again covered with wax. Then smoothe off to an even surface, and rub over with lard or grease. In all cases of simple "crack," pare away the divided edges so as to cut out the crack, and then with a hot iron draw a line above and below the place where the division has been.

SEEDY-TOE.—We are indebted to Mr. Mayhew for the most lucid and practical notice of this variety of sand-crack.

It consists in a separation of the two layers of horn which compose the crust of the hoof. These layers have a separate origin. The outer, which is harder, darker, and thinner than the inner, is secreted from the coronet. The inner, which is softer, lighter in colour, and thicker, is built up by the sensible laminæ, elsewhere described. When the foot is sound and the animal healthy, these two are one substance, and together make the "hoof" to which the shoe is nailed. When overwork, interrupted or disordered secretion, or unobserved injury affects the functions of the parts, the mischief begins, and the two kinds of horn begin to separate, as the human nail does from the "quick" as it is popularly termed. This beginning is always at the front, hence the term "seedy-toe." On gently tapping a foot with this affection, a peculiar hollow sound is perceived if the mischief is extensive; and upon removing the shoe a cavity between the two layers of horn is visible, up which a piece of soft wood may be passed, to ascertain the depth of the lesion.

Treatment.—Put the horse in a loose airy box, and feed him with sound, dry, food, and give a mild dose of cooling medicine. Then gradually cut away so much of the outer wall of the hoof, beginning at the toe, as is clearly detached from the inner. Examine from time to time, and cut away the crust as far as the detachment, should it not have been already completely removed. The new solid hoof will be found to be growing downwards from the coronet, and in a month or two rapidly forming and hardening. Rest and good feeding accelerate the secretion; the cure is in most cases complete.

FALSE QUARTER

is the absence of a portion of the outer crust of the hoof, and the sensible laminæ are consequently exposed at the point where this deficiency occurs; the spongy inner wall, spoken of in the last article, alone covering them—an insufficient protection, and liable to painful injury and rupture, when bleeding and fungous growths follow; the latter being squeezed painfully between the edges of the remaining hoof, and laming the sufferer. The treatment of sand-crack is to be followed; but as the hoof will not grow again in false quarter, owing to a portion of the secreting coronary band being absent entirely, there is no remedy but a palliative. This is found in the bar-shoe (Plate XVIII. E), with a clip at the toe, the bearing of the foot being eased off at the place where the want of hoof is visible. Then place a piece of softened gutta percha of the required thickness to fill up the hollow between the foot and the upper face of the shoe, and mould it up the side of the injured part. This will keep on for several days, when it may be renewed. The part being thus relieved from pressure, the horse—at moderate labour, on fair ground—has long preserved his usefulness.

QUITTOR

is the serious consequence of a severe wound of the coronet. The injury, whether from an accidental tread, a side slip in frosty weather, or a blow upon the inside quarter, should be carefully and immediately attended to; because if sand or gravel get into the wound, it is likely to produce those deep-seated ulcerations and sinuses which constitute the disease called "quittor."

Quittor may also proceed from any wound of the foot; and there is much difficulty in the matter proceeding from ulceration finding its way from under the hoof, which covers the foot with its various complicated parts. The consequence is, it accumulates under the hoof until it has increased to such an extent that it forces itself out in all directions, separating the little fleshy plates from their connection with the horny ones of the crust; or disuniting the fleshy sole from the horny one; and in extreme cases eats its way deeply into the internal parts of the foot, forming pipes or sinuses which run in all directions.

Treatment.—White's practice is as follows:—The extent and direction of the sinuses must be ascertained with a probe. Then spread some powdered corrosive sublimate on pieces of paper smeared with lard; cut them into narrow slips, and twist them up to a point, insert them into the sinuses and push them to the bottom with the probe. It often becomes necessary to remove the greater portion of the horny sole, and thereafter restore the healthy state of the tender surface beneath. When this has been effected, the horn will quickly be reproduced. But in cases where much of the sole has been removed, it will take at least six months to restore fully the deficient part, so that the horse may again be subjected to labour.

If it is found, when the probe is inserted into the fistulous openings on the coronet, that the direction of the sinuses is backward, it is probable a cure may be effected; but if the direction of the fistulæ be forward, and more especially if the probe touches bone, the case is of great difficulty and doubt.

Mr. Spooner objects to White's "severe treatment" with caustics; and says there is danger of destroying the lateral cartilage and producing false quarter, in which we agree. Mr. Newport, in the "Veterinarian," reports cures by injecting a saturated solution of sulphate of zinc every twenty-four hours, poulticing also the foot. This is much less painful, and we believe quite as efficacious. In severe cases, setons from the lower parts of the sinuses and brought out at the heels, or between the bars and frog, are often serviceable.

CONTRACTION.

This disorder or defect, to which such prominence and space has been given in many veterinary works, especially Continental, may be conveniently referred to two articles: that on "Shoeing," and, in its chronic form, to Navicular-joint Disease. Contraction is produced by bad shoeing.

NAVICULAR-JOINT DISEASE.—"GROGGY" LAMENESS.

In stable-phrase, the horse afflicted with what some modern veterinarians have called "naviculartbritis," is not inaptly described by the grotesque term "groggy." The learned compound term "naviculartbritis"* is simply pedantic nonsense, and expresses what the disease is *not*.

The perforans tendon is inserted in the hinder part of the coffin-bone, and to reach that part it passes under the navicular-bone, which rests upon it, with the interposition of a small synovial sac, for facilitating the motion of the little bone upon the tendon. It is on the upper side only of this sac that the appearances of navicular disease are found after death. The sac above the navicular-bone, and between it and the lower bone of the pastern, is never found partaking in the disease.

The cause of the disorder, which is direct injury, is obvious. The immense weight of the animal has been placed with an impetus on some hard substance, which has taken the foot at a disadvantage, and bruised the navicular-bone—the first solid substance receiving the extreme concussion. True, that the fleshy frog and the body of the dense perforans tendon lie between the face receiving the blow and the injured bone; but the fleshy frog is, by nature, highly organised, and adapted by its secretory powers to recover its tone; while the tendon, less organised, is wonderfully elastic and yielding in the living subject. The bone, then, the first unyielding substance, receives permanent injury from the concussion, forced downward as it is from above by the coronary-bone. When the injury is recent, the horse is found simply lame. The foot is examined, but it is generally quite cool. There is no apparent reason to be assigned for the lameness; indeed, it often goes off, and the circumstance is forgotten. After a period of three to six months, during which unseen mischief has been going on, the lameness reappears. It is relieved, comes back again, and the horse is lame for life. As one foot is painful, greater stress is thrown upon the sound member, which is often injured in consequence, and hence both feet are found, in so many instances, with disease of the navicular-joint.

We may observe that a sure sequel,—we might rather say a symptom,—of navicular disease, is contraction. The foot is thrown out of use, or "saved by the animal," indeed he will be found "pointing" it in the stable; hence the quarters draw inwards, the heels narrow, the frog hardens and diminishes in size and plumpness, the sole thickens, the hoof itself grows higher, and is marked by ridges. In short, "contraction" marks navicular disease.

Navicular disease is of an ulcerative tendency, and most seriously affects the adult and the aged animal. Mayhew remarks,—which is confirmatory of the view we have already taken,—"the foot in the first instance exhibits no heat, and in the after stages becomes no more than warm. Moreover, the consequences of this disease are absorption, which it takes years to effect; not deposition, which is accomplished in a few days. All internal structures of the foot lessen, till the hoof becomes visibly small and contracted; for it is a law in nature that, in the living creature, the contents should govern the covering. Thus, the brain controls the skull; the lungs regulate the chest, &c., &c.' With these views the treatment of Mr. Mayhew corresponds, and has our fullest assent.

Feed liberally on crushed oats and old beans. Soak the foot in hot water for one hour every night for fourteen days; put tips on the hoofs, which part smear over with animal glycerine. Put the feet in a sponge-boot (see Plate XIX. L), and wrap the shank in flannel. Remember Professor Coleman's "remedy"—a frog-pressure shoe—is the provocative of the disease, if not often the cause of its incurable aggravation. A leather sole, applied when the horse is shod, is of the utmost importance to his more permanent utility. Never use clay as a stopping, as the cold is apt to yet further enfeeble parts already deficient in blood-stimulus. Neurotomy, in extreme cases, is resorted to. It affords in these cases the only chance of the horse being serviceable for a time. Of course it does not cure the disorder, but it destroys sensibility. Hence, the animal often ruptures the tendon, or fractures the bone by a violent contact of the insensible foot with the ground. The animal must then be destroyed.

TREAD.

This, which often results in quittor, will be noted under disease of the hinder feet, in which it is more frequent; and see SPEEDY CUT and OVERREACH.

PUNCTURED SOLE, OR WOUNDED CRUST.

The sole is obviously very liable to wounds by nails, flints, pieces of glass, and the like. Frequently too, but not so often as in former times, the laminæ are wounded by the nail in shoeing; or if the nail does not penetrate through the internal surface of the crust, it is driven so close to it that it presses upon the fleshy parts beneath, and causes irritation and inflammation, and at length ulceration. When a horse becomes suddenly lame, after the legs have been carefully examined and no cause of lameness appears in them, the shoe should be taken off. In many cases the offending substance will be immediately detected, or the additional heat felt in some part of the foot will point out the seat of injury; or, if the crust be rapped with the hammer all round, the flinching of the horse will discover it; or pressure with the pincers will render it evident.

When the shoe is removed for this examination the smith should never be permitted to wrench it off, but each nail should be drawn separately, and examined as it is drawn, when some moisture appearing upon one of them will not unfrequently reveal the spot at which matter has been thrown

* Inflammation of the navicular joint. *Navicula* (Lat., *navicula*, a little boat) *arthron* (Greek, a joint), and *itis*, the affix for inflammation.

out. In the fore-foot the injury will generally be found on the inner quarter, and on the hind-feet near the toe, these being the thinnest parts of the fore and hind-feet.

Sudden lameness occurring within two or three days after the horse has been shod, will lead us to suspect that the smith has been in fault; yet no one who considers the thinness of the crust, and the difficulty of shoeing many feet, will blame him for sometimes pricking the horse. His fault will consist in concealing or denying that of which he will almost always be aware at the time of shoeing, from the flinching of the horse, or the dead sound, or the peculiar resistance that may be noticed in the driving of the nail.

When the seat of mischief is ascertained, the sole should be thinned round it; and, especially at the nail-hole or the puncture, it should be pared to the quick. The escape of some matter will now probably tell the nature of the injury, and remove its consequences. If it be puncture of the sole by some nail, or any similar body picked up on the road, all that will be necessary is a little to enlarge the opening, and then to place on it a pledget of tow dipped in Friar's balsam, and over that a little common stopping. If there be much heat and lameness, a poultice should be applied.

The part of the sole wounded and the depth of the wound must be taken into consideration. A deep puncture towards the back part of the sole, penetrating even into the sensible frog, may not be productive of serious consequence. There is no great motion in the part, and there are no tendons or bones in danger. A puncture near the toe may not be followed by much injury. There is little motion in that part of the foot, and the internal sole covering the coffin-bone will soon heal; but a puncture about the centre of the sole may wound the flexor tendon where it is inserted into the coffin-bone; or may even penetrate the joint which unites the navicular-bone with the coffin-bone; or pierce through the tendon into the joint which it forms with the navicular-bone; and a degree of inflammation may ensue, which, if neglected, may be fatal. Many horses have been lost by the smallest puncture of the sole in these dangerous points. All the anatomical skill of the veterinarian should be called into requisition, when he is examining the most trifling wound of the foot.

If the foot has been wounded by the wrong direction of a nail in shoeing, and the sole be well pared out over the part on the first appearance of lameness, little more will be necessary to be done. The opening must be somewhat enlarged, the Friar's balsam applied, and the shoe tacked on, with or without a poultice, according to the degree of lameness or heat, and on the following day all will often be well. It may, however, be prudent to keep the foot stopped for a few days. If the accident has been neglected, and matter begins to be formed, and to be pent up and to press on the neighbouring parts, the horse evidently suffers extreme pain, is sometimes scarcely able to put his foot to the ground, and much matter is poured out when the opening is enlarged, further precautions must be adopted. The fact must be recollected, that the living and dead horn will never unite, and every portion of the horny sole that has separated from the fleshy sole above must be removed; and, as directed in SEEDY-TOE, &c., the separation must be followed as far as it reaches. Much of the success of the treatment depends on this. No small strip or edge of separated horn must be suffered to press upon any part of the wound. The exposed fleshy sole must then be touched, but not too severely, with chloride (butyr) of antimony, some soft and dry tow placed over the part, the foot stopped, and a poultice placed over all if the inflammation seems to require it. On the following day a thin pellicle of horn will frequently be found over a part or the whole of the wound. This should be, yet very lightly, touched again with the caustic; but if there be an appearance of fungus sprouting from the exposed surface, the application of the butyr must be more severe, and the tow again placed over it, so as to afford considerable yet uniform pressure. Many days do not often elapse before the new horn covers the whole of the wound. In these extensive openings the Friar's balsam will not often be successful, but the cure must be effected by the judicious and never too severe use of the caustic. Bleeding at the toe, and physic, will be resorted to as useful auxiliaries when much inflammation arises.

In searching the foot to ascertain the existence of prick, there is often something very censurable in the carelessness with which the horn is cut away between the bottom of the crust and the sole, so as to leave little or no hold for the nails, while some months must elapse before the horn will grow down sufficiently far for the shoe to be securely fastened.

Youatt adds:—"When a free opening has been made below, and matter has not broken out at the coronet, it will rarely be necessary to remove any portion of the horn at the quarters, although we may be able to ascertain by the use of the probe that the separation of the crust extends for a considerable space above the sole."

CORNS.

A corn in the human subject is a very different thing from that of the horse, although both arise from pressure. In the horse they are ordinarily seated in that part of the horny sole which is situated between the inner quarter and the bars. When violent pressure is applied, even for a short time, it produces inflammation and extravasation from the secreting sole, the vessels of which becoming ruptured, a "sappy" or "bleeding" corn, called a "new corn," makes its appearance, presenting a blood-marked spot. The suppurating corn we will notice presently. The sensible sole thus injured, unless immediately relieved and not again subjected to pressure until perfectly reinstated, takes on a permanently diseased state. Ever after, instead of perfect horn, a morbid secretion is deposited, and in some cases a semi-purulent matter, or pure pus, fills up the place, the inflamed vessels retaining an exquisite sensibility.

Corns are usually found upon the inside of the foot, because the inner wall and heel are weaker, and also bear a greater portion of weight than the outer. The coffin bone not reaching to the heels, is the reason why these structures are the seats of corn, for the coffin bone is the active agent in its production. This bone is moved upwards and downwards at either end, as the weight rests upon one extremity or the other of its articular surface. It is the wings of the coffin-bone which cause corns. The descent of these wings squeezes the sensitive sole between them and the shoe in open feet, the shoe in this case being the passive agent; but in the contracted foot, the high, thick, hard, and unyielding sole becomes the passive agent, and between that and the wing of the coffin bone the sensitive sole is bruised. Too little horn subjects the feet to corns, because a slight pressure will indent weak feet. The best shoe, suffered to remain on a foot too long, will produce a corn or corns. Neglecting to prepare the foot for the shoe is also a fruitful source of corns; for in preparing a foot, this angular portion should be so pared as to remove it from contact with the iron, without weakening the horny covering of the sensible sole. Another common cause is the neglect of removing or renewing the shoes at proper intervals. When a shoe has been long worn, the growth of the hoof carries it forwards, by which the parts originally opposed to the heels are carried beyond them, and now press on the sole, often becoming indented within the line of the crust, and producing a most injurious pressure. Sometimes, also, either from the original form of the shoes, or by long wear, they become loose or "springy" at the heels, as smiths call it; in which case gravel is apt to make its way between the shoe and foot, which, by the pressure of the heels during action, is indented into the substance of the horn; other gravel is received in the same manner, which presses still onward, until at last it harms the sensitive part of the sole. Extravasation of pure blood ensues, and forms a corn, or it may proceed to suppuration.

Corns, when new, are deeply seated, and of a bright crimson colour, requiring much digging with the drawing knife to be found. When old they are black and near to the lower surface of the sole, which has then only to be scraped clean to perceive them. A corn, however, should be followed with the paring knife to its source in the sensitive part; for horses with old corns only go well when fresh shod and newly pared; and as soon as the portion of sole between the bars grows to a level with the surrounding horn, the sensible sole receives a fresh bruise, and lameness again appears.

Treatment.—When a corn of moderate extent first appears, it is not difficult by proper means to remove it completely: but when it has existed some time, the injured part becomes weakened, and the diseased action established. As soon, therefore, as it is discovered, the cure should be immediately attempted; first, by removing the shoe, then with a fine drawing-knife cutting away every portion of horn around; avoiding, however, wounding the sensitive sole underneath. If any contraction of the heels be present, the sole should be thinned till it yields to pressure of the thumb, and the blood appears like dew upon the surface. A unilateral shoe should be then applied, chambered opposite the weak part. Every third week remove the shoes, and pare the horn away from the seat of corn. In this way corns may be cured at their outset. But having become habitual and permanent, a palliative treatment only can be pursued. In the first place, the pressure of the horn must be guarded against by a regular and frequent paring out of the sole; and if the hoof be very strong, and at all disposed to contract, the quarters also should be attended to, and not allowed to become too thick. We have also in very strong feet found the short shoe or tips sometimes of the greatest possible service. To a weak foot, a chambered shoe is preferable. When the weakness is very considerable, or the corn a very bad one, a bar shoe is the most proper support; more particularly remembering, in these very aggravated cases, to remove occasionally all the surrounding horn likely to press on the injured part. Animals that could not wear tips or bear a bar shoe upon the foot, have gone well when shod with leather, and with a shoe shortened at the quarter, which is the seat of corn. By regularly attending to this, horses, before useless, have been able to perform work with comfort to themselves and satisfaction to their owner. In slight cases of corn, the shoe proper to be used is one of rather more substance than common, with the web a little wider than usual, and its width equal throughout, that is, as wide at the heels as the toe; it should also extend rather farther back than it generally does, and present a perfectly level surface to the sole. This affords ease and protection: future pressure must be avoided by keeping the seat of corns clear from offending horn.

Thrush. See Diseases of the Hinder Feet, *post*.—When thrush occurs in the fore-feet it may be considered indicative of navicular disease: by inserting a piece of tow in the suspected frog, the characteristic odour will be at once discovered.

CANKER.

Canker is distinguished by the growth of a fungoid substance, instead of healthy horn, over the surface of the soft parts of the sensitive frog and sole, exuding a thin and offensive discharge, which has the property of decomposing horn.

In mild cases every portion of diseased horn must be removed; otherwise the confinement of the fungus will not only exceedingly torture the horse, but, by the irritation which it produces, will prolong the disposition to throw out the unhealthy substance. The owner must not be terrified at the extent to which the foot is laid bare: not the slightest good can be effected while there is any portion of fungus confined.

Having laid the unhealthy part perfectly open, the

practitioner will consider what kind of surface it presents. If there is much fungus, he will probably resort to the knife. The fungus must be destroyed, and it cannot be done too soon, or with too unsparing a hand. A level surface being thus produced, the muriate of antimony may be lightly applied over the whole of it.

There is no disease for the relief of which there are more numerous remedies, all strongly recommended, than for canker. All and each of these will sometimes be successful; but on other occasions every one will fail. Solutions of the various caustics; the different acids, either diluted or of the full strength; powders in which the sulphates or chlorides are mingled with chalk, bark, or charcoal, and compounds of all kinds of things have their advocates. Nitric acid and tar is in great favour with some parties. Others employ verdigris, mixed with tar and treacle, or honey, to which is often added a portion of sugar of lead. In fact, the recipes are too numerous to be repeated; but they all have one and the same intention, namely, to act as a caustic and astringent; reducing the fungus, and stimulating the part to take on a healthy secretion. No recipe can strictly be given in a case of this kind. The strength of the agent should be suited to the state of the disease, and in this particular no two cases will be alike. Let, therefore, the judgment be exercised; and at the same time let it be remembered that it is better to change the application than to continue its use when it appears to produce no marked or beneficial effect. A rapid succession of different agents employed in different forms will often do that which a pertinacious adherence to a favourite nostrum will too frequently fail to accomplish. When not judiciously employed, the more potent remedies for canker not only destroy the surface to which they are applied, but deeply and injuriously eat into the foot. The whole cankered surface being exposed, sprinkle it with the following powder:—

Chloride of zinc	1 drachm.
Resin	4 ounces.
or,	
Chloride of lime	1 ounce.
Alum and resin	2 ounces.

Observe, neither of these powders will keep dry, and, therefore, must be made fresh for use.

A layer of lint and dry soft tow must be spread over the whole of the exposed surface, and made firmly and equally to press upon it by thin strips of spring-steel slid under the shoe; the horse must be put into a thoroughly dry box, from which the urine will immediately run off, and where no kind of moisture can reach the diseased part. A cankered foot, however, must not be dressed too frequently. The two or three first dressings may be given on succeeding days; but, when the fungus has been in some degree subdued, the bandages should only be removed every fourth day, or even once a week. Every time that the foot is exposed it should be carefully examined, in order to see that there is no portion of unhealthy horn; for if there is, it must be immediately removed. The appearance of the exposed surface must also be inspected with great attention. Fresh fungus will require a fresh application of the powder, or possibly of the knife. Every little pellicle of skinny matter or soft and porous horn must also be pared away: the healthy horn which has been secreted must be lightly run over with the knife; and then the butyr of antimony applied to the whole of the surface; the quantity used on the different portions of it varying with the progress towards a cure. After this the foot must be bound up as before.

A few days having passed—if the sprouting of the fungus has been quite checked, but yet the horn does not grow so healthily as could be wished,—a pledget of tow may be dipped in the solution of the chloride of zinc, and spread over that portion of the foot, with more dry tow placed upon that. A sudden change will thus often be effected; but, should not this take place to the desired extent, try muriate of antimony, laid on with a brush.

The secret of the treatment of canker consists in the use of superficial caustics or stimulants; pressure as firmly and as equably as it can be made; and the careful avoidance of greasy applications or of moisture, either applied immediately to the foot, or suffered to penetrate to it through the dressing. The solution of chloride of zinc is an exception to this last rule, for it corrects the exudation from the foot and stimulates the sensitive parts to the secretion of healthy horn, while the small quantity that need be used will be far from supplying constant moisture.

If wet can certainly be avoided, a horse with a cankered foot will, immediately after the first apparent growth of good horn, do much better at work than standing idle in the stable.

As canker, however, is a constitutional disease, local applications must not be singly depended upon. It is often connected with grease (see GREASE), and with grossness of body. The condition of the horse must be considered, and measures adopted to improve the system.

CHAPTER XXXIII.

LAMENESSES, AND DISEASES AND INJURIES OF THE HOCK, LEGS, AND HINDER FEET.

THE HAUNCH.—THE STIFLE.—STRAIN OF THE "ROUND-BONE."—DISLOCATION AND FRACTURE OF THE PATELLA.—ANCHYLOSIS.

THE bones of the haunch and hinder leg are described, *ante*, pp. 183, 184, and the muscles, pp. 190, 191. The Plates (X. and XI.) of THE FOOT AND NEUROTOMY, and Plate IX., representing the hinder extremities and their diseases, should be referred to.

The haunch consists of three bones: the ilium, which is joined to the spine, and, when projecting at its wings, produces the appearance called "ragged-hip;" the ischium, or hip-bone, behind and below the ilium, and which projects on each side under the tail; and the pubis, which unites the two last-named.

Fracture of the projecting part of the ilium or haunch-bone occasionally occurs. When it is of a simple kind, adhesive inflammation is set up, and the parts re-unite; owing, however, to the action of the muscular fibres inserted in the loosened portion, the piece is sometimes drawn aside, and no surgical application can keep it in its proper position. In these cases the horse is what is called "let down in the hip."

Although the "stifle," in comparative anatomy, corresponds with the "knee" of the human subject, yet the different proportions of the bones of the horse cause the parts below it to be called the "thigh," instead of the "leg."

As in old books of farriery "chest-founder" was the cloak for almost every obscure lameness in the fore-limbs, so to a "strain of the round-bone" or of the "stifle," the lamenesses of the hinder-limbs were conveniently referred. Violence, doubtless, occasionally injures the ligaments, especially of the inside of the thigh. The deep situation of the part presents difficulty. Cold applications, where tumefaction and heat are present, followed by stimulant fomentations, a mild blister frequently repeated, and local bleeding may be tried with good effect. What is called "lameness in the hip" proves, however, in most cases, on careful examination, to have the "hock" for its true seat.

Strain or Injury of the Ligaments of the Stifle, or Patella, is shown by the difficulty the horse feels in putting forward the hind leg; also by swelling and tenderness of the part.

The TREATMENT should consist of bleeding, either generally or from the thigh; warm fomentations to the part, followed by cold lotions; and, if the lameness continue, the joint should be blistered, or setons inserted over it.

Dislocation, or Fracture, of the Patella.—This injury, also included under "lameness in the stifle," is often mistaken for "cramp," as farriers term it. The signs of a dislocated patella (knee-pan or whirl-bone) are the rigid thrust of the hind-leg backwards, where it remains fixed; the head is erected, and the muscles quiver, while the pastern of the injured leg is bent upwards. An unusual swelling will be perceived at the outer and lower part of the buttock. By grasping the condyles (knobs) of the thigh-bone, the displacement of the patella can be felt, and the absence of the protuberant patella from its proper position, and its shift to the outer edge of the thigh, are visible, though not so to the unskilful observer in coarse, fleshy horses.

The bone, is always dislocated outwards; the form of the lower end of the femur, the strength of the ligaments, and the power of the muscles on the outward side, all prevent the bone from being dislocated inwards. It sometimes happens from weakness, when mere motion will be sufficient to reduce it. Nevertheless, in other instances, surgical aid is needed. In such cases proceed as follows. In the first place, have the leg drawn forward, if necessary, by means of a rope passed over a beam or rafter, and around the fetlock; then push violently against the dislocated bone, the position of which will be accurately told by the swelling it produces. It will generally fly back, with some noise; and having got it in its proper situation, partially release the drawn-up leg, and have an assistant to hold the bone justly, by pushing against it for several hours; afterwards blister the part, to render the animal averse to using it.

Fracture of the Patella is occasioned by a violent kick or blow. When the action of the tendons inserted into its surfaces disunites the fractured portions beyond the power of veterinary surgery to bring them together, the limb is useless, having lost the antagonism to undue flexion. It will be, therefore, of no avail to attempt a course of treatment.

In human surgery, the treatment of dislocations and fractures forms a most important branch of practice. In the horse, though these separations sometimes occur, the immensity of the muscular resistance is such, and our surgical machinery at present is so little calculated to make resistance to the power thus exerted, that the subject may be briefly dismissed in such a treatise as the present.

ANCHYLOSIS (STIFF AND BENT JOINT).

When bony matter is deposited within or upon the cartilaginous extremities of bones, or upon the capsular and investing ligaments, so as totally to destroy the motion of a joint, it is called anchylosis, from the Greek word *ankyloō*, to bend. This tendency is remarkably shown in the horse. Few of the joints of the animal escape anchylosis, as none of his bones are out of the ordinary reach of bony deposit. The joints of the spinal column, particularly of the dorsal and lumbar vertebræ, are frequently the seat of this affection, which seems to be occasioned by heavy weights. It is anchylosis whicl. renders old horses stiff, and in some instances unwilling to lie down, or when down averse to rising up again. When anchylosis of the knee or hock occurs, it usually follows injuries extending into the cavities of those important joints. The treatment is of course merely palliative, promoting absorption where possible by iodine and stimulants, and soothing pain, where present, by wet bandages, warm and cold.

THE HOCK.

STRAIN OF THE LIGAMENTS.—CURB.—ENLARGEMENT OF THE HOCK.—CAPPED HOCK.—BOG-SPAVIN, BLOOD-SPAVIN, BONE-SPAVIN.—THOROUGH-PIN.—WINDGALLS.

Strain of the Ligaments of this important joint is by no means unfrequent, and, as we have said before, the injury is supposed to be higher up. If taken early, the horse rested, and the case treated on the principles before laid down, we shall generally succeed in effecting a cure. When inflammation can be detected at the hock, bleeding, from the thigh or saphena vein, will effect great relief.

By violent and long-continued exertion of the hock joint, so great is the consumption of synovia, in consequence of its peculiarly extensive motion, that the synovial membrane becomes at length incapable of supplying any more, and in this exhausted state is itself the subject of friction. The joint then becomes inflamed and ulcerated, and the lameness is "past all surgery."

CURB.

This, which is, in fact, extension of the ligaments of the hock, is usually brought on by some violence offered to the sheath of the perforans tendon, passing downwards at the back of the hock. It is often the effect of leaping, rearing, kicking, &c., and as such is usually sudden in its appearance. A kind of predisposition to curbs from conformation is apparent in horses with "sickle hocks." For the confirmation of this fact the public are indebted to the dissections and observations of Mr. W. Percivall, a writer whose diligence and research cannot be too highly commended. The lameness arising from curbs is not, in general, severe: occasionally, however, it may and does prove considerable. We have already noticed under Ligaments the ring-like bands which, in the horse, tie down the tendons at the joints; these, by sudden extension, are injured, and hence a curb. An enlargement at the back of the hock, three or four inches from the point (see Plate IX., Fig. 5), is visible. Horses are found to "throw out" curbs after a severe race, an extraordinary leap, a fast gallop over heavy ground, or a sudden pull-up. Youatt thus describes the usual treatment of curbs:—

"The first object in attempting the cure is to abate inflammation, and this will be most readily accomplished by cold evaporating lotions, frequently applied to the part. Equal portions of spirit of wine, water, and vinegar, will afford an excellent application. It will be almost impossible to keep a bandage on. If the heat and lameness are considerable, it will be prudent to physic the horse, and to bleed from the subcutaneous vein. Whether the injury be of the annular ligament, or the sheath of the tendon, more active means will be necessary to perfect the cure. Either a liquid blister should be rubbed on the part, consisting of a vinous or turpentine tincture of cantharides, and this daily applied until some considerable swelling takes place, which should be allowed to subside, and then the liniment again resorted to; or, which is the preferable plan, the hair should be cut off, and the part blistered as soon as the heat has been subdued. The blister should be repeated until the horse goes sound, and the swelling has disappeared. In severe cases it may be necessary to fire, but we cannot recommend the indiscriminate recourse to the hot iron in every case of curb, and we would uniformly give a fair trial to milder measures. If the iron be used, the strokes should be in straight lines.

"There are few complaints in which absolute and long-continued rest is more requisite than in curb. An injury so serious leaves the parts very materially weakened, and, if the horse be soon put to work again, the lameness will frequently return. No horse that has had curbs should be put even to ordinary work in less than a month after the apparent cure, and even then he should very gradually resume his former habits.

"A horse with a curb is manifestly unsound. A horse with the vestige of curb we should regard with much suspicion, or generally condemn as unsound; for although the neighbouring parts may have accommodated themselves to the slight enlargement that remains, they are not in their natural situation, and have lost a portion of their natural strength. Some latent disposition to relapse may continue, which extraordinary exertion may rouse to action; and, besides this, it should be remembered, that curb is an hereditary complaint, and that there may be some constitutional weakness of these parts."

ENLARGEMENT OF THE HOCK-JOINT.—CAPPED HOCK.

The point of the hock is sometimes swelled, and a soft fluctuating tumour appears. This is an enlargement of one of the mucous bags (bursæ mucosæ), which assist the

motions of the os calcis, and surround the insertion of the tendons in the point of the hock. It is very unsightly, and sometimes becomes of a great size, particularly when it is occasioned by the practice of kicking; in which case not only is there an immense increase of the secretion, but the integuments also thicken, and accumulations take place about the capsule, which become of semi-cartilaginous consistency. It has been punctured occasionally with partial success, and the contents have been drawn off by setons, but the inflammation raised has endangered life. It has also been opened, and its contents, which in the enlarged state are partly fluid and partly semi-solid, evacuated, but after-irritation has endangered life; and no great advantage has been gained, for the incision made has united, and the sac has filled again. Hand-rubbing, almost continuously applied, has done more good with regard to diminishing the size, than all the puncturing, blistering, and firing put together. The hand is also assisted by an India rubber bandage made to fit the part, and worn at such times as the friction is stayed. When, however, opening the sac is insisted upon, it is best to dissect away the lining membrane, or to destroy it by the application of caustic.

It is exceedingly difficult to apply a bandage; and puncturing the tumour, or passing a seton through it, would be a most injudicious and dangerous practice. Blisters, repeated as long as may be necessary, are the usual means employed. Sometimes the tumour will disappear of itself, but at others it will attain a very large size, or will assume a callous structure that will bid defiance to all curative appliances.

BOG-SPAVIN.—BLOOD-SPAVIN.—BONE-SPAVIN.

Bog-spavin is the commonest form among young horses, chiefly at the time of breaking.

Bog-spavin may be termed "wind-gall" of the hock. From over exertion, the bursæ mucosæ, which lubricate this complicated joint (see Plate IX. Fig. 4), become inflamed and enlarged; hence the subcutaneous vein, which passes over these bags on the inside of the hock, is compressed, and the blood interrupted in its flow; blood-spavin is thus produced, but bog-spavin may exist without it. Blood-spavin is a mere fanciful distinction, which may be dismissed without further comment.

Spavin and splint in their most advanced stage are the conversion of ligament into bone; yet when spavin is found, though it may be small, no one can tell where it may stop. It is alarming to find them in young horses; but in old animals they are often perfected, and will not only grow no bigger, but often decrease, and become partially absorbed. The bones locked together by exostosis never become loosed, though the swelling may disappear. As a general rule, we would say, when spavin does not produce lameness, let it alone. However unsightly, do not risk setting up a new action where the disease is quiescent.

The TREATMENT of bog-spavin may be briefly given in the words of Youatt, to which we will append the shrewd and lively observations of Mr. Mayhew:—"Uniform pressure will sometimes cause the absorption of the fluid contained in cysts or bags like these, but in a joint of such extensive motion as the hock, it is difficult, or almost impossible, to confine the pressure on the precise spot where it is required; and could it be made to bear on the enlarged bag, it would likewise press on the vein, and to a great degree hinder the passage of the blood, and increase the dilatation below the obstruction. The old and absurd method of passing a ligature above and below the enlarged portion of the vein, and then dissecting out the tumour, is not, in the advanced stage of veterinary science, practised by any surgeon who has a regard to his reputation. The only method of relief which holds out any promise even of a temporary success, is by exciting a great deal of inflammation on the skin, and thus rousing the deeper-seated absorbents to carry away the fluid effused in the enlarged bag. Repeated blisters then will afford the fairest prospect of removing the tumour, or firing may be tried; but in the majority of cases, the disease will bid defiance to all our means, or will return, and baffle our hopes when we had seemed to have been accomplishing our object."

Mayhew's advice is worth the space we here give, as a contrast of the "difference of doctors." He says:—"The regular treatment is to purge, give diuretics, bleed, blister, rowel, seton, periosteotomy, neurotomy, fire, and punch. The bleeding may be great or small, local or general; the blister, mild or severe, applied over half the joint at a time, or rubbed in after the limb has been scored by the iron. Rowels and setons may also be simple, or they may be smeared with irritants, which are made of different strengths. Periosteotomy may be single or may be made compound by the addition of a seton and a blister. Neurotomy is very unsatisfactory, and very often a most tedious affair when employed to cure spavin. The fire may be down to the true skin; it may be through the skin and on to the tumour; or it may be inflicted by means of a blunt-pointed instrument, which, when heated, burns its way into the bone itself. The punch also admits of variety; it may be with or without a blister; it may be holes made in a living body, which holes are filled with a corroding paste. Or the operation may consist of the exposure of the bone, and cutting off the offending portion with a saw, or knocking away part of a breathing frame with a chisel and a mallet!

"All these tortures have for centuries been inflicted; they have been practised upon thousands of animals, only for men at this day to doubt whether the cruelty has been attended with the slightest service. Flesh, as capable of feeling as our own, has been cut, irritated, burnt, and punched for hundreds of years, and now, at the twelfth hour, such operations are not discarded, but their efficacy is mildly questioned.

"Reader, if you have a horse which is lame from spavin, and your calculations tell you it will not pay to nurse the cripple, have it slaughtered. Do not consent to have it tortured for a chance; do not sell it to the certainty of a terrible old age and of immediate torment.

"The cure for spavin is good food and rest,—perfect rest. Such rest or stagnation as a healthy horse submits to in the stable. This enjoined for months, with the occasional application of a mild blister, with the best of food to enable nature to rectify man's abuse will do more good, cost no more money, and occupy no more time than the devilries usually adopted, and very often almost without success. As an additional motive on the side of humanity, it may be stated that the horse suffers much more when disease is located in the hind, than when it is exhibited upon the fore-legs. The ravages which in the first case would endanger the life, in the last would be borne with comparative tranquillity. The posterior parts of the animal seem to be endowed with exquisite sensibility; yet, in spite of this, the so-called cure for spavin and the boasted treatment of ages only consists in torturing the hocks of the animal.

"While inflammation exists, apply poultices, and well rub the part with a mixture of belladonna and of opium; one ounce of each drug rubbed down with one ounce of water. Or place opium and camphor on the poultices; or rub the enlargement with equal parts of chloroform and camphorated oil. The pain having subsided and the heat being banished, apply with friction some of the following ointment. It may reduce the disease by promoting absorption, at all events it will check further growth by rendering further deposit almost an impossibility:—

Iodide of lead	1 ounce.
Simple ointment	8 ounces.

Mix.

Bone-spavin is an exostosis, or deposit of bone on the inner side of the hock, which, when low, is called by the horsedealer a "jack;" it corresponds to splint in the fore-leg, and originates at the head of the splint bone. The "high-spavin" is the most mischievous, as it locks the joint, or renders the motion of the hock excruciatingly painful, the tendons having to move over the rough bony deposit. The mode of lifting the hind leg in the trot will show spavin; the foot, instead of being freely raised from the ground and slightly rotated outwards, drags, with the toe pointed stiffly forward, describing a much less curve in its passage through the air. The toe being thus brought forward, is worn blunt with the shoe. Look then at the horse's shoes (if worn), and see the horse when first brought out of the stable; when warm, the stiffness, in less severe cases, will disappear. Horses with "sickle" or "cow-hocks," *i.e.*, with the great joints of the hinder-limbs approaching each other like the knees of a knock-kneed man, are most liable to spavin, thorough-pin, and splint. On Plate IX, Fig. 5, will be seen represented the locality of spavin and other diseases of the hinder extremity.

THOROUGH-PIN.

This is of the nature of bog-spavin, and allied to the "wind-galls" of the farrier. We have more than once mentioned the bursæ mucosæ as the seat of disease; there are two situations in which thorough-pin appears, one rather above the point of the hock, the other below it. Thorough-pin derives its name from the circumstance of its appearing as a round swelling on *both sides of the hock*, between the flexor of the tendons of the foot and the extensor of the hock, and is a sign of heavy work, though often not accompanied by decided lameness. Thorough-pin, when not interfering with work, is not unsoundness, though a serious diminution in market value.

Thorough-pin and bog-spavin often exist together, and then the fluid can be pressed from one to the other, though not readily. These thorough-pins are generally produced by the sudden violent straightening of the limb, whilst bog-spavin is probably caused by its sudden bending.

Mr. W. Spooner says:—"I have, however, known a troublesome and obstinate lameness produced from the upper thorough-pin, or perhaps rather from some strain of the tendon which attended it. It gave way, however, at length, to a seton placed over the part,—not through it. I have also succeeded in removing a very large thorough-pin in the lower situation, in a high-class race-horse, by the long-continued application of equal parts of iodine and mercurial ointment, previously, however, stimulating the part with a mild liquid blister. The subject was a race-horse of great value, and the thorough-pin entirely disappeared in about ten weeks. In some cases the synovial fluid in the thorough-pin coagulates, and becomes organised and firm."

THE HIND-LEGS, PASTERNS, AND FETLOCK-JOINT.

MALLENDERS AND SALLENDERS.—SWELLED LEGS.—GREASE.—WEED.—SPRAIN OF THE FETLOCK-JOINT.—HALTER-CAST.—TREAD.—RINGBONE.—WINDGALLS.

Mallenders and Sallenders.—On the inside and front of the hock, or a little below it, is often found a scurfy eruption called *Sallenders;* and a similar one on the back part of the knee bears the fantastic name of *Mallenders;* words of which the derivation is unknown. Their treatment is identical, and will be found, *ante*, p. 331, under DISEASES OF THE SKIN.

SWELLED OR "FILLED" LEGS.

This common grievance of the stable is commonest among coarse and heavy horses; though the exactions of the animal's hard taskmaster, man, render the best-bred ones subject to the visitation. The hinder-limbs, below the hock, are the most affected, though the fore-legs, below the knee, come in the same way to grief from undue exertion. Debility is also the constitutional cause of swelled legs. Some

horses are liable to swellings in the limbs in the spring and fall of the year. This can be accounted for by the principal activity of the circulation being employed in preparing a fresh covering of hair at those periods, so that the vital influence in the extremities is somewhat diminished; and the same cause produces swellings in the legs.

Frequently, when a horse seems to be affected with no other disease, the hind-legs will suddenly swell to a very great extent from the hock to the fetlock, in some instances even from the stifle downwards. This is accompanied by heat and tenderness of the skin, inducing lameness of a peculiar character. A quickened and hard pulse are usual concomitants of this seizure, with a considerable degree of fever. This complaint is acute inflammation of the cellular substance of the limbs, sudden in its attack and violent in its degree, consequently attended with the secretion of fluid in the cellular tissue. Young horses, and those which are over-fed, with little exercise, are most liable to be thus attacked, and without having had previous inflammation.

Swelling of the legs is common to horses which are used for hunting and pleasure only. This, it will be seen, arises from irregularity in their habits; one day having a more than sufficient exercise, and probably standing for days or weeks in a stable, and only walked out or trotted for a short distance. In such cases the limbs should be well hand-rubbed, to stimulate the vessels. Bandaging judiciously is advisable: but do not allow the groom to administer diuretics, as he says, to "cool the animal;" the remedy is ruinous to the constitution, and aggravates the tendency to "filling."

The most troublesome, as well as the most frequent swelling in the limbs, is that caused by inactivity, from high feeding, and want of due exercise. One kind is accompanied by local or comparative debility, or loss of power in the part affected. Those horses which are over-fed, without exercise, are liable to swellings in the limbs from the capillary vessels having sent forth an over-supply of fluid to the extremities; and in consequence of the want of muscular exertion and the perspiration naturally connected with it, the fluids accumulate in the extremities, the vessels not having sufficient power to return them. The heart is thus acting upon an additional quantity of fluid; while, by the want of exercise, the limbs are deprived of that power by which the fluids are returned. Here "physic" a little soft food, exercise, and a mild diuretic are indicated, with active hand-rubbing.

Horses taken in from grass are often seized with swelling in the legs. This is occasioned by the difference of food, owing to its containing a greater proportion of nutriment, which increases the quantity of the blood, and the want of muscular and respiratory exertion necessary to carry it off by the skin. Exercise and a little opening medicine will effect a cure.

Treatment.—This, of course, must vary as the cause of the complaint varies. If from fatness of condition, bleed moderately; you will find the upper surface of the blood at first colourless, and a thick coat of buff afterwards. If the cause is debility, and the horse has had too much moisture in his food, bleeding is improper, and if a diuretic is given, follow it by a tonic. White recommends, if the swelling extend much above the hock, that we make some punctures with a lancet, which will produce great relief, particularly if the leg be afterwards fomented with warm water. Care, however, must be taken to rub the leg dry afterwards.

Place the animal in a good roomy box; give no hay. Sprinkle a handful of ground oak bark on each feed of oats, which should be damped to prevent the powder being lost. Walking exercise should be given twice or three times a day. It will be necessary to repeat the diuretic medicine every alternate day; and if the animal is debilitated, give in addition the following tonic:—

Powdered ginger	2 drachms.
Sulphate of iron	3 drachms.

Either as a powder or in a ball.

If in the course of two days the leg is not so materially reduced in size as to lead us to infer its speedy restoration to a normal state, we may insert a rowel or seton in the thigh. If abscesses should form in the thigh or leg, we must take care to distinguish the case from farcy, to which it then bears some resemblance; but in the latter disease the abscesses are usually smaller, and lie in the course of the absorbents, which are enlarged, whilst in œdema the abscesses are larger and more independent in their position. These abscesses being opened, usually heal with little difficulty; but if the skin should slough, as it sometimes does, the cure is much more tedious. There is, however, a difference in this respect between the human and the equine subject; for whilst, in the former, the cure of ulcers is tedious and protracted, in the horse it is generally speedily accomplished.

GREASE.

This offensive disease is consequent on a morbid alteration of the quantity and quality of the fatty matter secreted by the sebaceous glands of the heels. Its sign is a white discharge from the skin of the heels, sometimes extending as high as nearly to the hock or knee. There is usually dropsical enlargement of the legs, the skin is red, and the hair staring, with pain and stiffness of the part. Horses with much hair on the leg are most subject to grease. Dr. Jenner supposed grease to be a specific disease, communicable by inoculation; but the idea has not been confirmed by experience.

In the simple form of grease, the stiffness and pain of the limb go off after a while; but if the disease is neglected, the discharge increases in quantity, the skin becomes thickened, and large excrescences,—called from their shape "grapes,"—cover the heels and back of the legs, while ulcerations form about the heels, and slough large portions away. Mayhew says, with proper indignation, "Grease is a filthy disorder, and a disgrace to every person concerned with the stable in which it prevails; it proves neglect in the proprietor, want

of fitness or positive idleness in the groom, and culpable ignorance or the absence of the slightest moral courage in all people entering the doors of the stable. It is one of those disorders which it is easier to prevent than to cure. By an ordinary regard to cleanliness, and by an average attention to the necessities of the animal, this taint may be avoided; wherever it is witnessed, it not only argues the human being to whom the building belongs to be in the lowest stage of degradation, but it also testifies to the sufferings endured by the poor creatures which are compelled to drag out life in such custody."

There is so much honest and just indignation here, that we forgive a little exaggeration. Grease is not always produced by mere neglect, though hand-rubbing, free ventilation, and cleanliness have almost banished it from our cavalry horses and well-regulated stables. Swelled legs, cracks, and grease are so much more common in winter, that grease has even been called a winter disease, and the "chilblain" of horses. Moisture is likewise favourable to the complaint, for it first produces a determination to the parts, and then, as a parent of cold, it weakens the already distended vessels. Grease sometimes follows injuries; as halter-casting. The disease may become serious when it occurs under other circumstances favourable to its production, as in moist, cold, and particularly frosty or snowy weather; or when, from previous illness, a horse has been thrown out of condition; and, more than all, when such a case has been maltreated by the idleness or ignorance of those around, who, finding a swelled heel, immediately fly to urine balls, or purging balls, whereas a little local attention will cure the surfaces at once. Colour, likewise, as it marks debility, so it influences grease; thus, it has been remarked that white-legged and light-coloured horses generally are more liable to cracks, to grease, and to diseases of the feet, than others which are darker, or whose legs are black. After all, however, the grand origin of grease is—bad stable management. No matter of what breed, or how old the horse may be, the groom is to blame if the animal becomes greasy. In all well-regulated stables, the appearance of this loathsome disorder should be a signal for a change of attendants therein; for as the affection is now banished from the army, what earthly reason can be urged why it should be found in private stables?

Treatment.—In the older veterinary books, pages are devoted to this opprobrium of the stable. Our directions shall be simple. Clip off the hair; it can only heat the skin and retain the discharge. Wash the leg with warm water and curd soap. Then take a soft cloth saturated with the following lotion:—animal glycerine, eight ounces; chloride of zinc, one ounce; water, one gallon; and lay it on the hot skin. As soon as it is warm, change it for another left ready in the lotion, and persevere in this till the temperature is lowered. Two men should be employed, and four cloths, each as removed being thrown over a line to expose as large a surface as possible to the cooling action of the air. The chloride of zinc deodorizes the discharge. When the cracks are ulcerated, a stronger lotion is to be used, of the permanganate of potash, one pint to a gallon of water, or:—creosote, four ounces; chloride of zinc, two ounces; and a gallon of decoction of oak-bark, cooled. A good powder to sprinkle grease is made thus:—chloride of lime, one ounce; chalk, four ounces, powdered gall nuts, two ounces.

A drink of tincture of muriate of iron, one ounce; liquor arsenicalis, one ounce; and one quart of sound beer, may be administered. Blaine recommends sound ale, one quart; carbonate of ammonia, half a drachm; extract of gentian, one ounce; tincture of capsicum, half a drachm; but we prefer the first, with the addition of the gentian if the animal is low and lymphatic.

It is, moreover, essentially necessary to the cure, that all sprouting luxurious granulations should be reduced to the level of the surrounding integuments. Caustics only render the "grapes," as they are termed, of greater size. The mode best adapted for their removal is the knife. Cast the animal, having a flat piece of heated iron ready to pass over the surfaces, in case the hæmorrhage is profuse; as the horse having grease can but ill afford the loss of blood. Employ the strongest lotion into which chloride of zinc enters, and sprinkle the legs with either of the powders before mentioned, only rendering each weaker as the symptoms abate. In this manner a cure may be accomplished. Moderate exercise is of the utmost importance; indeed, the pain of grease goes off greatly during gentle motion of the parts. The disease, however, is apt to return. Should it display this disposition, discharge the groom, and procure one that is less sparing of his labour.

WEED.

This name is applied in the north country to a disease simulating œdema, or swelled legs; yet is quite distinct in its nature, and should be looked for. It consists in a swelling of the thigh vein, extending sometimes from the hock up to the groin, very hot and tender. It is not mentioned by Percivall, Blaine, Mayhew, or in ordinary books; but is important, as its other symptoms are similar to ordinary swelled leg. When this affliction of the vein is found, bleedings, fomentations, and mild purgatives, to lower the system, should be adopted.

SPRAIN OF THE FETLOCK-JOINT.

This we have noticed, *ante*, p. 341. When occurring in the hinder feet, it may be mistaken by a superficial observer for œdema. Put the limb in a bucket of hot water, bleed from the leg, then apply a cloth wetted with muriate of ammonia, one ounce; pyroligneous acid, two ounces; camphorated spirit, half-an-ounce; water, one quart; and if much lamed, apply a patten shoe, and give absolute rest—which is the reverse of the treatment for œdema.

An *Overshot Fetlock-joint* sometimes renders a horse useless; he is only just able in this case to bring the toe to the

ground. There is but one remedy—division of the flexor tendon. The divided ends recede, and the intervening space is filled with granulations. The operation will be described hereafter in CHAPTER XXVIII.

HALTER-CAST.

The horse often injures himself by entangling his hind-leg in the halter, and injuring his fetlock or his heel. Wrap the part in a large linseed poultice, and then apply an astringent paste; pipe-clay mixed with water in which a piece of alum has been dissolved, is a cheap and useful application. When this is taken off, soften the cicatrix with a little Florence or palm oil.

WINDGALLS.

The similarity of windgalls to bog-spavin and thorough-pin,—the two latter, however, being looked upon as hock diseases, and the former as affecting the fetlock joint and the sheath of the flexor tendons,—renders detail almost unnecessary. They are almost always on the hind legs. There are two situations in which they most usually appear; one on each side, and at an equal distance from the front and back of the fetlock joint; the other on each side of the flexor tendons. The former communicates with the fetlock joint itself; the latter, which are larger and more frequent than the others, with the sheath of the flexor tendons. Thus connected, there must be considerable danger in opening them. Windgalls are, therefore, neither more nor less than a distension of the synovial bags with synovia, and sometimes an extension of these bags by a rupture of their connections. Blaine says:—"In the treatment of windgalls we must attend to three particulars; the removal of any diseased alteration they may have occasioned in the neighbouring parts; the removal of their own distension; and the prevention of its recurrence. Stimulating applications are the most likely to produce a removal of any coagulating deposit; these are likewise still more proper, as they will tend to effect a removal of the contents of the windgall itself. The "liquid blister" will be very proper for this purpose. But simply to promote absorption of the contents of the windgall, continued pressure will be found the most convenient and efficacious remedy. A calico or a flannel roller may be prepared, of two, three, or four yards long, according to the part affected: four inches is a proper width, and, from its superior elasticity, flannel is preferable to calico or linen. In addition to this, be furnished with one or two pads, stuffed with horse-hair or other elastic matter. Begin to apply the roller, and after having made a turn or two below the swelling, place the pad exactly upon the windgall; if in the pasterns, one should of course be placed over each side: continue the roller firmly and evenly over all, and fasten off. It however must not be forgotten, that but little benefit can be expected unless this be continued as a constant application for a considerable time, during day and night, when not in exercise; also, it must be remembered, that upon a repetition of the original cause (hard work), they are apt to return; the dilated capsule seldom regaining, with its original size, its original strength. It may be necessary here to warn the practitioner never to puncture a windgall. Most of those of great bulk and long continuance actually communicate with the cavity of the joints they surround; and the others of themselves excite similar effects with open joints, when they are laid open; and even if no mischief followed, no good could result; the cyst would be only momentarily emptied; for its capacity would commonly remain the same, and it would almost immediately fill up again. Such an operation is, therefore, not only useless, but usually produces such inflammation as destroys the horse, or ends in stiffness and anchylosis of the joint." Youatt recommends iodine and mercurial ointments.

RUPTURE OF THE BACK-SINEW.

This, which in racing parlance is called "breaking-down," is a tearing asunder of the suspensory ligament, causing the fetlock to come to the ground. A patten shoe, rest, and a good constitution have got over this frightful lesion in valuable animals. The treatment will be found, *ante*, pp. 339—341, under FORE-LEG and PASTERNS.

RINGBONE (ossification of cartilages) is described and treated of *ante*, p. 341. SPLINTS, SPRAIN OF TENDONS, &c. under FORE-LEG, p. 339, &c.

THE HIND-FEET.

CHAPPED OR CRACKED HEELS.—TREAD.—INJURIES IN SHOEING.

CHAPPED OR CRACKED HEELS are, like grease, penalties suffered by the poor horse for man's mismanagement or neglect. They are most prevalent in winter, and with horses that are entirely denuded of nature's hairy covering, (the "fet-lock"), by fantastical or oftener lazy grooms, who fancy because thorough-breds have clean (not naked) legs, they must trim up their roadsters or harness horses equally fine. The skin does not get dirty under this small mat of hair; and if masters would see that the servant rubs the horse's fetlocks dry, instead of drenching the poor brute's heels with water and leaving them to chap in the wet and cold, prescriptions for chapped heels would be out of date. The milder remedies for GREASE are resorted to in this disorder. Forbear exercise, give bran mashes; and, should ulceration come on, the advice given under the head just referred to will need to be carried out.

If in lower-bred horses,—or in better animals, from laziness or unpardonable neglect,—an ulcerative process should have been set up, creosote or permanganate of potash must supersede the chloride of zinc for a time; this must be mixed in proportions of half an ounce of creosote, or permanganate of potash, with two ounces of animal glycerine to a quarter of a pint of water, and the state of the general health attended to; the system however, must not be reduced, or depletory measures resorted to. A drink composed of the liquor

arsenicalis, half an ounce; tincture of muriate of iron, an ounce; and water, half a pint; should be given once a day. But never forget that leaving nature's covering on the heels, merely—if the master is so fantastical as to require it—trimming off the ends of the fetlock, and diligent cleaning, first with cold water, then drying them thoroughly with more than two cloths, and lastly, diligent hand-rubbing, will prevent, in animals thus stripped and exposed, a return of chapped heels. Where there is a marked predisposition, from light colour and tender skin, to this and similar disorders, after the drying and rubbing already directed, smear the heels with glycerine, and stop the feet now and then, in cold weather, with corroborative stopping of tar and linseed meal, wetted with chloride of zinc. We have found one of the convenient felt pads, slipped into the shoe, smeared with thin tar, after the washing with the white vitriol, a good preventive.

Mayhew pleads so eloquently against the practice of denuding the fetlocks of their ornament, that we are sure the reader will be pleased with his earnest appeal. He says:—"The liability to disorder, induced by removal of the natural covering, exemplifies the folly of those practices, which have lately become so very fashionable as, at the present time, to be almost universal. But there has always appeared to exist in the human mind a restless desire to improve the beauty of the horse. Now, the tail has been docked; then the ears have been cut. A short space prior to these amendments, the skin was tampered with, to produce a star, as a white spot upon the forehead was termed. At the passing hour, almost every man who owns a horse must have the body clipped or singed. The length of hair is given in this climate as a necessary provision. Nature never forms anything without its use; though man, in his ignorance, may not always be able to comprehend her intention. * * * * Were the legs of horses allowed to retain that adornment which Nature gave, and were the parts not shorn of their shaggy beauty,—were men not inclined to confound the different breeds of horses, and, because the thorough-bred has clean legs, to imagine the cart-horse can be artificially made to display members equally fine—were masters more resolute in resisting the selfish suggestions of lazy grooms, who love to have the bushy heels clipped—were the stable-keeper not afraid of doing his duty, but would go down upon his knees and rub the fetlocks dry, instead of drenching them with water, and then leaving them to chap in moisture and in cold—were these things attended to, there is no reason why cracked heels should not speedily become a thing which has been, but no longer is.

"However, if animals are exposed throughout the wintry season, under the pretence of being placed in a straw-yard, the proprietor must expect to take the creatures up with some defect. The worst case of cracked heels the author ever looked upon, was produced after the last-mentioned method; the skin was much thickened and deeply marked by fissures. In places it had sloughed, and, where the integument was absent, fearfully deep ulceration was established. Fortunately, the absorbing process had reached none of those important structures which are situated about the heel of the horse; and the animal, after lengthened treatment, was cured."

TREAD.

This is a wound inflicted on the coronet of the hinder foot by the act of crossing the feet when the animal is fatigued. In some cart-horses it happens in coming down hill, the calkin of the one foot striking its fellow in front, and tearing away a portion of the coronet. In light fast horses a very similar injury is produced by the inner part of the hind foot striking the outer part of the fore coronet, when it is called "overreach." Quittor or false-quarter results from this tearing away of the part which nourishes the hoof. Cut away the separated pieces of flesh, and wash with chloride of zinc, and give the animal generous diet. If a slough takes place, dress as for ulceration, but do not poultice. In slight cases a pledget of tow moistened with Friar's balsam, inserted in the wound, after washing carefully with *warm* water, will suffice to effect a cure.

In the first instance, all cases of "tread" are to be considered as simple wounds, or rather as bruises, which if extensive have produced death in the surface and adjacent parts of the hurt; in which some inflammation must occur and be followed by slough of the edges thus injured. Sometimes the injury is so great as to cause sloughing of the extensor pedis tendon and opening of the coffin joint. In no instance, therefore, should an early application of irritating or caustic matters be made, by which more extensive inflammation and an increase of sloughing are produced. On the contrary, wash with water to remove dirt, &c., and if the wound be considerable, wrap up the foot in a poultice; if not, apply over it simply the mild lotion of chloride of zinc. Should the injury be slight, it may heal at once; but if not, sloughing and suppuration will occur. Under some circumstances, however, more extensive mischief will follow, as "quittor," or "open joint;" the treatment of which, will be found under the proper heads.

INJURIES IN SHOEING.

These, arising from carelessness in nailing the shoe to the foot, or "pricking" him in the operation, from ill-shaped shoes, and the like, will come to be considered in the Chapter on SHOEING (Chapter XXIX.).

CHAPTER XXXIV.

OPERATIONS, INSTRUMENTS, ETC.

CASTING THE HORSE.—HOBBLES.—THE TRAVIS.—SIDE-LINE.—SLINGING THE HORSE.—THE TWITCH.—CHLOROFORM.—BLEEDING.—ROWELS.—SETONS.—TRACHEOTOMY.—ŒSOPHAGOTOMY.—LITHOTOMY.—PERIOSTEOTOMY.—NEUROTOMY.—DIVISION OF THE FLEXOR TENDON.—FIRING.—NICKING AND DOCKING.—BLISTERING, POULTICING, AND BANDAGING.

CASTING THE HORSE.—THE HOBBLES.

As a preliminary to the more serious operations of veterinary surgery, the mode of casting the horse has far more importance than is generally attached to it. To avoid awakening resistance from fear or suspicion of injury, is most important in so powerful an animal. Yet to see the violence and force with which a horse is too often brought down, what is emphatically termed, "a burster," by a set of hard-handed clumsy clowns, is a sorry sight. Terror, exciting to stubbornness and resistance, possesses the ill-used horse, aggravates the pain, and half maddens the firmly-bound sufferer, who, with his four legs drawn into a cluster, and with a heavy-sterned stable-helper sitting on his head, and another with his knee and fists upon his cheeks and jaws, is held down amid exclamations, confusion, tugs, threats, sly punches, and oaths. Let us, after a brief mechanical description of the improved hobbles, devote a few paragraphs to a more rational and humane method of securing a horse, especially for the less severe operations.

The HOBBLES, as represented on Plate XV., are of the simplest construction. Four straps of strong leather, a yard long, are doubled to eighteen inches, one end having sewn strongly into it a stout iron buckle. Five inches from this buckle is a strong iron D, consisting of a half circle of iron and a flat iron pin on the inner-side of the straps. Through these passes the rope or chain with which the horse's feet are to be drawn together. The rope in our picture is first fastened to the hobble on the fetlock of the foreleg, thence threaded through D of the near forefoot, so running to the near hind foot, the off hind foot, and thence the loose end comes out at the D on the off forefoot. Pulling at this, the near forefoot is first brought home, followed by the hind-feet in the same order, and these, being brought up to the forefeet, the whole are together, and the animal gently but quickly pushed down on his near or left side, on a number of trusses of straw, neatly arranged. The side for throwing the horse is easily reversed by placing the hobble with the fixed end of the rope on the opposite foot, and pulling in the contrary direction.

Mr. Gloag has introduced some improved hobbles which possess all the advantages of the ordinary apparatus, and are far more convenient. Each of his hobbles he advises to be furnished with a buckle, as well as with a D at each end, of unequal sizes, so that one D can be passed through the other. Thus, by means of the buckle, the size of the hobble can be varied so as to suit different legs, as well as to unloose any one leg that may be required during an operation; the D.s will enable each separate leg to be free the instant the screw is withdrawn.

The safety of the horse and of the operator requires the use of the improved hobbles, by which any leg may be released from confinement, and returned to it at pleasure; and, when the operation is ended, the whole of the legs may be set at liberty at once without danger. Putting the legs as closely together as possible before the pull,—the necessity of the assistants all pulling together,—and the power which one man standing at the head and firmly holding the snaffle bridle, and another at the haunch pushing the horse when he is beginning to fall, have in bringing him on the proper side, and on the very spot on which he is intended to lie—are evidently needful to a proper and safe position of the thrown animal. After all, however, this is a method of securing the horse to which we should not resort except necessity compelled, for reasons which we will briefly state, and on account of an improved practice having been inaugurated. If the horse is to be thrown with the hobbles, he should have his eyes covered before they are put on, and in some instances the "twitch" may be necessary, but should be removed before he is thrown. The men who pull the rope should not be more than two yards from the horse, as the power of lifting the legs from the ground is doubled by being at this short distance; and observe, above all, they must be silent. The man who has charge of his head should stand directly in front of him, holding the halter, steadily and without bustle throwing himself on the neck, and must lift the halter so as to raise the horse's nose the moment he is over on his side.

M. Girard, in his *Traité du Pied*, proposes an improvement in throwing horses, which is very simple. If the horse is to be thrown on the right side, a long piece of web

or a rope is to be fastened round the right fore arm, close up to the elbow. The other end is then to be passed over the withers, and held at a little distance by one or two men. The force which is applied in this way will cause the horse to fall more readily, and with more certainty, and exactly in the situation where he is required to be thrown. This contrivance, therefore, is extremely useful in confined places, where there is just room enough to throw a horse, and no more. Rarey's method of securing the fore legs, presently noticed, is yet superior to this. The horse being thrown down, and his legs closely drawn together, the end of the hobble rope is to be passed under the hobble rings, between the fore and hind legs, and secured with a hitch, as it is termed, so that he cannot separate them again until the hobbles are unbuckled, and then they all may be taken away at once, and the horse suffered to get up.

A suspicious affectation of mystery, the outward and visible sign of quackery, attended the introduction, in 1858, of the system adopted and partly invented by Rarey, and consequently its immense merits and advantages have been decried by prejudice and rejected by conceit and ignorance. The "grand secret," for which the original subscribers paid their ten guineas, and which the general public were admitted to see practically illustrated for a shilling, has suffered from the "showmanship" with which a really important process was accompanied. Resolution, firmness, gentleness, and apparent kindness, with a simple securing of the animal, enabled the American horse-trainer to produce by the simplest means almost miraculous results. The horse thrown by Mr. Rarey's method (which will be found fully described under "Breaking," *ante*, page 75), instead of being in the usual state of fear, will be found entirely quiescent. Indeed, for minor operations, the strap which doubles the fore-foot up to the elbow will be found sufficient security. The extent of influence which this simple process has over the hind-legs of the most vicious horse, might have been known before, but was never so convincingly illustrated as by Mr. Rarey. The "gentling" of which he makes so much, and at which brutal conceit is so tempted to scoff, will be found by no means over-rated, when applied with nerve and coolness, and directed by an enlightened feeling of humanity.

It was thought, before the system was divulged, that some drug, the smell of which was pleasing to the horse, was employed to produce that disposition to follow the operator about, which almost every horse exhibits on being submitted to the process; and even now there are obstinate persons who insist upon some such influence being used to induce the horse to follow the operator. We have found no such trick necessary for this purpose.

The Travis* is a frame of heavy bars of wood, into which, on the Continent, the quietest horses are placed to be shod; even when padded, it is a most dangerous apparatus, and horses have been known to kill themselves in their struggles, when confined in it. A picture of this clumsy contrivance, formerly used here for cropping, docking, nicking, and other blacksmith barbarities, may be seen in Bourgelat's "Essai sur les Appareils propres aux Quadrupèdes." The term *travis* is now applied to the separation between the stalls of a stable.

The Single and Double Side Lines are also used to limit the capability of resistance. The single side-line is thus applied. A soft collar is put over the horse's head, and a hobble is fastened to the foot it is desired to have elevated. From the collar is dependent a metal loop, ring, or other contrivance. By the side of this a strong rope is attached. The cord is then passed through the D of the hobble; afterwards, it is brought back and run through the side ring or loop. A man then takes hold of the end of the rope, and, by gradual traction, causes the leg to be advanced. It is neither wise nor humane to drag the foot off the ground. The side line is most useful when the hocks or hinder parts are examined. Many unbroken horses, though quiet in other respects, will not allow these portions of the body to be touched. By causing one leg to be advanced, the other is deprived of all power as a weapon of offence. The horse would obviously fall, if he were to project the only free hind member.

The Double Side Line consists of a rope fixed to a loop on either side. The loop or ring is attached to a soft collar. The rope is afterwards threaded through a hobble on each pastern. Both legs are then gently pulled forward, and the animal, having its posterior supports drawn from under it, comes to earth. The ropes are held tight, while the horse is turned upon its back. The instant it is in that position, a man seats himself upon the head, while the body of the animal is propped up by numerous trusses of straw.

For every minor operation, and even for many that are of more importance, this mode of restraint is sufficient; especially if the operator has active and determined assistants: and we confess that we are no friends to the ordinary casting of horses if it can possibly be prevented. When both legs are included in the hobble or rope (as in another way of using the side line), the horse may appear to be more secure, but there is greater danger of his falling in his violent struggles during the operation.

Slinging is clearly represented in Plate XV.; it is a restraint which horses submit to with great impatience, and not without much inconvenience, from the violent excoriations occasioned by the friction and pressure of the bandaging around his body. Graver evils are also brought about by the abdominal pressure. Some horses stale and dung with difficulty when suspended, and inflammation of the bowels has not unfrequently come on during slinging. The slings are, however, forced on us in some cases, as in fractured bones, the treatment of open joints (the horse slung in our picture is thus injured), and some other wounds

* The French term *traves*, merely means the space between two beams or pillars.

where motion would be most unfavourable to the curative treatment. Suspension may be partial or complete. Suspension of any kind will require the application of pulleys and ropes affixed to the beams, that the whole body of the horse may be supported. A sling may be formed of a piece of strong sacking, which is to pass under the belly, the two ends being fastened firmly to pieces of wood; each of about three feet long, and which are to reach a little higher than the horse's back. To the pieces of wood, cords and pulleys are to be firmly attached, by which means the sacking can be lowered or raised at pleasure. To the sacking, also, are to be sewn strong straps, both before and behind, to prevent the horse sliding in either direction, without carrying the sacking with him. Upon this so formed-cradle he is to recline. If horses when they are fresh should be placed in this machine, most of them would either injure themselves, or break through all restraint. However, by tying up their heads for three or four nights, their spirit is destroyed. The slings may then be applied without the fear of resistance. It is best not to pull the canvas firm up, but to leave about an inch between the horse's belly and the cloth, so that the animal may stand free, or throw his weight into the slings when he pleases. In this fashion a horse may remain for months in the slings, and at the end of the time display none of the wear and tear described by old authors.

Among the older "Vets," several other restraints are common, among them THE TWITCH. When too frequently used, it has the evil effect of making many horses violent in resisting its application. The TWITCH consists of a noose of cord passed through a hole in the end of a stout stick of wood; in this noose the muzzle is held and pressed in the most cruel manner; and as every turn of the stick following a struggle aggravates the pain, he ordinarily becomes quiescent, though we have seen cases where the madness of agony produced frantic resistance. The *barnacles* is a name given to the handles of the smith's pincers placed over and compressing the muzzle or upper lip, and torturing the animal, like the twitch, into submission.

In many instances blindfolding will do more than the twitch; and some horses may be quieted, when the pain is not excessive, by holding the ear in one hand, and rubbing the point of the nose with the other. A soothing manner will often engage the attention and prevent violence; but it is seldom that either threats or punishment render an unruly horse more calm. Inexperienced persons guard themselves only against the hind legs; but they should be aware that some horses strike terribly with their fore feet. It is prudent, therefore, in all operations, to blindfold the animal, as by this he becomes particularly intimidated, and if he strikes he cannot aim. When one of the fore extremities requires a very minute examination, it is prudent to have the opposite leg held up, or even strapped; and when one of the hinder feet is the object of attention, the fore one of the same side should be held up, as by this means the animal is prevented from striking.

CHLOROFORM.

This important agent has been recently experimented upon with the horse with marked advantage in severe operations. The inhalation of the vapour of sulphuric ether or of chloroform is easily effected. A sponge wetted with chloroform being applied to the nostrils of a horse, the first effect is a certain degree of excitement; this is followed by insensibility, and the comatose state is found to continue during the severest applications of the knife and cautery. The stupor remains for some time after the operation is over. The utmost care must be taken that the vapour does not escape externally, and at the same time that the animal is not wholly deprived of atmospheric air. Castration and the extirpation of tumours have been effected under its influence. The horse, unlike man, being little subject to heart-disease while in ordinary service, is a safer subject for the action of chloroform.

BLEEDING.

The modern instruments used in taking blood from the horse, are figured and described in Plate XVI. B 1, B 2, B 3, B 4, and the accompanying letterpress. The olden instruments, the common fleam and blood-stick (a piece of hard wood loaded at the end, to drive the fleam into the vein by a blow on the back) should be dismissed to the limbo of obsolete contrivances, and superseded in skilful hands by a large and strong lancet (B 1); or better still, with so strong-veined and thick-skinned an animal, the abscess-lancet (B 2); or, best of all, either of the two patent fleams (B 3 and 4), with their regulating machinery and powerful and steady depth of incision. The two latter may now be procured, by order, of any surgical-instrument maker.

Bleeding is of two kinds, from a vein, called *phlebotomy* (Gr. *phleps*, a vein, *tomos*, section), or from an artery (arteriotomy). Some bleedings (as at the toe-point, division of the vessels of the eye, &c.,) combine both these operations. Bloodletting is further divided into "general," and "local," or "topical"; the first being intended to act on the constitution, the second, very near to the affected part, is intended to act more rapidly and directly than general bleeding, and to produce more effect with less abstraction of blood. Local bleeding is usually practised on the lesser branches of arteries or veins, as the temporal artery, the "plate" vein, the thigh (*saphena*) vein. In inflammation of the eye, bleeding is effected by scarifying the inner surface of the eyelid and opening a small vein which is seen passing from the inner corner of the eye towards the nose. Cupping and leeches may be left to human surgery, though the latter may be useful in affections of the eye. We shall first notice "general" bleeding.

Bleeding from the Jugular Vein.—The near side in ordinary cases will be found most convenient for the fleam; the off-side for the lancet. Elevate the head so as to stretch the vein, which should then be pressed with the fingers of

the left hand, to stop the blood. It is advisable to blindfold the horse, or to turn away his head from that side from which blood is to be taken. The hair is smoothed along the course of the vein with the finger, which has been previously moistened; then with the third and little fingers of the left hand, in which the fleam must be held, sufficient pressure is applied to the vein to bring it completely into view, taking care, however, not to distend it too much, as the too rounded surface is apt to roll or slip when the incision is about to be made. Never forget that immaculate cleanliness in lancet or fleam is a duty to neglect which is an atrocious crime. The particular part from which the blood is taken lies three to four inches below the union of the two branches of the jugular vein at the angle of the jaw. Farriers sometimes tie a cord round the neck, to "raise the vein;" it is unnecessary and dangerous. The fleam or lancet must be placed in a direct line with the course of the vein, and over the precise centre of the vein, with its point as close as possible to the skin, without touching the vein. A large-bladed fleam should always be preferred, which will make a greater opening, and thus facilitate the operation; besides, what is of greater importance, blood drawn speedily has far more effect on the system than double the quantity taken slowly; and the wound, although larger, will heal as fast as a smaller one. A slight pressure on the neck with the pail, or other vessel used while blood is taken, will be enough to cause the blood to flow sufficiently fast. Some persons introduce the finger into the mouth between the tushes and the grinders, when, by gently moving it about, motion in the jaws is induced, and the stream of blood flows more rapidly from the action of the muscles surrounding the vein; but by keeping the fingers of the left hand firmly pressed on the vein, so as to obstruct the reflux of the blood, the stream will flow freely.

The blood should be received into a vessel the dimensions of which are exactly known, so that the operator may be able to judge from time to time of the quantity that has been taken. A graduated tin can, holding six or eight quarts, is most convenient; pints being marked on the inside of the vessel. The blood should flow in a regular stream into the centre of the vessel; for if allowed to trickle down the edges, it will not, when cold, exhibit those changes necessary for ascertaining the degree of inflammation. When it has been necessary to repeat the bleeding, if more than three or four hours have intervened, it will be better to make a fresh incision lower down than to open the old wound. The blood coagulates soon after it is drawn. That portion of it which is coagulable is composed of two substances—that which gives colour to the blood, and the thinner part in which the red particles float.* By degrees these separate, and the red particles sink to the bottom. If coagulation takes place slowly, the red particles have more time to sink through the fluid portion, and there appears on the top a thick, adhesive, pale, yellowish-orange substance, called the buffy coat. In proportion to the slowness of coagulation and the thickness of this coat, the degree of inflammation is determined. In the healthy condition, coagulation is more rapid, and consequently the red particles have not time to sink, and the buffy coat is thin. When the horse is much exhausted, and there is a general decay of his constitution, coagulation will not take place at all, but the blood will exhibit a uniform blackish colour, with a thin and loose consistence. When blood is drawn from a large orifice, coagulation is slower, and from a small wound it is more rapid; so that the difference must be carefully considered, and the changed condition of the pulse attentively marked.

Some persons consider it unnecessary to pin up the orifice after bleeding. These bleedings may not renew, but we would advise the edges of the wound to be brought close together and kept in their place by a small pin being passed through the contiguous skin, with a little tow wrapped round the extremities of the pin, figure of 8 fashion, so as to cover the entire wound. The pin should not be large, and care should be taken that no hairs are between the lips of the cut. In bringing the edges of the wound together, care should be taken not to draw the skin too much from the neck, otherwise blood will insinuate itself between the skin and the muscles, and cause a swelling which sometimes proves troublesome. The edges of the wound will heal in twenty-four hours, after which the pin may be withdrawn.

For affections of the head, as well as extended inflammatory action and fever, the jugular vein is decidedly the best. Blaine has some cautions and cases which should be present to the practitioner's mind; for common as the operation is, and qualified as every one thinks himself to perform it, very serious accidents occasionally arise. "It has occurred that the carotid artery has become penetrated. When the puncture has been made through the vein, the accident is known immediately by the forcible and pulsatory gush of florid arterial, and dark venous blood together. In one instance of this kind, which occurred to a French practitioner, he immediately thrust his finger into the opening, through the vein, and thus plugged up the artery, intending to wait for assistance. In this state he remained, we believe, an hour or more; when, removing his finger, to his surprise, he found the hæmorrhage had ceased, and did not again return. In another case, where an English practitioner accidentally opened the carotid, he placed a compress on the orifice, and had relays of men to hold it there for eight-and-forty hours, when it was found the bleeding had stopped. The admission of air is also another serious accident that now and then attends bleeding. It sometimes happens from the sudden removal of the fingers or blood-can, or whatever was used to distend the vessel by obstructing the return of the blood. This being suddenly taken away, allows the escape

* The composition and properties of the blood are treated of *ante*, pp. 350, 351.

of the blood towards the heart, and occasions a momentary vacuum, the air being heard to rush with a gurgling noise into the vein through the orifice; it then mixes with the blood, and occasions, in some instances, almost immediate death. The animal begins to tremble; he next staggers, and finally falls in a state of convulsion. If the quantity of air taken in has been considerable, death ensues. The remedy must, therefore, be instantaneous, and consists in again opening the orifice, or making a new one, to gain an immediate renewed flow of blood, which will, in most cases, renovate the horse, who has been found afterwards to be tormented with an intolerable itching.

Local, or Topical Bleeding.—The leading operation in local bleeding is the puncture and division of *the temporal artery* in inflammation of the brain. These vessels do not supply the brain, it is true; but by opening them an artificial drain is made, through which much of the blood escapes that would otherwise have gone to the brain; besides which, a large quantity of blood is abstracted in a short time, when, perhaps, it would have been difficult to have bled from the neck at all, owing to the violence of the animal. The lancet is here vastly safer than the common fleam. The spot for its puncture or division is where the vessel leaves the parotid gland, to curve upwards and forwards round the jaw, a little below its condyle. It affords much blood, and when the desired quantity is taken, divide the vessel, then the parts will recede, lessening by their own contractility, and the bleeding will stop.

Bleeding from the Palate.—This is a favourite spot with ignorant farriers, who recommend it in spasmodic colic and stomach staggers, or megrims. Fatal hæmorrhage has often resulted from the incomplete severance of the palatine artery. This artery and its vein run near each other on each side the roof of the mouth, so as to divide the inner surface of the hard palate into three nearly equal parts. The vein only should be divided by plunging a lancet across the ridges, one inch inside the mouth, between the middle and second nippers. If the artery should be wounded, it must be *completely severed* so that its retraction may check the flow of blood. Bleeding from the palate, except under extraordinary circumstances, had better be avoided.

Bleeding from the Plate Vein.—This is resorted to in affections of the shoulder, fore-leg, and foot, and sprain of the back sinews. The principal trunk of the *superficial brachial vein* ascends along the inner side of the radius or arm-bone. If, when taking blood from these veins, a difficulty is found in making it flow, lift up the other foreleg, which will call the muscles of the punctured one into action, and force the blood in greater quantity. The *external thoracic* (plate vein) is best opened just as it emerges from behind the fore-arm, as it is here easily got at and readily pinned up.

Bleeding from the Thigh Vein.—The saphena is a prominent vein, continued from the inner part of the hock. The opposite leg to that to be operated on having been raised, the practitioner places himself in front of the thigh; grasping the hock with his left hand and pressing the vein with the side of the right, he punctures the vessel with his adjusted fleam. It is a troublesome vein to pin up.

Bleeding by the Toe.—This is practised in acute founder, or laminitis, in our opinion most mischievously. We have here, however, only to do with the mode of effecting it, should it be deemed necessary. A searcher, or drawing-knife is driven down between the crust and sole at their line of union, then, by puncturing the part with a lancet, an immense flow of blood will follow.

If the blood should not flow with sufficient freedom, place the foot in warm water: the bleeding finished, cover the puncture with some tow and a little tar, and lightly tack on the shoe. There are, however, other methods of bleeding from the toe. Mr. Mavor uses a drawing-knife with a long curve, so that one sweep of the blade may cut a piece out of the foot. This seems dangerous, as it leaves a space to be filled, instead of a mere cut to heal. Others take away none of the horn, but merely make a slit through the outer covering on to the vascular portion of the foot. The flap of horn they hold up so long as they desire blood, by the insertion of a piece of wood; and when they have obtained blood enough, they take out the wood, so as to let the horny flap down. The last method appears to us the easiest and best.

Sometimes the plantar vein is opened as a substitute. Scarifications are also occasionally practised, which, of course, divide both venous and arterial branches.

As it was the practice of our fathers to bleed themselves, their wives, and horses "for everything and for nothing," of course the horse-doctor followed the fashion, and the poor patient, temperate servant of man, without his vices and their consequences, was murdered or debilitated, *secundum artem*, his life-blood drained, and even the "constitution of a horse" ruined, by what doctors called "antiphlogistic remedies." We must not, however, err on the other side and reject bleeding, when a judicious diagnosis indicates its necessity. In order to reap the advantages of general bleeding, we must continue to draw blood, when once a vessel is opened, until such time as some visible impression is made on the system. Some horses will bear to lose a much larger quantity than others, without our being well able to explain the reason of the difference. In a general way, the quantity an animal can afford to lose will depend on his condition at the time; his age; and on the nature of his disease, should there happen to be any present. Horses that work hard and live well, will bear bleeding best: fat, bloated subjects, worst. Under acute inflammatory disease, especially of the brain, an animal will support the loss of a much larger quantity than if he were in health. Under ordinary circumstances, a gallon is reckoned a moderate bleeding: under pressing disease, take three gallons: four have been taken. By way of a rough estimate, a gallon of blood may be reckoned equal to the loss of about a pint in man. Though under conditions of health and forms of disease of no great consequence, we are in the habit of prescribing so

many pounds or quarts of blood to be drawn, yet, when it becomes necessary to make a sensible impression on the system, our only safe and true guide, as to quantity, is a steady observance of the effects produced on the animal as the blood flows from its vessels.

The effects of bleeding will depend on two circumstances. The fuller and more rapid the stream, the greater will be the effect created by any given quantity; when we are desirous, therefore, of producing what is called "an impression on the system," and to do this at the least possible expenditure, we make a large opening into a large bloodvessel, and draw away the blood as quickly as we can. In order to know when this impression is made, we keep our fingers, during the time the blood is flowing, steadily upon the pulse, with pressure just sufficient to feel its beats distinctly; the declining force and perceptibility of which, with their subsequent total failure and simultaneous shrinking of the artery from beneath the fingers, indicate to us that the required effect is accomplished: this we call "the sinking of the pulse." About the time that the pulse sinks or fails, the animal himself commonly evinces signs of uneasiness: he becomes restless and fidgety; jerks his head up and down; and moves step by step backward, feeling, as it were, for support, until he has backed himself against the side or corner of the stable, where, finding a rest for his hind quarters, he becomes once more tolerably tranquil again for a time. Should the bleeding be continued beyond this (which, by the bye, it ought not to be), the respiration becomes disturbed; the animal heaves at the flanks and puffs at the nostrils, sighing, as it were, deeply for want of breath. His strength also now begins to fail him; his body rocks from side to side; if he lifts a foot, he quite staggers in putting it down again: in fine, things are now arrived at that pitch that there is danger every moment of his falling headlong upon the persons about him. These symptoms of distress are quickly followed up, if not accompanied, by a profuse sweat all over the body; and this is often succeeded by a sort of rigor or shivering fit. In some instances, these symptoms make their appearance some little time after the operation of bleeding is all over, and even in cases in which we hardly expected their supervention. After the animal has been tied up for a time, on returning to him, we find him heaving and puffing, and wet with sweat. When we perceive exhaustion approaching, we may often succeed in arresting its further progress by turning the animal's head towards or (if possible) into the open air, and suffering him to drink three or four go-downs of cold water; and with the same water afterwards sponging out his nostrils and his eyes; all which will so refresh him as probably to arrest the fainting fit altogether.

In bleeding horses that live idle and pampered lives, it not unfrequently happens that this puffing and blowing comes on even as early as during the flowing of the second or third quart of blood. When this happens, take away the blood-can, and suffer the blood in the vein to circulate for two or three minutes, by which time the animal will commonly have recovered himself. The operation may then be resumed, and the required quantity generally be obtained.

ROWELS AND SETONS.

These are merely different modes of applying the principle of counter-irritation; thus drawing away the inflammation from the point attacked in the form of purulent issue. In this point of view, blisters, rowels, and setons are merely three methods to attain the same object, and their applicability is merely governed by circumstances; the blister being the most expeditious in acute cases, the rowel and seton more certain and permanent in chronic affections.

A Rowel can only be formed where the skin is loose, as in the chest. The instruments for rowelling, and the rowel itself, are figured on Plate XVI., H, H, H. Having prepared a round piece of leather, with a hole in the centre, and about the size of a crown piece, wrapped with a skein of fine tow (see H 3), smeared with digestive ointment; we cut the skin with the rowelling scissors, and with the forefinger, or the "cornet" (a piece of crooked horn made for the purpose), or the handle of the improved scissors figured in our Plate (H 2), separate the skin from the underlying tissue for the space of an inch. The circular leather is then introduced, the opening plugged up with tow, and in four or five days suppuration is established. The rowel should now be turned every twelve hours, the matter allowed to flow out, and the rowel be kept scrupulously cleansed every twenty-four hours. We do not think the digestive ointment, or any other application beyond the tow, at all necessary.

Setons are tapes, threads, or lamp-cottons passed under the skin by needles made for the purpose. (See Plate XVI., I 1, 2, 3, 4.) Setons may be introduced in almost every part of the body: the side or front of the face, the poll, the throat, the neck, the back, the loins, the arms, and feet are all available for this counter-irritant, which can be made longer or shorter, deeper or shallower, as skill may dictate.

The skin should first be punctured with a lancet, which will much facilitate the subsequent insertion of the needle, whether the sharp or the blunt one be used. The latter will be found preferable in every situation where it is possible to make way with it through the subcutaneous tissue: in fact, the sharp-pointed needles are but seldom used. It would be idle to pretend to give any specific directions for using these needles: the operation can be learnt only from actual observation. The best material for setons is the coarse brown or beggars' tape, as it is called; which will admit of being medicated (if thought necessary) in any manner the operator may fancy. The practitioner must not tie the ends of the seton, making a bow of it. From its liability to hitch against anything and be torn out with risk of laceration of the skin, this becomes objectionable, and even dangerous. The ends had better be made into knots, and left hanging out of the extremities of the wound.

When a seton is placed in a sinuous track for the purpose of inflaming, it is moved twice a day frequently, and moistened each time with some stimulant, as oil of turpentine, tincture of aloes and of benzoin. All setons require daily cleaning and moving. When they are required to act more quickly, the tape is infused in turpentine, with powdered cantharides; or small pieces of black hellebore are sewn within it. An old material composed of woollen, flax, or cotton and hair, is also used instead of tape.

The frog-seton recommended in navicular disease (see I 4), is to be inserted through the heel. The animal being secured by the twitch, an assistant holds up the foot. The needle is then plunged into the heel, and by a second push brought out at the cleft of the frog (previously thinned off for the purpose). Then draw the tape through and knot the ends. If the horse is down, insert the seton-needle from below upwards.

ŒSOPHAGOTOMY.—BRONCHOTOMY.—TRACHEOTOMY.

A wound or division of the œsophagus or gullet, was long supposed to be a fatal injury; this is now known to be a fallacy. The operation is described under CHOKING, p. 298, and need not here be repeated.

Bronchotomy.—Trachcotomy.—Cases occur when this operation is the only hope of saving life. It consists in making an opening into either the larynx or the windpipe, through which the animal is enabled to breathe with ease; and is an operation practised in some cases to the saving of the animal's life, in others to the affording him instantaneous and effectual relief, at a time when he has difficulty in drawing his breath through his nose. The animal's head being kept elevated by an assistant, the windpipe may be plainly felt projecting underneath the skin, as it proceeds in its course along the anterior and inferior part of the neck. About one-third of the length of the neck from the head will be found a convenient place for operating. Make a longitudinal incision, three or four inches in extent, through the skin, and carry the point of the knife at once down to the windpipe, which must be laid bare nearly to the same extent by lateral dissection. The surface of the pipe being freely exposed, the point of a double-edged scalpel is to be thrust through its substance in a direction to make a cross-section of two of its rings; the object being, to excise either a square or circular portion of the substance of the tube, of about an inch in diameter. This done (in order to prevent the skin from closing over the opening, as well as the aperture itself from becoming plugged by lymph, or obstructed by secretion) it will be necessary to introduce a canula, or tube, into the windpipe, and confine it there by carrying tapes or strings from it around the animal's neck. A piece of elder, about three inches in length, with a notch cut around its middle, will answer the purpose; though an ivory or bone tube with shoulders to it, and holes through the shoulders, will be found still better adapted. After the performance of the operation, and the introduction of the tube, the animal will appear as in Plate XIV., Fig. 5.

The tube will require to be taken out from time to time, and cleansed. A weak solution of sulphate of zinc is best. The animal ought to be continually watched; and as he will be unable to swallow any solid food, he should be abundantly supplied with well-made gruel and malt-mashes, which (providing he be kept without water) he will, after a time, drink with avidity. Should the case take a favourable turn, the breathing tube is to be removed as soon as the natural passages become sufficiently cleared to carry on free respiration. Mr. Gowing's tracheotomy tube, with its trochar, figured in Mr. Mayhew's work, is a most efficient and ingenious contrivance.

LITHOTOMY.

Cutting for the stone in the bladder of the horse is rather a curiosity of veterinary surgery than a part of customary practice. In Hurtrel d'Arboval's Dictionary, art., "Lithotomie," and by other Continental writers, minute accounts of this operation may be consulted. At p. 321, *ante*, under the head URINARY CALCULI, will be found a general description of these abnormal deposits, with a case relieved by lithotomy.

PERIOSTEOTOMY.

This term is applied to an operation which has grown into much favour with modern practitioners for the reduction of splints and ringbone. It is, as its name implies, a cutting of the periosteum, or membrane surrounding the bone, and is effected with a curved knife, having a blunt probe point, and sharpened on the inner or scythe edge. The late Professor Sewell, of the Veterinary College, has strongly advocated periosteotomy for the removal of bony tumour, and it proved highly successful in the cases he thus treated.

The horse is thrown upon his side, and the leg to be operated upon released from the hobble, and extended on a bag of straw. A piece of webbing is passed round the hoof and given to a man to hold, who pulls the foot steadily forward. The operator kneels and examines the splint or node; then, with a pair of rowelling scissors (Plate XVI., H 1) he snips the skin just below the exostosis. He then forces a blunt seton-needle,—fixed in the shifting handle (Plate XVI., I 1), and armed with a tape—through the cellular tissue, under the skin covering the tumour. He then makes another cut with the rowelling scissors *above* the splint, pushes the needle through it, and then draws it back. The probe-pointed knife is then introduced, and turned with its cutting edge downwards, and the periosteum cut through and through; the tumour being sliced in pieces, when not too solid, as it sometimes is in older animals. This cutting down over, the seton-needle, armed with a tape with a knot at the end, is passed through the opening, knotted at the other end, and treated as an established seton, being moved daily. A blister is sometimes applied over all, which is considered more likely to defeat than to assist the

object in view. When periosteotomy is successful, it is generally so at the first start; if not, the seton may be abandoned, to avoid a certain blemish for an uncertain benefit.

NEUROTOMY.

This important operation has been the subject of the fiercest polemic among veterinary writers and practitioners Like most discoveries, vehement partisans have obscured its real merits by their indiscriminate and unmeasured praises of its value, without allowing a qualification or drawback. It has restored innumerable useless animals to usefulness, and has occasioned destructive injury to others; but it is probable, as these were diseased subjects, it merely somewhat hastened the inevitable end. No neurotomized horse goes with the same freedom and safety; and from the loss of sensation he has battered the feet to pieces, or fractured his legs. On the other hand, hunters and hacks have gone "as well as ever" in horseman's phrase, after division of the nerve. Improvement in the constitution of the animal has also marked the relief from pain which neurotomy confers. Blaine tells us, that "an aged and crippled stallion, from constant and painful irritation, became so emaciated as to be unable to fecundate; but being relieved from a constant state of suffering by neurotomy, he improved in health and condition, and was again used to cover. It happened, also, that a mare similarly circumstanced ceased to feel "œstrum;" but after neurotomy it returned, and she resumed her character of a brood mare. It appears to act with most certainty when a piece of the irritated nerve is cut out. One case has actually occurred where tetanus, occasioned by a wound in the foot, was arrested and removed by neurotomy. It also promises much in the painful state of severe cankers, where the irritation has rendered the application of dressings almost impossible. Here, by depriving the foot of sensibility, we deprive the horse of that which is injurious to him. The sore itself is often amended by it; but in every instance the dressings can be effectively applied, and the healthy processes cannot be at all suspended.

When, however, the sole of the foot is convex (pumiced foot), neurotomy is mere destruction. The sole of the foot, scarcely able to bear the pressure of the coffin-bone, which has fallen below its natural situation, having now no feeling, will be battered against hard substances, worn through, and destroyed; and this will be aggravated should any tendency to ulceration exist among the ligaments or cartilages. Nevertheless, neurotomy, dependent as it is on the judgment and experience of the surgeon, is the most important and valuable discovery in veterinary practice of the present century. It would, therefore, be unjust to omit the name of Mr. Sewell, then Assistant Professor of the London Veterinary College, who first communicated the *modus operandi* and its results in a paper contributed to the Royal Society. It has been asserted that Mr. Moorcroft and others had previously performed neurotomy: if so, they never published their success or non-success, or recommended it to their professional brethren. To Professor Sewell, then, belongs the credit of this invaluable discovery, of which Mr. Spooner truly and candidly says in his work "On the Foot:"—"Although it is vilified by a few veterinary surgeons, and often condemned by the ignorant as a cruel and barbarous operation inflicted on a dumb creature, yet, for my own part, having fairly tested its merits, I regard it as one of the most merciful and humane operations that surgical science has ever invented for the relief of suffering quadrupeds."

"Nerving," "unnerving," or "neurotomy" signifies the cutting out of a piece of the metacarpal (or pastern) nerves on each side, to the extent of an inch or more. From Plates X. and XI. (Anatomy), the reader may form a clear idea, not only of the structure of the parts, but in the latter (Fig. 6), a clear representation of both the upper and lower operations is given, with letterpress references. For ourselves we would recommend the lower one, for the reason that in this case the coronet and front of the foot will still retain a certain degree of sensibility, which (if those parts are not involved in the disease), will greatly improve the style of going and safety of the animal.

Mode of performing the Nerve Operation.—The horse being thrown as directed (*ante*, p. 358), and having decided as to whether the upper or lower incision would be advisable, examine the part to be operated upon. Remember, the hair should be clipped from the part. A piece of tape tied tightly round the leg just below the knee or hock will be found to deaden sensation. The instruments being in readiness,* the operator kneels over his subject. An accurate acquaintance with the course of the nerve is indispensable. It descends in two main branches from the knee, one on each side of the leg. It proceeds in company with and behind the artery and vein on the inner side of the fore leg, while on the outer side it has no blood-vessel near it. About the middle of the leg the two nerves join by a branch, which goes over the perforans tendon, and connects the fibres of nerve on each side. The "high" incision is better, therefore, "below" this. At the pastern the nerve divides; the hinder branch runs to the frog, the front travels in front of the artery a little way, then divides into several branches, in which reside the sensibility of the foot. We will suppose you are operating on the inside. Ascertain the exact course of the artery by its pulsation; then make a cut close to the edge of the flexor tendon. Let the incision be near to but rather behind the artery; if below the fetlock joint, an inch in length. The cellular substance being cleared away will bring the vessels into view, and the nerve will be readily distinguished from them by its whiteness. In horses of very clean legs there is little cellular membrane to remove. Having clearly distinguished the nerve and artery, elevating it from the vessels and its mem-

* See Plate XVI., where the nerving knife, D 1, for making the incision, and the curved knife for dividing the nerve, I 2, are delineated.

branous attachments by means of a tenaculum, or crooked needle, armed with some small twine, pass the needle under the nerve, withdrawing it, leaving the twine behind, and tie its ends firmly together. Inserting your finger in the loop, raise the nerve, and insert the curved nerving knife (Plate XVI., D 2), turn it, and the nerve is instantaneously severed by a drawing stroke, as near to the upper angle of the section as possible. The violent spasm the division of the nerve produces may be somewhat lessened by pressing the nerve between the finger and the thumb, when the opportunity may be taken of dividing it; then, taking hold of the lowermost portion between a pair of forceps, clip out about three-fourths of an inch of its trunk. Having finished, if both feet are affected, proceed to operate upon the contrary side of the other leg; after which turn the horse, and repeat the operations on the like parts of each leg as they come in succession.

The reason of dividing the nerve at the upper part of the incision, is, that from the moment of severance all below the cut is deprived of communication with the sensorium, and the after-dissection and cutting is upon a substance deprived of feeling. The nerve should be always dissected out to the length of the incision, about an inch, or it will probably reunite and restore sensation. The skin may be closed with a single stitch; no bandaging is required, but a compress or linen roller may be applied, as looking more surgical and neat. For the first three days, sponge the leg with luke-warm water; and, if there is any heat, change this for cold water, with cloths frequently changed. No dressing is required, and the wounds should be healed in three or four weeks.

White says, in his excellent practical "Farriery," the horse may be "turned to grass after three weeks." To this we positively object. The animal, relieved from pain, gallops wildly about the field, and is apt to injure the tendon opposite the navicular bone, if not to produce a mechanical rupture of the parts. Of the success of neurotomy under his own eye, Mr. Spooner says:—"We have collected no less than sixty-three cases of the successful performance of neurotomy, nearly all being on horses that stood sound a considerable time afterwards; some of them having been hunted, and others severely worked. Of these cases we find twenty-seven in which it is not mentioned whether the operation was performed above or below the fetlock; and there are eight cases of the low operation on one leg, and two in which it was thus practised on both legs. We have thirteen cases of the high operation, nine out of which are on one fore-leg, two on both fore-legs, one on one side of the leg only, and one on both legs, but one side of each. Besides which we have six cases in which it was performed on one or both hind legs. There are many other cases mentioned, though not related; and there are two instances in which the operation failed."

DIVISION OF THE FLEXOR TENDON.

"Clap of the back-sinews," already treated of, and sprains of tendon, are the cause of that "knucking over" seen in many horses that have been overworked to so disfiguring and disabling an extent. Some look ready to fall forward on their knees, while others can only put the toe of the hind foot to the ground. In these cases, division of the tendon is both humane and serviceable. The operation consists in making a longitudinal incision of about three inches in length along the inner lateral edge of the tendon; dissecting each portion from its cellular attachment, so as to expose the nerve, artery, and tendons. A stout curved knife, with a probe point and a blunt back, cutting at the inner edge, is used, when the above-cut has been made. The leg is then bent. This opening will allow the perforans to be freed from the perforatus, when a division should be made by a scalpel applied to its surface. It is evident that this should take place below any thickening or adhesions which may have permanently connected the tendon with the neighbouring parts. Any lesser attachments will be broken through by forcing back the foot to the just position. By Mr. Dick this was done "by placing his knee against the front or projecting part of the pastern, at the same time laying hold of the foot with one hand and the upper part of the leg with the other, and using considerable force; and this appears to be necessary, in order to break any adhesions that may have formed." To return: We will suppose the leg bent; the knife is inserted behind the nerve and artery, and under the tendon; the back is towards the former, when by a simple turn of the wrist the operator brings the cutting edge to the tendons, and an attendant forcing the leg straight, the perforans is brought against the knife, while the suspensory ligament and blood-vessels are safe behind it. If the tendon resist the edge, the curved knife is brought out with a drawing cut. Sometimes, on the division of the flexor tendon, the extensor pedis muscle, relieved of its antagonism, brings the fetlock joint straight. The wound is then closed with a pin and twisted tow, and treated in the usual way. A shoe with a long piece projecting at the toe should be worn for a few weeks, till the leg is well.

FIRING.

There is not in the records of blacksmith brutality—though for that matter our older professors of the veterinary art were fully their equals, if not their masters,—a more humiliating record than that of the application of red-hot iron to the uncomplaining and tortured horse. They seared his palate for lampas; the end of his tail after docking; the under vertebræ of the same appendage in nicking; his legs (with more reason) in the special operation of "firing;" and frizzled and fried his skin for wounds, cuts, ulcers, and farcy buds; in short, for anything—when the red-hot iron was handy. Professor Coleman, an eloquent and plausible teacher in his day, was a very apostle of the actual cautery

He viewed a scorching or sudden roasting of the skin as a permanent bandage, and of the flesh, as the readiest of styptics. It was declared excellent to promote absorption of the callus; it was inconsistently asserted to promote granulation in broken knees, and to check granulations when too luxuriant. In glanders, they slit the nostril, scraped the bone, and then fired the swelled gland with a hot iron; and one writer says, by the use of the searing iron "ulcers, and abscesses generally, may be reduced to common scalds." (See "Hinds' Veterinary Surgery," 1829). Finally, it is related by Lafosse, the eminent French veterinarian, that in 1801, several regiments in Alsace and Lorraine employed the actual cautery as a cure for glandered horses. Some "applied fire to the jugular gland in three lines; others cauterised the bones of the forehead and nose;" but the most ridiculous affair of all was, to see "forty horses together which had fire applied round the eyelids to cure the running," common to all glandular affections in the head! In short, there was no cruelty or folly which hot iron was not guilty of, through the ignorance of its manipulators. Firing may now be confined to its legitimate use; that of constricting those parts of the leg which consist of tendon and ligament, enclosed with a skin and lined with the hardest bone; and its application to farcy-buds (*ante*, pp. 270, 271); though in both it may often be advantageously substituted by caustics, blistering, fomenting, and detersive lotions.

The iron for firing is represented in Plate XVI. (E.), and there are various modes of its application. Old books contain some grim drawings of attempts at fancy patterns scored with red-hot iron on the integuments of the prostrate beast, bearing a remote resemblance to the tattooing of South Sea savages. The Veterinary College, erewhile the head-quarters of the firing iron, recommends that the legs should always be scored in perpendicular lines. White recommends the "feather" pattern; others, horizontal, vertical, and oblique lines. Some veterinarians cast the horse, others fire him standing. We prefer the former. Some recommend the firing to be very light and superficial, others declare that there is no virtue in hot iron unless you go deep. Messrs. Turners, good and intelligent surgeons, say they find firing quite through the skin most effectual; and, if the iron is resolved on, we agree with them. The theory of the benefit of firing is, by creating a superficial inflammation, to draw, by counter irritation, the inflammation from a deeper-seated part; also, by the thickening and constriction of the skin, to create a permanent bandage, or compress, on parts inclined to "fill." Firing leaves a blemish; which should also be a reason for avoiding its application, unless deemed indispensable.

The horse being thrown, and the legs secured in the manner already directed, the hair is cut off close from the part to be operated upon. The firing iron should have a smooth round edge, the thickness of a worn shilling. For ourselves, we would never penetrate the skin while running the vertical lines. This direction, in the upright line of the leg, produces the most efficient contraction, while the cross way, or horizontal, leaves less blemish. A combination may be adopted by which the horizontal lines are combined with lighter lateral scorings in a sort of herring-bone pattern: these should not be close. Mr. Spooner proposes, where deep cauterization is thought advisable, that small punctures with a pointed iron may be made in various places, when a glutinous exudation will be seen after the operation. These punctures must not be too close, or there is danger of the skin sloughing between them and making an extensive blemish. We have said thus much of firing, once so prevalent. The absence of the hot iron from the hands of the veterinary surgeon,—though we would not squeamishly reject a remedy of the "heroic" sort—is a proof of his judgment and skill, as well as of his humanity.

NICKING AND DOCKING.

These once prevalent, dangerous, and barbarous disfigurements having passed away—except in some dark parts of the sister island, where animals thus mutilated and deformed are still to be seen—we shall merely record our satisfaction that they are obsolete. The first-named consisted of tying the hair at the point of the tail in a bunch, and attaching to it thereafter a heavy weight passed over a pulley, to keep it drawn up. The tail being lifted, the torturer sought for the middle of one of the vertebræ (not its point of articulation), and fiercely slashed through the depressor muscles from one side to the other with a curved sweep of a sharp knife. With a thoroughbred, we are told, one "nick" was sufficient, with a hunter, two; while a hackney had three gashes under his tail, as he was thought to look handsomer for an extra cock-up of the caudal appendage. With a pair of scissors the "fibres," if any appear across the incisions, must be cut off, and pledgets of tow inserted deeply in the wounds. We are also cautioned to see that "the muscles are divided equally on each side the tail;" for, *risum teneatis*, "you would not like to see him carry his tail sideways." It is confessed that intense inflammation, swelling, and death, frequently followed these painful barbarities, when the weight dragging up the tail was too heavy, or long continued. Yet "the tail must be kept back *for some weeks*, until after the wounds are healed; for, *if allowed to hang down*, the edges of the cuts would unite, and the object be defeated!" Credit is taken for a double line carried to a pulley on each side of the stall, by which the suffering wretch's caudal appendage can be regulated "when growing awry." Lastly, we are told, if "severe inflammation come on, take the weight off the tail-ropes and foment the part with warm water; but if *locked-jaw comes on, take off the tail at the first joint above the highest nick*." And we read this, and more, in "The Complete Modern Farrier," by Thomas Brown, published by a highly respectable firm in 1861; from which work also, as we shall never consent to be a party to such mutilation, we extract this curious rather than useful account of docking.

Docking.—"It has been a long-established custom to dock the tails of horses. Convenience justifies it, and fashion guides it (?) The length of the stump varies with the taste of the times, or the fancy of the owner. A medium length is undoubtedly the best, and a very short one is not only unseemly, but also a very great injury to the animal, as he is thus deprived of that which nature intended as a switch, and as a substitute for hands to drive off insects.

"The operation of docking is performed at different ages of the animal; some consider it best to do it at two years, while others think the earlier the better. From what we have ourselves noticed, we coincide with the latter opinion. At a fortnight it may be done with perfect safety, and even sooner; and it unquestionably affects the foal less at this period than at the age of two years.

"The manner of performing the operation is, to fix upon a part of the tail, and having determined on that, take the one next joint to it; let the hair be turned up and fastened with tape for an inch or two above the joint, while that which grows upon the vertebra itself must be cut off. The horse is then restrained by the side line, and the surgeon now applies his docking machine, and cuts it through at the division between the vertebræ, at one stroke. It is not uncommon for farmers and other breeders to perform the operation with a sharp knife, resting the tail on a board, and striking the back of the knife with a mallet or hammer. Although considerable bleeding is caused by this operation, there is no danger to be apprehended from it. To stop this, the speediest manner is, to sere the stump with a red-hot iron, with a hole in its centre to prevent it from touching the bone, which would cause exfoliation; or, if severely injured, it would fall off at the joint above, and thus shorten the desired length of the tail. The bleeding vessels are all on the outside of the bone. The iron must not be too hot, nor much pressure applied to it, neither should it be long continued. No kind of dressing is required after this operation. In some cases slight bleeding occurs after the use of the cautery; but when this occurs, it is better to allow it to stop of its own accord, as a repetition of the burning might cause locked-jaw, or constitutional irritation."*

BLISTERING.

The preparation and ingredients of Blisters will be found in List of Medicines, *ante*, p. 227. When a "vesicatory" becomes absorbed through the pores of the skin, it inflames the sensible cutis underneath; the consequence of which is an effusion of serum through the part, which, in man, elevates the cuticle into a bladder of the same extent as the surface inflamed; but in the horse, from the greater tenacity of the cellular connections, it becomes separated in the form of small distinct vesicles only. If the irritating cause be quickly removed, the serum may be re-absorbed, and the surface restored by a slight effort of adhesive inflammation. If the irritant act in a still minor degree, it simply stimulates the vessels of the skin to an infiltration of fluid through the sensible pores, but produces no destruction of cuticle: such has been called a sweating blister. But when by continued irritation the cutis is exposed, suppuration succeeds, and the part is fully blistered. The salutary action of blisters is exerted in several ways; in promoting absorption; in combating deep-seated inflammations, and in aiding others. As a stimulus to the absorbents, they act beneficially in the removal of injurious deposits; as the coagula remaining after inflammatory lesions. Blisters are very important aids in inflammatory affections, as counter-irritants, derived from a law in the animal economy, that two inflammations seldom exist in the vicinity of each other. Therefore, when such an affection has taken place in any part, and we wish to remove it, we attempt to raise an artificial inflammation in the neighbourhood by means of blisters; which, if persevered in, destroy, or at least lessen, the original one. Occasionally, also, we blister the immediate inflamed part, with an intention to hasten the suppurative process by increasing the activity of the vessels—as in deep-seated abscesses, and also in those which attack glandular parts. We, therefore, employ blisters to hasten the maturation of the tumours in strangles.

In applying a blister, cut the hair as close as possible from the part; then hand-rub in the blistering compound from ten minutes to a quarter of an hour. In blistering the legs, take care the hinder part of the heel, under the fetlock joint, is rubbed with lard or melted suet, to prevent the action of any of the blister that may run down the leg; this will often prevent some troublesome sores forming, from the blistering ointment falling on these sensitive parts. While a blister is acting, the litter should be removed from under the feet, or it will tickle the legs, and irritate; the head ought to be carefully secured for two days and nights, to oppose lying down, more especially to prevent the horse biting the blistered part. On the third evening he may be permitted to repose; but a prevention should even then be continued, by means of what is called a cradle. (This apparatus may be bought at every turnery shop; or may be made of eight or ten pieces of round wood, an inch and a half in diameter, and two feet long: these are strung at each end on a rope, and fastened around the neck.) When it is intended to blister repeatedly, the effects of the first blister should have subsided before the second is applied; the scurf and scabs also be cleared away, and the part well washed with soap and water. In all cases, the third or fourth day after the application, the part should be thoroughly painted over by means of a long-haired brush (such as are in use with pastry-cooks to glaze their crusts) with lead liniment, which should be repeated every day; and when it is proposed to turn a horse out, it should never be done until the whole blistered surface is quite healed; otherwise

* *The Complete Modern Farrier*, by Thomas Brown, M.P.S., London; Virtue, & Co., 1861, pp. 328, 329.

dirt, flies, &c., may prove hurtful. Some practitioners blister mildly one day, and on the next wash off the blistering matter, thereby saving loss of hair. But there is more of apparent than real good in this plan. If a blister be necessary, it requires all its activity.

Ammoniacal Blister.—Mr. Mayhew strongly recommends this in spasmodic colic and enteritis. Spanish flies are only efficacious when the animal can afford to wait their action, which is rather slow. In most of the acute diseases, the horse would perish before the blister began to rise, wherefore resort has been had to boiling water and red-hot iron. The action of these last coarse and brutal measures was alone controlled by the violence of the internal inflammation. We have in the liquor ammonia an agent quite as formidable as boiling water or heated iron, but it is rather longer in displaying its force; wherefore it allows time for watching its action, and for checking it the instant it has sufficiently blistered the skin. It is true the liquor ammonia upon the skin cannot be removed, neither need it be counteracted. The ordinary soap liniment, if covered over, would, because of the ammonia it contains, produce a lasting blemish; but every veterinary surgeon knows how very harmless a preparation that is when simply rubbed upon the surface. So, when we desire the active effects of liquor ammonia, we double a blanket or rug four or five times, and hold it over the liquid. It takes from ten to twenty minutes to raise a blister, and it consequently can from time to time be observed; and when its action has reached the wished-for point, all we have to do effectually to stop it is, to take away the rug or blanket. That removed, the free surface and the heat of the body occasion the ammoniacal vapour to be dispersed, and the animal is safe.

POULTICING AND BANDAGING.

There is much comfort and relief to the animal in the neat-handed application of poultices and bandages. With this object we have devoted Plate XVI. to delineating some of the more generally useful bandages. Fig. 1, is adapted for poulticing for sore throat, &c. The cloth to be employed should be of stout but supple linen; Russia duck, or fine sailcloth, or if you have it at hand, a piece of sheepskin or a chamois leather will do. You need not steep the cloth in any solution to make it water-tight.

When spread out, the cloth will be of an irregular octagon shape, at each corner whereof is to be strongly sewed on a piece of broad tape for the purpose of fastening to the girth, or round the neck, and to a breasting of broad web, which is supported by another piece, that passes over the withers, and which two should be previously fastened together by stitching the cross-piece ends upon the breasting. The two extremes of the bandage will be the fillet across the forehead and the fastening at the girth; therefore, measure should be previously taken of the whole length proper for the individual patient, lest the tie, which would otherwise be necessary at the ears, might discommode the animal and occasion uneasiness; on the other hand, the application would not be kept in its place properly. A glance, however, at the figure will instruct a tolerably expert workman (or workwoman) how to manufacture such a bandage as would answer every purpose.

In Bandaging for Strangles (the steaming apparatus is shown Plate XVI., A, a), another form of cloth and straps is required. The explanation above, and the drawing on Plate XVI., Fig. 4, are sufficiently explanatory.

The *Bandage for Poll-evil* is represented on Fig. 3. The poultice (see POLL-EVIL) should be of sufficient quantity to cover the whole swelling two inches thick at least, having a small quantity of sweet oil, hog's lard, or oil of turpentine mixed therewith. Fix it on by means of a contrivance sufficiently explained by the figure, in which it will be seen that the girth is to have a web breasting, to which the lateral corners of the cloth are to be attached by broad tapes, as was explained above. The bandage in the drawing is longer than requisite for poll-evil, so that it may not be liable to shift, and be serviceable for other diseases lower down the neck.

Fig. 2, Plate XVI.,—the bandage for "critical abscess"—is equally intelligible from the representation.

CHAPTER XXXV.

ON SHOEING.—PREPARING THE FOOT.—MAKING THE SHOE.—FORM OF THE SHOE.—NAILING.—CLIPS AND CALKINS.

The history of horse-shoes may be read in Beckmann's "History of Inventions," Bracy Clark's works, and other compilations. We may presume that the cavalry in ancient Greece were not shod, as Alexander the Great and Mithridates were stopped in military expeditions by their horses requiring time to restore the horn of their hoofs. There is little doubt that at an early period the Tartars of central Asia, and probably the Chinese,—though the latter are no horsemen, except in imitation of their conquerors,—shod their horses. Numerous barrows and tumuli about Tomsk, on the Amoor, the Yenissai, and the Sener, have of late years been opened, where, with the bones of ancient Tartar and Mongolic warriors, have been found rude carved idols and the remains of horses with their shoes on, of a circular form, and (alas for modern invention) nailed on the outer side only, as in the "unilateral" shoe. In the western world, Cardanus, Beckmann, and Mr. Bracy Clark refer the introduction of horse-shoes to a period even later than the age of Augustus; the latter in their comments endeavouring to prove that golden, silver, and even iron shoes were not what we understand by them, but mere plates, more or less thin, according to the metal, fastened to leather, and this secured by *ligamenta* (straps or shackles) to the hoof or fetlock.

Suetonius, in his "Life of the Emperor Vespasian," tells an anecdote in which the fact of the Emperor's mules being shod, is incidentally mentioned; though the manner of shoeing is by no means indicated. The historian says, that the Emperor was wont to travel eighty miles to his Castilian villa. On an occasion of this kind, a petitioner (*litigator*) having bribed the driver of the imperial carriage to contrive to loosen a shoe of one of the mules, that worthy found himself under the necessity of alighting to fasten it; thus giving the petitioner the opportunity of access to the Emperor at a leisure moment. Vespasian, we are told, suspecting the trick, facetiously put off the supplicant by addressing his driver, and inquiring how much was to be his reward for this well-timed shoeing; intimating that he, the Emperor, "meant to go shares with him."* Our inference from this, would be in favour of metal shoes with ligamenta—horse sandals, in fact—rather than nailed shoes; though Schœffer, in his learned work "De Re Vehiculari," jumps the conclusion, that the muleteer got down to nail on a loose shoe, "soleam ferreum pede unius ex mulis." A proof of this mode of fastening, extending high up the shank of the leg, will be found in a drawing from a Roman tablet of terra cotta, in the British Museum,† wherein the bands of these boot-like defences of the feet are shown on the legs of four chariot-horses engaged in a race. These boots, being intended only for a special occasion and a brief exertion, may have been no more than leather: indeed, in cases of tender hoofs, Columella, writing in the time of Augustus, speaks of *solea spartea* (shoes made of the *spartum* or broom twigs); Vegetius and Clusius also mention *shoes* made from this tough material.‡ Leather, with iron "acorn-shaped" (*glantes ferrei*), is advised for healthy feet, to be exchanged for the *spartum* (broom shoe) *detritis pedibus;* and here, perhaps, lies the whole question.

It is, however, obvious, where once iron or other plates were applied, the form of the shoe was necessarily adapted to the animal's foot; and the internal surface was of very secondary interest, the whole difficulty in question being in the mode of fastening them on. In some cases this was clearly by nails driven, as now, through the corneous substance, as is evident from poetical notices, such as that of Catullus:—

"*Ferream* ut *soleam* tenaci in voragine mula derelinquit."

We know that Nero had his horses shod with silver; and Poppea, his wife, had her mules similarly protected with gold. The exact form of these shoes, it is sufficiently probable, was the same, or nearly the same, as the modern shoe of France and Italy; for on the battle-piece discovered at Pompeii, the horse standing before the chariot wheels of Darius, about to be mounted by a Persian satrap, is shod as here stated. This remarkable work of art cannot be of later date than 79 of the Christian era, when Pompeii was destroyed; and, it being to all appearance the copy of some

* The words of Suetonius immediately relating to the shoeing, are: Mulionem in itinere quodam suspicatus ad calciandus mulus desilisse, ut adeunte litigatori spatium moramque præberet: interrogavit, quanti calciasset: pactusque est lucri partem.—*Suetonius*, Vit. Imp. Vespasian. de Facetis p. 120.

† It forms the frontispiece of Bracy Clark's *Essay on the Knowledge of the Ancients respecting Shoeing the Horse, &c.*

‡ They were probably no more than boots for inflamed feet. At any rate they could not have been used on modern roads, if they even were on the flat stone causeways of the Romans.

celebrated picture of the Greek school, the original may be older than the Roman supremacy among the Hellenic nations. If, therefore, the mosaic really represents horse-shoes on the feet of the Persian steeds, the antiquity of the invention is carried up to a date coeval with, and most likely to one anterior to, the Christian era by more than a century. Upon the whole, there is no real objection to the existence of horse-shoes—not during the wars of Alexander, for we have already noticed his cavalry being detained in consequence of their worn hoofs—but a century at least before the Augustan era. The date affords time for the appearance of them in the mosaic, and the use of them at Rome for the use of the imperial family, and for horse-shoes in the tombs of Tartar chiefs. This also makes the tradition not impossible, that the iron work about the banner of Hossein, at Ardebil, is made from a horse-shoe belonging to Abbas, uncle of Mahomet, by order of his daughter Fatima. It was brought from Arabia by Sheik Bedreddeen, son of the holy Sheik Sefi, who was son of another holy villager, after the manner of the Moslem.

It is most likely that the story of the horse-shoe is true; but that it was one of a horse belonging to the Beni Coreish —a camel-riding tribe, without horses till the Prophet had begun his successful military career—may be doubted. Horse-shoes, from the foregoing observations, are sufficiently proved to be of more ancient date than Beckmann will admit; he referring them to the ninth century, notwithstanding his thorough acquaintance with the passages in Roman authors on the subject. The fact is one more in illustration of the inconceivable tenacity there is in man to defend an opinion once adopted. Whether the iron shoe is fixed by means of three nails clamped round a hoof, or by eight or ten driven in, as now, through a plate more or less different in form, or alleged to be used for mules, are one and all so many amusing quibbles to escape from a self-evident fact.

Although the practice was long opposed, and ages passed before shoeing was general, yet when it was once understood, the presumed difficulty vanished, and Tartars and Cossacks at this day very generally understand the shoeing of their own horses. In England it is pretended that it was William the Norman who introduced it; but the assumption is like that which, some years ago, maintained that there were no stone churches in England before the Conquest, and none in Ireland before Henry II.—they are mere instances of the audacity of ignorance. Saxon England contained a number of Northmen adventurers, Danes and others, who had served, and who continued to serve after the Conquest, among the Varangi—life-guards of Greek emperors; it had monks that went regularly for education abroad, and travelled to Rome. England was infatuated with female saintship, then most fashionably exemplified by a pilgrimage to the Papal throne, and that in such numbers that the 11,000 virgins of Cologne, martyrs, &c., were held to be, in general, Englishwomen; besides more authentic records describe the crowds passing up and down the Rhine on their route, with rather equivocal characters. It is impossible, therefore, that horse-shoes should not have been known and used; though, as the Anglo Saxon is not shown to have been essentially a horseman, it is likely that the practice was confined to the nobility, as indeed it was till a late period in parts of France.

Horse-shoes have varied little in Europe, retaining now very nearly the form even of that figured in the wall-pictures before-mentioned. But the most ancient Circassian horse-shoe appears to have been round; and if the figure of it remaining in a brand be correct, it had only three nails or clamps secured on the outside of the hoof. Another round horse-shoe is in use among the modern Egyptians, and partly the Syrians; it is a round plate with a hole in the middle; the common shoe, also used, has the heels turned against the heel. In other parts of Turkey, the plate is square behind, and rounded at the toe. On the continent of Europe, the ends, particularly in winter, are always turned up; and when there is ice on the ground, both are frequently pointed. The forms of modern shoes, many of them adapted to special purposes, will be found engraved in Plates XVIII. and XIX., and described hereafter.

Considering the apparent simplicity of the process to an ordinary observer, the method of fastening a piece of iron to the horse's foot has been the occasion of more dissertations, essays, guides, manuals, "practical" instructions, theories, disputes, and—we sorrow to write it—hard words and abuse, than any subject we are acquainted with. It will be our aim here rather to simplify the matter than to overload it; and instead of wearying the reader with the investigations of something like a hundred (many of them ingenious) writers on the mode of defending the horse's foot, endeavour to combine the proven facts of all with the results of our own experience in a plain and succinct compendium. A reference to Plate XI., Figs 2, 3, 4, where the sole, frog, &c., are delineated in its natural and its contracted states, will help to elucidate the subject.

Shoeing, then, is a necessary evil. Among the evils inseparable from every kind of metal shoe, is the severe battering upon hard roads, rendered yet more severe by the interposition of an unyielding substance, such as iron. Every step the horse now takes, is made upon iron; and the wonder should be, not that a foot occasionally gives way, but that any part of a living frame should be able to withstand such treatment. Then, not only are the roads hard, and the pace at which the horse is driven along killing, but we have also to weigh properly the treatment the horse receives within the stable. Here he stands often for days together, cramped in a stall where he can only stand, frequently he cannot turn round, and very seldom can he lie upon his side, and stretch out his limbs. He stands here generally for twenty hours out of the four-and-twenty, with iron upon his feet, resting upon wet stones or damp bricks. No wonder if the feet should become cold; and those who

are accustomed to bleed horses from the foot can tell how cold the first drop or two of blood flows from the part, owing to muscular action being suspended, which is necessary to circulation and to vital warmth.

With regard to shoeing itself, and the share of the farrier in producing lameness, Mr. Youatt says, sensibly, "We must protest against the opinion that contraction is the necessary consequence of shoeing. There can be no doubt that an inflexible iron ring being nailed to the foot, prevents, to a very considerable degree, the descent of the sole and the expansion of the heel before; and it is likewise possible, that when the expansion of the heels is prevented, they will often begin to contract. But here again, nature, cut off from one resource, finds others. If the coffin-bone has not so much descent downward, it probably acquires one backward, and the functions of the foot are usefully if not perfectly performed. The plain proof of this is, that although there are many horses that are injured or ruined by bad shoeing, there are others, and they are a numerous class, who suffer not at all from good shoeing, and scarcely even from bad. Except it be from accident, how seldom is the farmer's horse lame? and it might even be further asked, how seldom is his foot much contracted? Some gentlemen who are careful of their horses, have driven them twenty years, and principally over the rough pavement of towns, without a day's lameness. Shoeing may be a necessary evil, but it is not the evil which some speculative persons have supposed it to be: and the undoubted fact is, that when the horse is put to real hard work, and when the injury produced by shoeing in destroying the expansibility of the foot would most of all shew itself, the foot lasts a great deal longer than the leg; nay, horsemen will tell us that one pair of good feet is worth two pairs of legs."

As we address ourselves specially to those who love the horse, it will not be too much to ask the horse-owner to spare an hour a month to see his horse or horses shod. Many a valuable horse may thus be saved some suffering, if not injury. Do not have your horses shod at an ill-lighted place, but one with side-lights as well as skylights. Cast your eyes about for signs of drinking, and see that there is no screaming or bawling at the horses, rough tossing of the hammers and tools, and a prevalence of cant and self-sufficiency—all these we have seen, but never in conjunction with good shoeing and trustworthiness. See, too, that in tying up, the halter or rope does not annoy the horse's ears or fore top, rub his eye, or constrict his throat, as a "vicious" resistance, as it is called, is often thus established.

With these preliminary remarks we shall proceed to the Practice of Shoeing.

Preparation of the Foot.—The horse is standing in the forge with his old shoes on, and these have to be taken off. We have gathered much of the character of the smith, by watching the way he has gone about this seemingly trivial preliminary. See that he handles his "buffer"* properly, and does not cut pieces out of the hoof in raising each clench separately. The clenches of the nails should be raised, which few do; but, after turning one or two of them, he seizes first one heel and then the other, and wrenches them loose, then, seizing the toe with his pincers, tears off the iron. By this the hold of the new shoe is weakened, the nail-holes enlarged, and sometimes a portion of the hoof splintered or torn off. The horse often shows that he suffers, by a sudden shrinking or trembling, when the pincers are thus used. Stubs, too, are sometimes left in the crust of the foot by this off-handed violence, and prove the seeds of future lameness or exfoliation, to say nothing of the animal being rendered timid and difficult to shoe.

The general principle of healthy shoeing is, to support the foot off the ground by means of the "wall," and by this only; so that the frog shall not come in contact with the hard plain road, whilst it may be allowed to receive pressure upon going over soft ground. The first prevents injuries and resists wear and tear, the latter promotes the secretion of healthy horn, by a proper degree of pressure—that is to prevent this being received by the heel, frog, and bars. Whatever is here said, the fore foot is still kept in view, unless the hinder foot is particularly mentioned; and occasion will present itself for the distinction, as there is great difference in the wall and other external shape between the two, especially as regards heavy draught cattle. The shoe removed, the crust is to be rasped down at the edges; and although a little roughness may be exercised in this, yet there is little danger of injury to the hoof, only that too much must not be removed, so as to render it too thin. The hoof requires considerable labour to pare, and this is of great importance to the comfort of the animal, as well as his safety on the road. It is a part of the operation of shoeing which is too often done in a hurried and slovenly manner. We would advise the owner of the animal, when he employs a new or strange farrier, to see that paring is thoroughly performed; because, if the sole is not well pared, its elasticity will be destroyed, and the internal portion be prevented from descending. This will impair the functions of the foot, and induce many of the maladies to which it is liable—navicular disease, contraction, corns, inflammation, and the diseases of which we have already treated. Nothing is of more consequence than to prevent an accumulation of the horny substance of the sole, which, it is easy to see, must increase, because, being protected by the shoe, it cannot get worn down as it would in a natural condition. Sufficient thickness should be left, so as to protect the internal parts of the foot from injury, and enough taken away to allow the external sole to descend. This can easily be determined by the pressure of the thumb on the sole, which should yield slightly in all its breadth. This operation is performed by the drawing-knife, figured in Plate XVII.

It will happen that the horn of the sole becomes so hard

* The buffer is a square, short iron knife. See Plate XVII.

that it is removed with very great difficulty, in which case it becomes necessary to soften it by heat. This is effected by means of a flat heated iron, drawn over the sole, and even kept close to it for a little time. If the sole is thick, no injury will be sustained from it, and, on the contrary, it will render the paring more easy and less disagreeable to the horse; but if the sole has been regularly pared out during shoeing, this must not be permitted. The quantity of paring necessarily varies much, according to the formation and condition of the foot. The foot which is pumiced should only have the ragged parts cut away; when the foot is flat, little paring is needed; from that which is concave, the crust must be pared until it yields slightly to strong pressure from the thumb; if the foot is strong, a great deal of paring is requisite. Care must always be taken that the crust is not reduced to a level with the sole, as this would permit the sole to press upon the edge of the seating, and thereby be bruised and injured. The entire circumference of the crust should be perfectly level, but projecting a little beyond the sole.

Mr. Cottam, the patentee of the admirable Goodenough shoe, in reference to the heel, to which we must now direct attention, observes, that almost without exception horses' heels are allowed to grow too long, so that the frog is raised from the ground, and thus thrown out of action, it ceases to aid in nourishing the foot. Atrophy is the direct consequence; and the wall of the foot closes in upon the diminished volume of the interior; and in thus contracting, the frogs are nipped by the heels of the hoof, so that the horse cannot rest the flexor tendon on its natural cushion without pain; and to avoid this discomfort, he throws his weight on the toe—a habit which destroys the just apportionment of the duties of the flexor and extensor muscles, exerting the former continually and unduly, and the latter insufficiently. The horn or wall of the hoof, becoming dry from a diminished supply of its natural secretions, has from this cause alone a tendency to curl inwards at the heels. A cow's horn (cut to form a shoe horn) or a goose quill exemplifies this, as it curls inward as the inside becomes dry on exposure to the air.

Goodenough's System of Shoeing Horses.—In 1861 Mr. Goodenough (well known in this country by his association with Mr. Rarey) invented and patented the shoe we are now about to describe, and has succeeded, we think, in securing all necessary protection to the hoof, and in removing, or reducing to a minimum, the bad effects of earlier methods. The principle laid down by Mr. Goodenough is, that the shoe should resemble, and preserve as far as possible, the natural shape of the hoof, of which it is a continuation. The unshod horse has the under surface of his foot on a generally level plane, the frog and the whole margin of the hoof in contact with the ground, and the surface of the sole, between the frog and the margin, somewhat raised by its own concavity. The Goodenough shoe is made precisely to follow the outline of the hoof for which it is intended, and to reach exactly to the bars, never projecting at all beyond the heel. Its upper surface is perfectly plane and true; its under surface is generally concave from the outer to the inner margin, the outer margin having, however, a narrow flat bearing upon the ground, and this bearing is interrupted by portions of the margin being cut away, so as to leave a central toe calk, and two smaller calks on either side. The elevation of these calks is inconsiderable, and their general level is the same, so that they may be compared to a series of short claws on the under surface of the shoe. In the notches, or spaces between the calks, the nail-holes are bored and countersunk, so that the nail-heads are completely buried in the shoe. For frost, shoes are made in which the calks have no flat bearing, but are brought up to a feather edge. The inner margin of the shoe is thin, so that its outline passes insensibly into that of the sole, and presents no projections by which stones or snow can be retained. The method of preparing the foot and of applying the shoe is as follows:—

In the first place, a shoe which precisely fits the outline of the hoof is selected from the stock. If a proper fit cannot be found, any slight alteration is made by a few blows on the cold iron, or, if heating be necessary, the shoe is made cold again before it is applied, and care is taken that it remains perfectly level and true. The farrier then prepares the hoof by cutting or rasping away the surface of that portion of the crust on which the iron will rest, leaving the centre of the sole and the frog and bars untouched. Having given what he judges to be a true level to this marginal seating for the shoe, the shoe is applied cold, and the hoof is rasped again and again until horn and iron come into perfect contact in every part. As a guide to the use of the rasp, the surface of the shoe is ruddled, so that any portions of horn not touched by it remain uncoloured. The adjustment being correct, the shoe is nailed on in the ordinary way, and the process is complete.

When the shoes are put on for the first time it will often happen that the frog, dwarfed and deformed by previous ill-treatment, does not reach the ground at once, and for some hours or even for a day or two, the horse may experience the same kind of inconvenience that would be felt by a man who was taken out of very high-heeled boots, to which he was accustomed, and made to walk on level soles. But a very short time restores the muscles of the leg to their natural equilibrium and relieves the latter discomfort, while, after a few shoeings, the frog reaches the ground fairly and fully, forming an elastic wedge which gives the horse a conscious and safe foothold upon every surface. The sole also grows somewhat within the circle of the shoe, and forms a shoulder by which the firmness and security of the latter are greatly increased, so that fewer and smaller nails are required. At first, too, it is necessary to have a considerable thickness of iron, in order to supply the place of the horn usually removed by the excessive cutting of the ordinary farrier; but when the hoof has grown to its natural proportions, smaller and lighter shoes will be sufficient.

Mr. Goodenough's system has only very lately been introduced into this country. It has been in use in America for about nine years, and comes recommended by a singular concurrence of testimony from large employers of horse labour, from omnibus and railway companies, from cavalry officers, from surgeons, human and veterinary. The surer foothold is said so much to diminish labour that horses are kept in condition on an appreciably smaller quantity of food; and diseases of parts from the knee or hock downwards are said almost to have disappeared from the stables. Apart from this testimony we will relate what we have ourselves seen.

A number of horses belonging to the London General Omnibus Company, some that had been shod for two months on the Goodenough system, and some shod in the old method with high heel calks, were brought together for inspection. Of the latter horses, all stood resting one hind foot, or first one and then the other. Of the former, all, without exception, stood still and quietly on all four feet at once, without a sign of restlessness or discomfort. A hind shoe with heel calks, that had been worn for some little time, was removed, and a new Goodenough shoe to fit the same foot was selected. The Goodenough shoe was lighter by 1¼lb. than the one removed to make way for it. At omnibus pace, a horse lifts each hoof about six inches, and takes, with all four, about 60 steps in a minute. A set of Goodenough shoes would, therefore, save this particular horse, every hour, the labour required to lift a ton weight to the height of one foot. A fine old white horse, condemned by his owners as hopelessly lame, useless, and worn out, was bought by Messrs. Robinson and Cottam, the manufacturers in England of the Goodenough shoe, for £3. With no other treatment than the shoeing, he speedily and perfectly recovered, and now trots cheerfully along with a ton and a half behind him, or stands quietly on all four feet when at rest. Another somewhat similar purchase by the same gentlemen, a horse with one fore hoof completely split, has recovered in a manner no less remarkable.

Mr. Goodenough claims for his system the negative merit that the shoe, being applied cold, does not injure and weaken the horn by burning, as in the common method. He claims the positive merits that "it prevents slipping, overreaching, and interfering, cutting, or picking up stones, balling snow or mud, contracted feet, corns, sand cracks, thrush, springing of the knees, shrinking of the shoulders. It also prevents the nails striking the ground while the foot is sensitive from shoeing. A horse will draw with it a greater weight and travel further." From careful examination of the method, and, so far as they are yet to be seen in this country, of the results of its employment, we are of opinion that these claims are scarcely, if at all, overstated, and that Mr. Goodenough will confer the greatest benefits, alike upon horses and upon those who own or use them. Another advantage of the system is one that will be greatly felt in the hunting field. The hoof, having its natural form and surface preserved, draws out of clay or mud without the suction by which so many ordinary shoes are loosened, and so much extra labour is entailed upon the horse. It has been calculated that this suction may be nearly 1lb. per lift to each foot, in addition to the weight of the shoe; and its total amount at the end of a day's work would be such as to seem scarcely credible.

The Goodenough horse shoe has not only proved a direct economy in shoeing, but has effected astonishing results in improving the feet of horses which have been subject to the imperfect mode of shoeing commonly practised; for it is well known and can be shown that the principal diseases of the foot arise from this cause—diseases which impair the usefulness of the horse, and result in shortening his working life to an extent scarcely to be credited. There are known physiological facts concerning the foot of the horse, acknowledged in veterinary science, which, nevertheless, have only been made available in farriery to a limited extent, owing to the circumstance that a shoe with the necessary requirements to meet them cannot be produced by other than the present advanced appliances of manufacture. Such a shoe is now, for the first time, placed before the public of this country.

The weight of the horse being mainly sustained by the crust of the hoof, this shoe is designed to arm that crust, and forms a continuation of it to the ground in iron, and is so contrived that no pressure is put on the sole of the foot; by these means the horse strikes a direct and solid blow through that part of the hoof intended by nature to receive it. A portion of the weight of the horse should be sustained by the frog, which, if the patentee's system of shoeing be attended to, will be allowed to touch the ground and give rest to the tendons, expand the foot, and cause a healthy deposition of sound horn to the hoof. This, in due time, will remedy contraction, corns, split hoof, quarter or sand cracks, and thrushes.

The natural position of the foot is preserved by the level calks, preventing that slipping and rocking of the foot which wastes the muscular power of the horse to the wearing away of the shoe; for the rapid wearing of the heavy broad webbed shoes in common use is owing to the continued slipping and consequent grinding away of the surface. This, and the action of the frog above alluded to, will prevent the springing of the knees, and the shrinking of the shoulders of the horse.

The temptation to the common and pernicious practice of burning on the shoe to a fit, which destroys the vitality of the horn, is entirely obviated, as the patent Goodenough horse shoe is made by machinery to a true form, and is fitted on the foot cold. Its concavity on the ground surface entirely prevents balling in snow or mud, and the nail heads are effectually prevented striking the ground after shoeing by the prominent calks, a desideratum that will be appreciated by those who know how sensitive the foot is for some time after shoeing.

From its peculiar form it is a non-overreaching and a non-interfering shoe; it is lighter by 40 per cent. than the ordinary shoe—a saving in this direction being of great

THE GOODENOUGH SHOE.

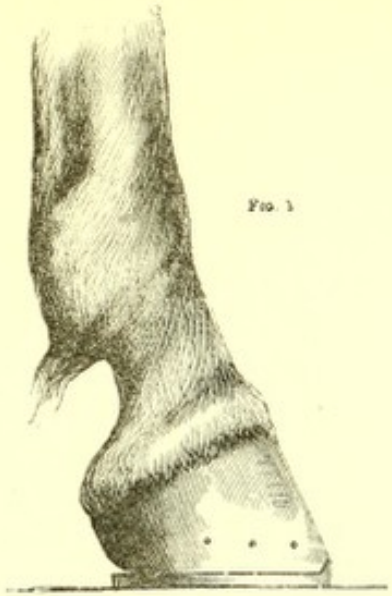


Fig. 1.

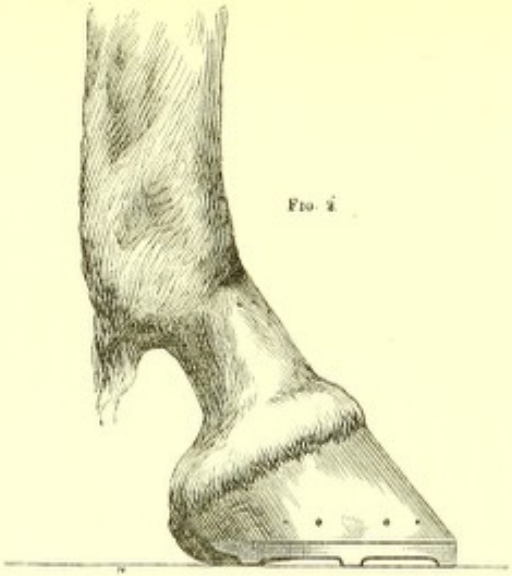


Fig. 2.

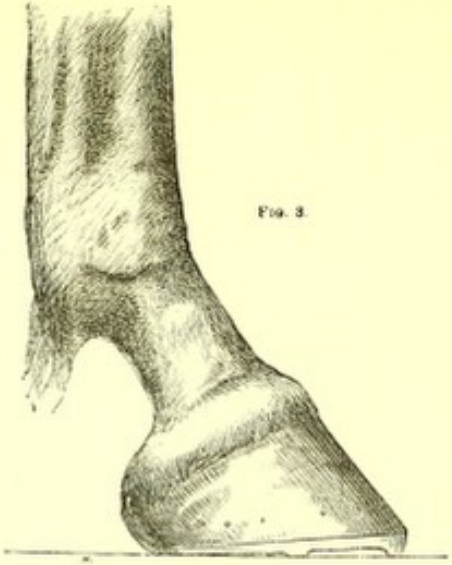
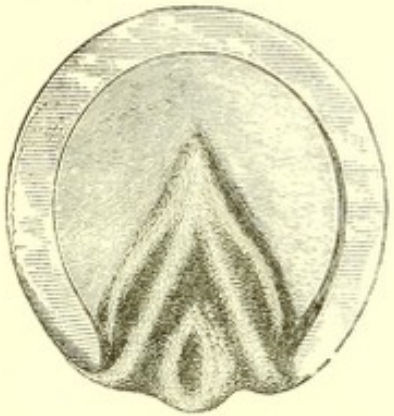


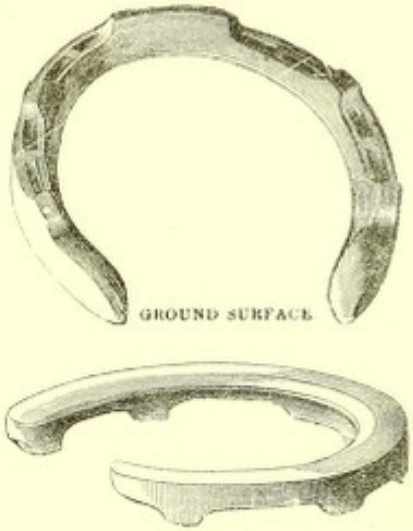
Fig. 3.



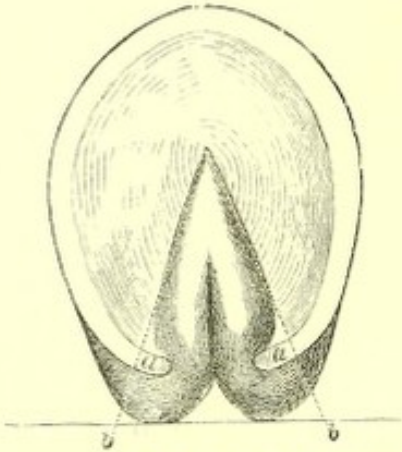
HOOF PREPARED TO RECEIVE SHOE.



FOOT WITH SHOE ON.



FOOT SURFACE.



SHOE CONTRACTED FOOT.

importance, as the horse lifts the round of his shoes from 30 to 60 times a minute, according to his speed.

Horses shod with the Goodenough shoe are found to travel five miles in fifty further with less fatigue, and also to draw heavier loads than when otherwise shod. The Goodenough shoes are light, cheap, durable, and easily put on, and are made of all weights and sizes.

Putting on the Shoe.—The first thing in ordinary shoeing is the selection of the shoe; and in this, experience and a judicious eye is worth all the learning of a college. The judgment of a shoeing smith is shown in the adaptation in quantity and quality of the iron to the horse. The thick-walled foot will require a good bearing; the thin hoof cannot carry a heavy shoe, though it stands most in need of defence. The hoof, too, should guide the farrier in the number of nails. The shoe is the work of the "fireman," as he is called in the forge; the preparation, of the "doorman," who also nails on and clenches the shoe made by the "fireman." The "doorman" takes the task of preparing the foot, as already described, to receive the shoe, by removing the superfluous horn of the sole.

For hunting, the shoe must be narrower than for the road, and an additional nail may be placed on the inside; no evil will result from this, because in the field the pressure on the crust is, in a great degree, relieved by the sole and frog. There must be space for a picker to pass between the foot and inner rim of the shoe, but no more, as the foot can then be withdrawn from heavy soil with less difficulty than when the usual space is permitted. To avoid overreaching, the heels of the fore shoes should scarcely project beyond the heels of the crust, and they should be rounded off, instead of being left square, as is usually the case. The hind shoes should also, where there is any disposition to overreach, be square at the toe, set a little within the crust; and the inner rim at the toe should have a piece cut out, so that, instead of a sharp edge, there should be a rounded surface, which, of course, is not so likely to catch the heels of the fore feet.

"Nailing," a very important operation, requires much previous study of the formation and functions of the internal sensible parts of the foot, many injuries being inflicted by penetrating those parts to the quick. A good aphorism has it thus—"If it were possible to keep the shoe in position without nailing, we should then have arrived at perfection in the art of shoeing; it follows that the least number of nails that are driven, consistent with safety, is the most commendable practice." Mr. Bracy Clark, among his many inventions, once proposed to fasten on the shoe by enveloping the whole hoof in an "iron defence," and fastening it by outside screws; but the scheme failed for obvious reasons.

The nails for shoeing horses, are received from the hands of the manufacturer soft, without point, variously bent, and unfit for use till they have passed through a process, requiring some dexterity, called "pointing the nail;" they receive for this purpose a smart hammering from the hand of the "doorman," on an upright steel-headed shaft, termed "the stake," beginning at the head of the nail and continuing it along the shank on both sides and edges to its extremity, which is then drawn out to a clear point. By this means, the nail is rendered hard and stiff, and its surface smooth and polished. But of as much or more consequence than this, is the figure which the point of the nail is made to receive; for after it has been drawn to a clear good point, the workman gives it a final stoke, obliquely directed over or upon the very extremity of the nail, so as to impart to it the figure of an inclined plane on one side, leaving it perfectly flat on the other. This bevelling of the point of the nail is of the greatest use in driving it, giving it always a tendency to pass out of the hoof, from the bevel being placed next the interior of the hoof, which facilitates the process of shoeing very much, and greatly diminishes the risk of pricking the horse; for the, foot being softer within than it is externally, would naturally draw the nail in that direction.

The nail mostly used at present has a long conical square head, with a view of fixing it tight in the shoe; and the pritchel point is directed to be made of the same figure, that it may be the more firmly fixed.

This conical nail, when made too long in the head, or neck, is apt to enter the hoof and distend it unduly, rending or splitting the horn; a short shoulder or neck is therefore to be preferred.

The first nail usually driven is one near the toe, on the side of the foot next the right hand of the workman, as more convenient to the hammer. This may draw the shoe out of its place, which is again adjusted by a blow or two of the hammer on the projecting side, bending the nail or forcing the hoof, or both; the second nail is then passed through the hoof on the opposite side, which renders it in a degree fixed; the rest are then driven indiscriminately, smaller nails are however used near the heels or inflexions, on account of the horn being thinner. The presentation or planting the point of the nail first in the hoof, in order to give it a proper direction for driving, is called by the smiths "pitching the nail;" this is done with the finger and thumb, and on its being judiciously chosen, the success of driving the nail, it is obvious, will much depend. In giving the first strokes of the hammer, they strike, not on the flat part of the head of the nail, but on its exterior edge; and when safe in the hoof, or nearly home, upon the flat head. The smith is led to judge by the sound, as also by the resistance the nail makes to the hammer, whether it be in its right course or not, and he aims to bring out the nails as nearly at equal distances round the hoof as may be, and at equal heights up the hoof, the accuracy of which exhibits the skill of the workman. On the first entering of the nail, he proceeds with caution; but when the point is felt by the finger, or makes its actual appearance, he strikes more boldly till the head is driven home to the shoe. The nail having passed through the hoof, the shank or extremity of it is turned down and bent against the side of the hoof, so that

the horse, in struggling or suddenly withdrawing his foot, should not tear the clothes or wound the thigh of the workman.

In England, it is usual to see the doorman perform the nailing on of the shoe by himself, unless with very heavy draft horses, when he gets assistance. In France, two men are generally employed, one to hold the foot, the other, however, standing behind the foot. In France and Holland, also, the travis, described in the last chapter, is used, and a hind foot lashed to a post.

The nails being driven and turned down, the smith next proceeds to give them all round a smart hammering upon the head, to fix them more firmly; and, by holding the pincers to the shank of the nail, he draws the shoe tighter against the hoof. This done, he wrings off the shank or point of the nail, and files the clenches with a rasp to a uniform length, filing away, also, a little of the hoof, that they may lie the more closely. He should not use too much force, as that may draw the sole too strongly against the coffin-bone, and distress, stun, and benumb the sensitive sole. Now, by reversing the situation of his pincers and hammer, and holding the former against the head of the nail, which prevents its return, he beats down the clenches with his hammer, and forces them into the hoof. The clench is in part imbedded in the hoof; but if any part projects, or if there should be any irregularities, they are removed with the rasp, and the process is completed.

The various forms of nails are shown on Plate XVII., and described in its accompanying letter-press.

Of the manner of attaching the shoe to the foot, the owner can scarcely be a competent judge; he can only take care that the shoe itself shall not be heavier than the work requires—that for work a little hard the shoe shall still be light, with a bit of steel welded into the toe—that the nails shall be as small, and as few, and as far from the heels, as may be consistent with the security of the shoe; and that, for light work at least, the shoe shall not be driven on so closely and firmly as is often done, nor the points of the nails be brought out so high up as is generally practised.

The Hinder Shoe.—As the hinder limbs are the chief instruments of progression in the animal, except while walking, the whole stress of the frame rests upon them. In consequence of this, the shoes of the hind feet are always made broader than those of the fore feet, and the toe is widened still more by rasping. When there is the slightest tendency to over-reaching, the toes of the hind feet should be shortened by sloping in the surface, and rendering the shoe somewhat less projecting than the toe. The hinder differs a little from the fore foot, in being straighter in the quarters. The nails in the hinder shoe should be situated nearer to the heel than in the fore shoe.

Calkins.—It is scarcely possible that a shoe thinner at the heel than at the toe, can ever be serviceable; on the contrary, it will generally occasion lameness, by throwing undue stress on the flexor tendon. It will be a fruitful source of sprain of the back sinews, also of navicular disease. On the other hand, a shoe a little elevated at the heel may favour a leg weak in the back sinews. In the hinder foot, and particularly in draught horses, custom has sanctioned the use of a shoe raised at the heel by calkins. This certainly gives the horse a better purchase; enables him to descend a hill more securely, as well as to draw a heavier load. A draught-horse always digs his toe into the ground when he has a heavy weight to move; and he can do this more effectually when the heel is raised. But this practice is carried to an absurd and ruinous length. In many horses of heavy draught, the only bearing points—the only parts of the shoe which touch the ground—are the tip of the toe, and the end of the calkin. There must be inequality of pressure here; and by it the ossification of the cartilages; enlargement of the pasterns; and other diseases with which the draught-horse is often afflicted, are too well accounted for by shoes too high in the heel.

Clips are portions of the upper edge of the shoe, hammered out and turned up in such a way as to lap over the outer surface of the crust, which is also pared away a little, to bed the clip. Their use is to give greater security in attaching the shoe to the foot, and lessening the stress upon the nails, which might prove injurious. In horses subjected to heavy draught, clips are indispensable, and are useful to all employed in draught of any kind. They will be found a useful preventive in securing the shoes from being torn off, when the strain is great on the feet while drawing. Clips are also beneficial when horses are given to stamping and pawing, as either of these tricks are likely to loosen the simple shoe. But clips should only be used in such horses as we have named, because they press upon the crust as it grows down, and are therefore unsuited to animals employed in light draught or hackneys.

Our Compendium is concluded: and we trust we have given a simple and clear account of the practice of an art obscured by much mystery and pretence, but without a difficulty in the mastering of its main principles and practical details which need deter, or can perplex an inquiring and a well-instructed mind. It would have been easy to extend even the present chapter by compiled accounts of the merits and demerits of a large number of varieties of shoes, but we have preferred appealing to the eye, aided by a brief description of their differences in the letter-press accompanying the subjoined engravings.

APPENDIX.

THE HISTORY OF HORSE-RACING AND OF THE RACE-HORSE, WITH NOTICES OF TURF CELEBRITIES. THE LAWS OF RACING. ADJUDGED CASES. WINNERS OF THE GREAT RACES FROM THEIR INSTITUTION TO 1873. BREEDING, REARING, AND TRAINING THE RACE-HORSE AND HUNTER.

CHAPTER I.

THE HISTORY OF HORSE-RACING.

Rejecting as extraneous the records of chariot-racing, so fervidly sung in ode and epic of the early Greeks, and forming a prominent feature among their public games and festivals, we come at once to the practice of racing between horses ridden by men.

That the utility of public horse-racing was understood and appreciated by the Greeks, is sufficiently evident by the introduction of horse-racing among the Olympian games, which were held at Elis every four years, about the time of the 24th Olympiad; and it is a curious fact, that at the 78th Olympiad, such progress had been made in these races, that, besides prizes instituted for aged horses, we find a race formed for mares only, called Calpe, much on the same principle as the Oaks of the present day.

The Olympian Hippodrome at Elis, where these races were held, is thus described by Pausanias:—"This course was divided into two parts; the stadium for foot races and athletic exercises; the hippodromus, as the name implies, for equestrian trials. The barrier, or starting post, was in the shape of the prow of a ship, with the rostrum or beak towards the course; and towards the other side, at which it became broader, it was connected with the portico Agnamptus, as it was called, from the name of its architect. A bar appears to have stretched across the course at the extremity of the beak, and upon this was fixed a brazen dolphin. The space on either side the beak extended 400 feet in length, and in it were various stands, both for horses and chariots, distributed by lot to the competitors; in front of these was suspended a rope. About the middle of the prow stood an altar of unburnt brick, which was fresh plastered at every renewal of the games. Upon it was a brazen eagle, with outspread wings, which at a particular time, worked by some ingenious machinery, flew upwards, while the dolphin before mentioned sank below. At this moment the barriers were let down, and the horses and chariots moved forward from their particular stands, according to the order of their lot, till they were ranged in an even line at the point of the beak; the race then began. One side of the course stretched along a hill; the other, which was the larger of the two, was formed by a causeway.

The Greek writer relates an anecdote of a mare called Aura, the property of Phidolas, a Corinthian, who threw her jockey in the race, but continued her course as if he had kept his seat, increasing her pace at the sound of the trumpet, which was used as the signal of the coming in, and having been first at the winning goal, presented herself to the judges, as if conscious of having won. The Elians declared her the winner, contrary to the present custom in such cases. These Stewards of the Jockey Club, called Hellanodikai, regulated all matters at Olympia, exercising a power which would not be relished at the present day; for we find them not only excluding from the games, and imposing fines upon such as were convicted of fraud, but even inflicting upon them bodily correction.

From Greece we pass to Rome; where, in lieu of the noble riders in the Olympic festivals, menials, hired jockeys, and slaves, rode in the public contests.

The mounted races of the Certamina Equestria early became favourite exercises of the Romans; but as we have reason to suppose saddles were not yet in use, and stirrups we are certain were not yet invented, it excites some surprise how the riders could keep their seats, for we read that they were expected to exhibit extraordinary feats of agility, such as leaping up and down from their horses, lying at length on their backs, standing upright on them, or picking up small coins thrown by the spectators, &c. &c. The riders of these coursers were a hired set, called *desultores* or *leapers*, and probably resembled the riders at our theatrical circus. We therefore infer that the feats of the horsemen, rather than the speed of the horses, formed the entertainment. In the races, as well of the Grecian as of the Roman course, certain prescribed rules and regulations were to be strictly followed: the

competitors were required to enter their names, and to send their horses to a given place, at least thirty days before the race commenced, where a species of training was imposed, not only on the horses, but also on the charioteers and riders. The longer courses, like our own, were appropriated to the aged horses, and the shorter to colts. Mares ran against mares, as at our Epsom Oaks' Stakes, and they had their clerks of the course and judges, who took the direction of the whole. The victorious riders, or drivers, were liberally rewarded; but we do not hear that gambling formed a prominent feature of either the Grecian or Roman turf; on the contrary, we may suppose the entertainment of the spectators, and the approbation bestowed on the victors, were the principal objects contemplated.

The first races of the Romans were exhibited on the open plain; the chosen spot was next enclosed within ropes or rails, to prevent interruption; and they continued thus until Tarquinius Priscus built the Great Circus at Rome (B.C. 624), where they were afterwards mostly exhibited. "How far the horses ran before they got to the last *meta* from the starting-place is not expressed by historians; but we are informed that the above course was said to be about two thousand one hundred and sixty-seven Roman feet in lenght, and nine hundred and sixty broad; of a semicircular form at one end, the other ending in a right line. The races commonly ended at the seventh turn round the *meta*. (*Propertius*, lib. ii. eclog. 29.) The number and length of the heats, however, occasionally varied. The matches were generally about twenty-four, though sometimes a far greater number were exhibited; for Suetonius tells us that the Emperor Domitian presented a hundred matches in one day. The time when the races were to begin was anciently given by sound of trumpet. The horses being up at the line, ready for starting, the signal was given by a *mappa*, or napkin hung out at the prætor's tent, or chief magistrate's seat, something like the ordinary mode of starting horses at country courses here. Hence Juvenal calls them Megalensian games—*Megaliacæ spectacula mappæ*. The origin of this custom is thus accounted for:—Nero was once at dinner, and the people making a great noise, desiring that the sport might begin, the emperor immediately threw the napkin he had in his hand out at the window, as a token he had granted their request."

The Roman jockeys rode, as ours now do, in different colours, particularly the companies of charioteers, to distinguish themselves. There were, according to Kennet, generally four, viz., *prasina*, green; *russata*, red; *alba*, or *albata*, white; and the *veneta*, sky or sea colour; but green was generally the favourite colour, especially under Caligula and Nero. Suetonius tells us that Domitian (who was made Emperor, A.D. 81., and died, A.D. 96.) added two more colours, viz. the golden or yellow, and the purple; but these were soon laid aside by the following emperors. Racing, indeed, appears to have been so favourite a diversion of the Romans, that they practised it with other animals besides horses. Asses were made coursers; and ostriches were competitors for the goal. The tyrant Heliogabalus made racing matches with elephants; four being attached to each chariot. He also employed camels for the same purpose.

Montfaucon, in his *Antiquities*, gives an engraving of an urn bearing two inscriptions, the upper one relating to a horse, the lower to human beings. The superior inscription runs:—"to the memory of the horse Aquilo, begot by Aquilo, who conquered 137 times; won second prize 88 times; and third prize 37 times." In Spartianus we find that Hadrian was so fond of his horses that he built sepulchres for them; and there is yet extant an epitaph "to Borysthenes, called Alanus," from the country of his origin, a horse belonging to Hadrian.

That the Romans brought their manner of racing into Britain is clear from the remains of race-courses found at York, the Eboracum of the Romans, and in several other places.

From ancient Rome we pass, with the conquerors of the world, into our own sea-girt land. The earliest mention of race-horses, or, as they were called in those days, "running-horses," in our national annals, is of the 9th century;* this was sent by Hugh, founder of the royal house of Capet, in France, as a present to King Athelstan, whose sister, Ethelswitha, he was soliciting in marriage. In the reign of William the Conqueror, as we have already noted, Roger de Bellesme, a follower of the king, created for his military services, Earl of Shrewsbury, imported some stallions from Spain into his estate in Powis-lands and we find their produce celebrated afterwards by Drayton, the poet. This is the first well-authenticated step we can find towards the improvement of the breed of horses.

Fitzstephen, a monk of Canterbury, secretary to the celebrated Thomas à Becket, and who flourished in the reign of Henry II., gives the following account of races in Smithfield, in his "Description of the City of London," originally published in Latin, but afterwards translated into English by John Strype:—"There is also without one of the city gates, and even in the very suburbs, a certain plain field, such both in reality and name, Smithfield, from a Saxon word, *smeth*, signifying smooth. Thither come, either to look or to buy, a great number of persons resident in the city—earls, barons, knights, and a swarm of citizens. When a race is to be run by this sort of horses,† and perhaps by other, which also in their kind are strong and fleet, a shout is immediately raised, and the common horses are ordered to withdraw out of the way. Three jockeys, sometimes only two, according as the match is made, prepare themselves for the contest (such as, being used to ride, know how to manage horses with judgment). The grand point is to prevent a competitor from getting before them. The horses, on their part, are not without emulation. They tremble, are impatient, continually in motion, and at last, the signal once given, they strike, devour the course, hurrying along with unremitting velocity; the jockeys inspired with the

* *Vide.* Malmsb. de Gest. Reg. Angl., Lib. ii. cap. vi.

† He refers to what, in a previous passage, he denominates the more valuable hackneys and charging steeds.

thoughts of applause, and in the hopes of victory, clap spurs to the willing horses, brandish their whips, and cheer them with their cries. You would think, according to Heraclitus, that all things were in motion, and that the opinion of Zeno was certainly wrong, as he held there was no such thing as motion, and that it was impossible to reach the goal."

Drayton the poet testifies to the correctness of this account, which is the earliest to be found of racing in this country. Fitzstephen does not say whether prizes or money were run for in these races; or whether it was merely to show off the paces of horses to the buyers. Smithfield now removed, and converted from its livestock purposes, at that day was the market for the best, as well as the inferior sorts of horses. We are, however, inclined to think that, if not exactly at the period he writes of, a very short time elapsed before matches for considerable sums were run for; as we find in the next reign, that of Richard I., a match, for what was a very large sum in those days, is spoken of in the old metrical romance of Sir Bevis of Hampton.*

"In somer in Witsuntide,
When knightes most on horseback ryde,
A courselet they they make on a day,
Steed and palfraye for to essaye
Whiche horse that best may run;
Three miles the course was than,
Who that might ryde him sholde
Have forty pounds of redy golde."

And in another romance of the same period, written to celebrate the warlike actions of Richard I., we find that swift running horses were greatly esteemed by the heroes who figure in it, and rated at prodigious prices, even allowing for the exaggeration of the poet. These horses, having been bought in Cyprus, were, doubtless, of Eastern extraction. The rhymer is speaking of races in the camp:—

"Two Steedes fownde King Richard,
That oon Farell, that other Syard,
Yn this worlde they hadde no pere,
Dromedary, ne destrier,†
Stede, Rabyte,‡ ne cammele,
Goeth none so swifte without fayle,
For a thowsand pounde of golde
N oulde the one to be solde."

Passing over those reigns of which no records exist bearing immediately upon the subject, although we may fairly presume that swift running horses continued in request, and were highly prized and sought after by breeders, we come to the reign of—

Edward III. (1326.)—This monarch, we find, purchased running horses at the price of 13*l.* 6*s.* 8*d.* each—equal to 160*l.* in money of the present day; and in the ninth year of his reign he received a present of two "running horses" from the King of Navarre, supposed to have been valuable specimens of the barb-descended Spanish "running horse."

The records of racing are nearly a blank until the reign of James I.; Elizabeth, as we have already said, not recognising trials of swiftness, as a sport—private matches between noblemen and gentlemen being the only racing mentioned.

If we find racing languishing in the previous reign, it would seem but to have laid by, to start up with increased vigour in that of James, from which we may safely date the foundation of our present system. This king gave 500*l.*, equal to 1,500*l.* of present money, to Mr. Markham for an Arabian;—probably the first Eastern horse introduced into this country, for the express purpose of racing and breeding. The Duke of Newcastle, who wrote in the reign of Charles II, and whose work we shall presently notice, mentions the Markham Arabian as a little bay horse, not well shaped, and as having been beaten in every race he ran. From this we learn that even at this period the English had attained considerable swiftness with their race horses.

A south-eastern horse, called the White Turk, was imported about the same period by Mr. Place, many years afterwards stud-master to Oliver Cromwell, who purchased it.

In this reign, public races were run for silver bells, at Gatherly in Yorkshire, Croydon in Surrey, at Chester, and Theobalds, on Enfield Chase. The racing, too, assumed a systematic form; and the food, physic, exercise, sweats and weight (which was usually ten stone) began to be rigidly attended to. The following ceremony is mentioned by the elder Randle Holme,* the Chester antiquary, as having been performed according to custom near that city, in the presence of the mayor, at the Cross, in the Roodee, or Roody, an open place near the city. A silver bell, valued at about three shillings and sixpence, is placed on the point of a lance, to be given to him who shall run the best and furthest on horseback before them on Shrove Tuesday. These bells went by the name of St. George's bells, and the younger Randle Holme tells us that in the last year of this reign (1624) John Brereton, innkeeper, Mayor of Chester, first caused the horses entered for this race, then called St. George's race, to start from the point beyond the New Tower, and appointed them to run five times round the Roodee; and, he continues, he who won the last course or trayne, received the bell, of a good value, 8*l.* or 10*l.*, and to have it for ever, which moneyes were collected of the citizens for that purpose. By the use of the term, for ever, it would appear that the bell had been formerly used as a mark of temporary distinction only, by the successful horseman, and afterwards returned to the Corporation.

The origin of the phrase "bear the bell" is here plainly indicated.

We have already mentioned Gatherly, in Yorkshire, as a race-meeting. The following quaint ditty, commemorating the sport at that place, will warrant its insertion by its antiquity and curiosity:—

You heard how Gatherly race was run,
What horses lost, what horses won,
And all things that there were done,
That day.

* Sir Bevis of Hampton, *i. e.* Southampton, black letter, printed by Wm. Copland, Garrick Collection, K ix.

† Destrier, *i. e.* War-horse.

‡ Rabyte, *i. e.* Arabite, Arabian.

* Randle Holme of Chester, one of the city heralds, M.S. Harl. 2150, fo. 235.

Now of a new race I shall you tell,
Was neither run for bow nor bell,
But for a great wager, as it befell.
Men say.

Three gentlemen of good report,
This race did make, to make some sport;
To which great company did resort,
With speed.

To start them then they did require,
A gallant youth, a brave esquire,
Who yielded soon to their desire.
Indeed,

They started were, as I heard tell,
With, now St. George! God speed you well!
Let every man look to himsel,
For me

From Sever Hill to Popleton Ash,
These horses run with spur and lash,
Through mire and sand, and dirt, dish-dash,
All three.

Bay Corbet first the start he got,
A horse well known, all fiery hot;
But he full soon his fire had shot:
What tho'?

For he was out of graith so sore,
He could not run as heretofore,
Nor ne'er will run so any more,
I trow.

Grey Ellerton then got the lead,
A gallant beast, of mickle speed;
For he did win the race indeed;
Even so.

Grey Appleton the hindermost came,
And yet the horse was not to blame,
The rider needs must have the shame
For that.

For tho' he chanc'd to come behind,
Yet did he run his rider blind;
He was a horseman of right kind,
That's flat.

For when the race was past and done,
He knew not who had lost nor won;
For he saw neither moon nor sun,
As then.

And thus this race is at an end,
And so farewell to foe and friend;
God send us joy unto the end.
Amen.

Drayton's Poly-Olbion, Song 3.

Bassompierre, a French writer, mentions that in the reign of James the merit of the English horses began to be so evident, that many were purchased and sent into France, where they continued to be much valued and admired. It would also appear that towards the conclusion of this reign the English method of keeping and managing horses was thought so judicious, that France, and other neighbouring countries, adopted their method; and, no doubt, by this treatment the foundation was laid for that celebrity of the British race-horse which so soon followed the introduction of Eastern blood.

Charles I. established horse races in Hyde Park, changing the prize from a silver or gold bell to a cup. The first races which were held at Newmarket took place in the year 1640, although the round course was not made till 1666. As a further proof of the rapid progress already made in the improvement of the national breed of horses, we find one Sir Edward Harwood querulously complaining of what he calls the scarcity of able horses in the kingdom, there not being so many as 2,000 that were equal to a like number of French horses; the cause of which he supposes to be the strong addiction which the nation had to racing and hunting-horses, which, for the sake of swiftness, were all of a lighter and "weaker mould." We may here remark, as highly probable, that the general use of fire-arms, causing heavy armour to be disused, did much towards effecting this change, by bringing lighter and fleeter horses into general demand. Butcher,* a contemporary writer, informs us, in his *Survey of Stamford*, that a race was annually run for in that town, for a silver and gilt cup with a cover, of the value of £7 or £8, provided by the care of the alderman for the time being, out of the interest of a stock formerly made by the nobility and gentry in the neighbourhood.

The following lines are from a ballad in D'Urfey's† collection of songs, supposed to have been written in this reign. It is called "Newmarket," and plainly shows not only that that place was then famous for horse races, but that they were not always conducted with the strictest integrity:—

Let cullies that lose at a race,
Go venture at hazard to win;
Or he that is bubbl'd at dice,
Recover at cocking again.
Let jades that are foundered be bought;
Let jockies play crimp to make sport;
Another makes racing a trade,
And dreams of his projects to come,
And many a crimp much has made
By *bubbing*‡ another man's groom.

In a farce, or interlude, played in 1641, entitled *The Merry Beggars, or the Jovial Crew*, we find Hyde Park races spoken of.

Burton, in his *Anatomy of Melancholy*, touches on the expense attending these pursuits, in a passage which seems to imply that much money was then ventured on races. He observes—"riding of great horses, running at rings, tilts and tournaments, horse races, and wild goose chases,§ which are

* Butcher's *Survey of the Town of Stamford*, first printed A.D. 1646, chap. 10.

† *Pills to Purge Melancholy*, 4th edition, 1719, vol. 2, page 83.

‡ Bribing.

§ These we imagine to have been what are now called steeple chases, and if so is the earliest mention of them we find. Berenger (vol. ii. p. 188) says: "the wild goose-chase was run by two horses, and whichever had the best at twelve score yards from the start, the other was obliged to follow him wherever he went, and to keep within a certain distance of him, or else 'beaten' up to the mark by the judges, who rode to see fair play. If one horse got

disports of greater men, and good in themselves, though many gentlemen by such means gallop themselves out of their fortunes."

As a proof of the attention of this monarch to equestrian exercises, he issued a general order, at the commencement of his reign, directing the use of bits instead of snaffles, which were used in the army before that time.

When Cromwell assumed the Protectorate, his sagacity perceived the vast benefit derived to the nation by the improvement of its breed of horses—the natural consequence of racing. He, therefore—puritanism *non obstante*—patronised this already peculiarly national amusement. We find, accordingly, that he kept a racing stud. Mr. Place, whose name, coupled with that of his horse, the famous White Turk, will live for ever in the memory of all British sportsmen, was Cromwell's master of the stud; and it is to be deeply regretted that we have scarcely any reliable records of racing during the Protectorate. An anecdote which has been handed down, of a narrow escape of Cromwell, when driving in person four horses in Hyde Park, from their running away and overturning the carriage, would fairly warrant the inference that the Protector was fond of equestrian amusements, which is confirmed by the European reputation which his own regiment of dragoons, known as "Cromwell's Ironsides," earned under his training and command. On the occasion above alluded to Cromwell's life was endangered by the accidental discharge of a pistol which he carried about his person. It would appear this great man found it less difficult to keep a whole nation in subjection than to control four horses.

The Lord General Fairfax too is heard of in the pedigree of the celebrated Basto, (who was foaled 1703), whose sire was the Byerley Turk, and whose great grandam was bred by Lord Fairfax from his "Fairfax's Morocco Barb."

Political reasons, or rather perhaps the apprehension of assassination, and a concession of hypocrisy to fanaticism, seem to have induced Cromwell, in his latter days of his suspicious fears, and endeavours to conciliate the Scotch presbyters, to suppress race-meetings. We find a proclamation of the Lord Protector, dated Feb. 24th, 1654, in which it is forbidden that any horse-races shall take place for six months, from the 26th February, "owing to the great concourse of people who attended such meetings;" and again he issued a similar prohibition on the 8th of April, 1658, for eight months, declaring all persons of what estate, quality, or degree soever, who should appoint or assist at them, breakers of the public peace, and further requiring all civil and military authorities to seize all the race-horses and spectators.

We now approach that important epoch in the history of the British horse—the reign of that unprincipled profligate known as the "merrie monarch." The natural reaction of the popular mind from the sour severities and ascetic absurdities of an intolerant and mirth-denouncing puritanism, led the public mind to a *revanche* in the way of popular recreation: bear and bull-baitings, cock-fighting, and other exceptionable amusements were the rage, but the turf also raised its head. Newmarket, the modern metropolis of racing, which had remained in oblivion, save for a few private matches among gentlemen and noblemen, and which had possessed, from the reign of James I., a building twice destroyed, but yet known as "the palace," was once more the resort of the noble, the rich, and the fair. Charles II. rebuilt the palace, which had fallen into decay during the Civil Wars, and from time to time attended the races on the Heath with his brother the Duke of York, afterwards James II. The King not only kept running horses, but gave prizes and entered for various stakes in his own name. Evelyn, the author of *Sylva*, records in his diary a visit to the heath under date of Oct. 10th, 1671.—"After dinner, I was on the heath, where I saw the greate match run between Woodcock and Flatfoot, belonging to the King and Mr. Eliot, of the bed-chamber, many thousands being spectators: a more signal race had not been run for many years." Charles would also seem to have taken with him the company of comedians, those known as "His Majesty's subjects," for we find extant three farces acted before this monarch and his court at Newmarket. They are "The Merry Milkmaid of Islington; or, the Rambling Gallants defeated." "Love Lost in the Dark; or, the Drunken Couple." "The Politick W—e; or, the Conceited Cuckold." They were published together by D. Brown, in 1680, under the title of *The Muse of Newmarket*.

The Grand Duke of Tuscany, who visited England in 1669, writes of the numerous train of ladies and gentlemen attending Newmarket Races, who stood so thick on horseback, and galloped so freely, that they were no way inferior to those who had been for years accustomed to the *manège*. As the King passed, his highness bowed, and immediately followed His Majesty to the goal, where trumpets and drums, which were in readiness for that purpose, sounded in applause for the conqueror, which was the horse of Sir — Eliot, beating a horse belonging to Bernard Howard. The dress of the jockey was "taffeta, whole colour, breeches and jacket the same."

Royal plates of various value were instituted by Charles II., who, whatever were his personal failings, was unquestionably a popular monarch. When at Windsor the King visited the races at Datchet Mead. In the *London Gazette*, February 15th, 1672, there is a notice from Charles Earl of Derby, that a race-course of five miles has been made near Liverpool, calling upon the gentlemen of Lancaster and Chester, and the mayor, aldermen, and burgesses of Liverpool to subscribe to the plates.

In 1676, July 31st, a similar notice appears in the *Gazette*, stating that the Marquis of Winchester will add a plate to the money subscribed; none but gentlemen to ride; four mile heats; 14st. without the saddle, or 14st. 2½ lb. with, on Winchester Downs, the last Wednesday in August.

before the other a certain *distance*, according to the terms of the match, he was accounted to be beaten. If the horse which at the beginning was left behind could get before him who first led, then the other was bound to follow, and so on, until one got 240 yards, one furlong, before the other, or refused some leap the other had taken."

Another plate is also given to be run for in Whitsun-week, on Burford Downs, whereof a worthy gentleman hight Matthew Thomas Baskerville, who certainly could not be included in Pope's sneer at Charles's "mob of gentlemen who wrote with ease," has indited some awful doggrel verses, of which the following lines serve as a record of the royal attendance :—

Next, for the glory of the place,
Here has been rode many a race:
King Charles the Second I saw here,
But I've forgotten in what year;
The Duke of Monmouth here, also,
Made his horse to sweat and blow;
Lovelace, Pembroke, and other gallants,
Have been venturing here their talents;
And Nicholas Bainton, on Black Sloven,
Got silver plate by labour and drudging.

On the 22nd of March, 1683, during the races, at which the King, Queen, and Duke of York were present, a sudden conflagration compelled them to return hastily to London, to which event the defeat of the Rye-house plot has been attributed.*

The reign of Charles, and the after-influence exercised by his encouragement of the turf, wonderfully improved the breed of our present race of running horses. With a view of the improvement of our stock, Charles sent his Master of the Horse into the Levant to procure horses and mares for breeding from. Sir Christopher Wyvill and Sir John Fenwick appear to have been thus employed. The mares then procured, and their immediate produce, figure in the pedigrees of almost every great racehorse of our time as the "Royal Mares." Of these we will treat when we come to the Race-horse in our next chapter. The horses imported by Charles were Barbs and Turks.

James II. disgusted his subjects too much by his attempted restoration of Popery to be enabled to bestow much time on the sports of the turf or the field. He is represented as being exceedingly fond of racing and hunting, and showing so decided a preference for the English horse as, after his abdication, to have several of them in his stables in France. Berenger speaks of this with much feeling:—"He expressed a peculiar satisfaction in having them, and that at a time, and in a situation in which it is natural to think that they were rather likely to have given him uneasiness and mortification than to have afforded him pleasure."

William III., a soldier and a sportsman, was a strong supporter of the turf. Some excellent stallions were imported in his time, and a powerful and fleet horse much cultivated. The Oglethorpe Arabian (Barb), and Byerley Turk, hereafter noticed, stand conspicuous as imported sires.

"Good Queen Anne" was a liberal supporter of the turf. Gold bowls and Queen's Plates were numerous at the leading race-meetings. Her consort, Prince George of Denmark, was a zealous improver of the race-horse. Every variety of Eastern blood was rife in this reign; and the superiority of the progeny of this graft over the native racing stock became evident. Admiral Rous very pertinently remarks* upon this point:—"About the year 1710, racing men became aware of the fact that the old English race-horses could not contend with Arabs, Barbs, or their immediate descendants. The old stock, therefore, fell into disrepute, and gradually retired into private life and followed domestic pursuits, for which they were now admirably adapted." Anne was, also, fond of hunting, after the fashion of the French court, who went hunting in wheeled carriages. Swift writes to Stella, July 31, 1711: "The Queen was abroad to-day in order to hunt; but finding it disposed to rain she kept in her coach. *She hunts in a chaise with one horse*, which she drives herself, and drives furiously like Jehu, and is a mighty hunter like Nimrod." Again, the Dean writes: "I dined this day with the gentlemen ushers, among merry company, but the Queen was again hunting the stag until four of the afternoon, and she drove in her chaise above forty miles, and it was five before we went to dinner." It is clear the heartless, selfish wit had no warmth towards the enjoyments of the field.

Croft's Bay Barb, the Curwen Bay Barb, the Leeds and Woodstock Arabians, the celebrated Darley "Arabian," Cole's Barb, St. Victor's Barb, and others, illustrate this period.

The earliest historical record on which dependence can be placed of the performances of the English race-horse, and published in an authentic form, was a work by John Cheney, entitled an "Historical list of all the Horse Matches run, and all plates and prizes run for in England and Wales (of the value of Ten Pounds or upwards,) in 1727, &c., &c.; and to which is added a list of all Cock Matches of the same year."

This book was published by subscription, the condition being half-a-crown to be paid at subscribing, and five shillings annually for seven years, (the term of the first subscription;) and we find the number of subscribers amounted to six hundred and sixty, among whom were at least one hundred and nineteen people of rank, including fifteen dukes; a proof of the progress the taste for racing had then made in England.

In the historical list of matches published by Cheney, there were, in 1727, only eleven of these royal plates run for—viz., three at Newmarket, and one at Black Hambleton, Guildford, Ipswich, Lewes, Lincoln, Nottingham, Winchester, and York. Since which period the royal patronage has been extended to the following places:—Ascot, Bedford, Burford (discontinued in 1802), Canterbury, Carlisle, Chelmsford, Chester, Curragh (Ireland), Caledonian Hunt (Edinburgh), Doncaster, Edinburgh, Egham, Guildford (this ought to be transferred to a more sporting meeting), Goodwood, Hampton, Ipswich, Lichfield, Leicester, Lewes, Liverpool, Lancaster, Manchester, Northampton, Newcastle-upon-Tyne, Plymouth and Devonport, Richmond (Yorkshire), Shrewsbury, Salisbury, Warwick, Weymouth, Winchester, and York.

From this book it would appear that the cities and towns in England where races were then held amounted to one hundred and twelve, and in Wales to five; while early in the

* Spratt's *History of the Rye-House Plot*, p. 44.

* In *Baily's Magazine of Sports and Pastimes*, March, 1860.

present century they amounted to one hundred and forty-three in England, nine in Wales, nine in Scotland, and thirteen in Ireland; it being always remembered that at many of these places races are held twice annually, and in some cases even oftener.*

The most correct set of racing records of the early history of the British Turf are in the possession of Messrs. Weatherby, of Burlington Street, the proprietors of the Racing Calendar, the successors of James Weatherby, many years keeper of the match book at Newmarket. This useful work is to be found in almost every country in Europe.

These gentlemen, the Weatherbys, who are generally esteemed for their diligence, urbanity, and unblemished character, have likewise in their library an old work published at York, in 1748, entitled an "Historical List of all the Plates and Prizes run for on Clifton and Rawcliffe Ings; also since they have been removed to Knavesmire, near the city of York; likewise how the mares came in every year at Black Hambleton, &c., &c."

The earliest race mentioned in this work is one for a gold cup of £50 run on Clifton and Rawcliffe Ings, near the city of York, by horses six years old, in September, 1709. But as this volume contains few details worthy of particular attention, we will content ourselves with merely noticing such of its contents as tend to throw a light on the most remarkable characteristics of racing in those days.

So much had this great national amusement increased in favour with royalty towards the latter end of the reign of Anne, that we find that sovereign not only still increasing the number of royal plates, but running them in her own name. For example, we find that at York in 1712, her majesty's grey gelding, Pepper, ran for the royal gold cup, value £100; and again, Mustard, described as a nutmeg-grey horse, another of her Majesty's racing stud, ran for the same stake in 1713. The last mention made of any race-horse belonging to the Queen, we find is for a sweepstakes, or as it was called in those days, stakes of 10 guineas, with a plate of £40 added, run for over the same course near York, on Friday the 30th July, 1714, the weight being 11 stone, and which was won by the Queen's bay horse, Star, in four heats†—for according to the rules of racing at this time, the horse which had won the first and second heats, was obliged to start for a third, and to save his distance in order to entitle him to the prizes.‡

On the Monday following, during the race for a gold cup, value £60, with a sweepstakes of 16 guineas, an express arrived with advice of the death of her Majesty, Queen Anne; when it is related that most of the nobility and gentry left the course, and attended the Lord Mayor of York and Archbishop Dawes, who proclaimed his Majesty King George I.

The fact of the non-existence of any reliable record as to the running of race-horses previous to the commencement of the year 1727, is further established by the following note in Cheney's work:—"During the six preceding years," the author writes, "there was no regular account kept how the horses, &c., came in; but as I have taken pains to inform myself, in the best manner I could, I hope that what is published may be depended upon. In the year 1714," he goes on to remark, "such was the concourse of nobility and gentry that attended York races, that 150 coaches were at one time on the course."

George I., who neither understood England nor the English, was surrounded by a set of rapacious Germans. Nevertheless the impetus of the last reign was continued, and the nobility and gentry patronised their favourite sport. George I., in 1720, withdrew the Royal Plates in the form of inscribed cups or bowls, displaying the names of horse, owner, and rider, and substituted 100 guineas in specie. When the Duke of Somerset resigned his post of Master of the Horse, which he had held under Anne, the King, instead of nominating a successor, kept the place vacant, and conferred the salary on his antiquated mistress the Duchess of Kendal. The King, however, kept a stud, and bred a heavy cavalry horse, with true German taste.

George II., a German dragoon, was fond of hunting. The public taste for racing too was now formed, and the history and pedigree of the racehorse assumes a historic form and precision.

Admiral Rous quotes a paragraph from the *Gentleman's Magazine*, April (temp. Geo. II.) 1739, and says, sarcastically but truly, much similar twaddle is written in 1859-60:—"The original design of this entertainment (horse-racing) was not only for sport, but to encourage a good breed of horses for real use, and the Royal Plates are supposed to be given for that purpose, the horses being obliged to carry heavy weights; but, alas! how are these intentions perverted? Our noble breed of horses is now enervated by an intermixture with Turks, Arabians, and Barbs, just as our modern nobility and gentry are debauched with the effeminate manners of France and Italy."

The Whip at Newmarket, supposed to have been the property of Charles II., is an antique trophy, with a silver handle, and a ring at the end for a cord and tassel, but which, in this instance, is made of the mane of the renowned Eclipse, while the lash is from the tail of the same celebrated horse. The tradition runs—for the origin of the race for the Whip is obscure—that Charles presented it to his Master of the Horse, for the time being, who left it to be annually run for upon challenge. It is now conditioned that the challengers of the Whip shall run against the holder over the Beacon Course; weight, 10st.; and each party to stake 200 sovs., play or pay. The challenge may be made on the Monday or Tuesday in the Second Spring or Second October Meeting in each year; and the

* At the Curragh of Kildare, the Newmarket of Ireland, frequent race meetings are held during the year, as at our Newmarket.

† Sixteen miles! Star died the next day. We shall have more to say on this point when we come to speak of weights and distances.

‡ In the year 1710, the first gold cup given by her Majesty, Queen Anne, was of 60 guineas value, afterwards increased to 100 guineas value, and run for by six year old horses, carrying 12st. each, the best of three four-mile heats.

acceptance must be signified, or the Whip resigned, before the end of the same meeting. If challenged for, and accepted, in the Spring, it must be run for in the Second October following: if in the October, on the Thursday in the Second Spring Meeting following. The first regularly recorded winner of this ancient trophy dates so recently as 1756, when Mr. Fenwick's Matchem, by Cade, won it, by beating Mr. Bowles's Trojan.*

As a sketch of Newmarket in this reign (1753,) the following description of the course and visitors, from the pen of Pulteney, Earl of Bath, (published in *The World*, vol. i., No. xvii.), may prove interesting:—"When the horses are in sight, and come near Choak Jade, immediately the company all disperse, as if the Devil rose out of his Ditch and drove them, to get to the Turning of the Lands, or some other station, for seeing the push made. Now the contention becomes animating: 'tis delightful to see two, or sometimes more, of the most beautiful animals of the creation, struggling for superiority, stretching every muscle and sinew to obtain the prize and reach the goal! To observe the skill and address of the riders, who are all distinguished by different colours of white, blue, green, red, or yellow; sometimes spurring and whipping, sometimes checking or pulling, to give fresh breath and courage! And it is often observed that the race is won as much by the dexterity of the rider, as by the vigour and fleetness of the animal. When the sport is over, the company saunter away towards the Warren-hill, before the other horses, left at the several stables in the town, are rode out to take their evening exercise and their water. On this delightful spot you may see at once above a hundred of the most beautiful horses in the universe, with the grooms and boys upon them in their several liveries, distinguishing each person of rank they belong to. This is, indeed, a noble sight; it is a piece of grandeur, and an expensive one too, which no nation but our own can boast of. To this the Crown contributes, not only by a very handsome allowance for keeping horses, but also by giving plates to be run for by horses and mares at different ages, in order to encourage the breed by keeping up the price of them, and to make the breeders extremely careful of their race and genealogy."

George III., though no turf man, encouraged the sport on national principles, and patronised the importation of racing stallions, which were brought over but in diminished numbers. Indeed, the breeding system in the English studs had by this time attained such perfection, that a selection of English racers matched against any horses from any part of the world would have proved as superior to their own progenitors as to all others. Eclipse, of whom more anon, was an early turf-star of the reign of George III., being foaled in the fourth year of it; and how many minor stars graced the course during its continuance, let the *Racing Calendar* testify.

The Duke of Cumberland, the king's brother, also stands eminent at this period as a breeder for the turf: Marsk emanated from his stud, as did the more celebrated Eclipse just mentioned, who was a son of Marsk; Herod also, who, like Eclipse, was at once a most noted racer and the sire of some of the best horses of that day, among which we may instance Highflyer. Mr. O'Kelly, the great turf-man of these times, became the fortunate possessor of Eclipse, and the breeder of Volunteer and Dungannon by Eclipse, who is said to have been the sire of no less than one hundred and sixty winning horses. The breeding stud of O'Kelly was immense, and his knowledge of turf affairs was equal, if not superior, to that of any of his contemporaries.

At the First October Meeting, 1768, Augustus Henry, Duke of Grafton (who died May 4th, 1811), at a large party held at Euston Hall, proposed the establishment of the Jockey Club Gold Cup: Sir Charles Bunbury being appointed treasurer. Twenty-seven gentlemen subscribed to this trophy, whose names we preserve:—Dukes of Ancaster, Bridgewater, Grafton, Kingston, and Northumberland; Lords Grosvenor, Ossory, Rockingham, Bolingbroke, Molyneux, and Barrymore; Sirs Charles Bunbury, L. Dundas, John Moore; Colonel Parker; Messrs. Blake, Fenwick, Shafto, March, Meynell, Ogilvy, Panton, jun., Pigott, Pratt, Stapleton, Vernon, and Wentworth. The conditions are:—The Cup may be challenged for on the Monday or Tuesday in the First Spring Meeting in each year; to be run for over the B. C. on Tuesday in the First October Meeting next, by horses, &c., the property of members of the Jockey Club: four yrs. old carrying 8 st. 7 lb.; five, 9 st. 2 lb.; and six and aged, 9 st. 6 lb. Each gentleman, at the time of challenging, is to subscribe his name to a paper, to be hung up in the Coffee Room at Newmarket, and deliver to the keeper of the Match-book the name or description of the horse, &c., sealed up, which shall be kept till six o'clock on the Saturday evening of the same week; and if not then accepted, or only one challenger, to be returned unopened: but if accepted, or if more than one challenger, to be opened and declared a match, or sweepstakes, of 200 sovs. each, p.p. If the challenge be not accepted, the Cup is to be delivered to the keeper of the Match-book, in the meeting ensuing the challenge, for the person who may become entitled to the same. The first winner of the Cup was Mr. Vernon's Marquis, beating three others. In 1769, Mr. Shafto's Goldfinder beat Marquis and four others.

The celebrated race now known as the Great St. Leger first appears in racing annals in 1776, when we find in the Calendar of that year that Lord Rockingham's br. filly, Allabaculia, by Sampson, beat five others, for a sweepstakes of 25 gs. each, 6 subs. Old Singleton, who died in 1801, rode the winner. The weights at this time were—3 yr. old colts, 8 st.; fillies, 7 st. 12 lbs.: two miles. But it was not till 1778 that the race took the name of the "St. Leger Stakes." Colonel St. Leger, who then lived at Park Hill, near Doncaster, started the idea of an annual sweepstakes, on the terms and conditions before given; and at a dinner, on the day of closing the entries, in 1777, at the Red Lion, Doncaster—the Marquis of Rockingham in the Chair—this race was agreed to be called

* In another place on the Race-horse will be found a chronological list of winners of the principal races, lengths of courses, the new laws of racing, adjudged cases, handicapping, weight for age, betting, &c.

the St. Leger, in compliment to the Colonel, its founder. In 1832 the St. Leger conditions were altered to 50 sovs. each, h. ft.: colts, 8 st. 6 lbs.; fillies, 8 st. 3 lbs.: the owner of second horse to receive 100 sovs. out of the stakes. The first winner of the newly-named race was Sir T. Gascoigne's Hollanduise, by Matchem.

To Earl Grosvenor the turf at this period was also greatly indebted; he bred largely, and his stock was the great support of the country races. His two mares, Meteora and Violante, will be long remembered. In proof, however, that racing even then was hazardous, it is said that Lord Grosvenor, though supposed to have won £200,000 on the race course, was minus at last.

In 1787, Dennis O'Kelly, Esq., or Captain O'Kelly, as he was called, whose name is inseparable from that of "Eclipse" in sporting annals, died at his house in Piccadilly, aged 56.

This successful turf adventurer was born in Ireland, of humble parentage, and at one period of his life no man ever experienced more adversity than fell to his lot. After his release from the Fleet Prison, where he had been confined for debt, the tide of fortune turned, and from this period, he continued a career of the greatest prosperity. At the period of which we write, the higher classes were greatly addicted to gaming, and for sums which would now appear incredible; the amounts also for which they matched their horses, and betted, were proportionally large. O'Kelly plunged at once into the very vortex of this infatuation, and both at the play tables, and on the turf, met with a success which made him at once the envy and wonder of his contemporaries. His natural shrewdness and penetration, his indefatigable industry and constant attention, went far towards gaining him success on the turf, by enabling him to counteract the various and almost incredible deceptions then in constant practice in the sporting world. His good fortune with Eclipse we shall notice when we come to the performances and pedigree of that celebrated racer.

Mr. O'Kelly purchased an estate near Epsom, with training stables, and paddocks, contiguous to the race-course, which became his favourite residence, and here it was that Eclipse died. Besides Eclipse, O'Kelly was the owner of some of the best horses of the day, such as Brutus, Badger, (alias Ploughboy,) young Gimcrack, Atom, Tiny, Milksop, &c., and with these he swept off annually, most of the give and take and Royal Plates, at the different country races. He was, however, sternly refused admittance into the Jockey Club, and thereby prevented from running for the more important of the Newmarket stakes, which was a severe mortification to him, of which he was wont to complain in no measured terms.

In 1799, "the Oaks," at Epsom was originated.

On Banstead Downs stood an alehouse called "The Oaks;" this was purchased by General Burgoyne (of Saratoga celebrity) who built thereto an elegant dining-room, and fitted up the place as a hunting seat. It was sold by the General to the Earl of Derby, one of the most accomplished sportsmen of the day, who greatly enlarged the house and enclosed much of the adjoining common. Here was given the celebrated *fête champêtre*, in celebration of the Earl's first marriage, with Lady Elizabeth Hamilton, which furnished General Burgoyne with the subject of a musical entertainment, entitled the "Maid of the Oaks." The title of the seat originated the famous stakes, called the Oaks, of which Lord Derby's Bridget by Herod, rode by Robert Goodison, was winner.

In the following year (1780) the Derby was established; its name being given in compliment to its founder, by the noble Earl's lady. Its first winner was Sir Charles Bunbury's Diomed by Florizel, ridden by S. Arnull.

As a promoter of the turf, the patriotic duke of Bedford should not be passed over. His Grace was in possession of Grey Diomed, notorious for his running at Newmarket with Escape and Traveller. This esteemed nobleman had at one time nearly thirty horses in training; but they could not save their master's cash, and he retired from the turf in disgust, a heavy loser. Racing also owned the patronage of many other noble dukes, as those of Kingston, Cleveland, Ancaster, Bridgewater, Grafton, Hamilton, and Northumberland. Of lords, we may mention names conspicuous as turf amateurs, among whom may be particularised Rockingham, Bolingbroke, Chedworth, Barrymore, Ossory, Clermont, Abingdon and Foley. The names of Shafto, Meynell, Bullock, Panton, Ralph, Dutton, Smith, Barry, Wildman, and "last, though not least," the Honourable Richard Vernon, will all of them long remain fresh in memory as friends and patrons of the racing of bygone days; neither will the renown of Sir Charles Bunbury, as a staunch and judicious turfman, be speedily lost.

George IV., was a warm patron of the turf as Prince of Wales. He began his sporting career early, being only twenty-six years of age when his horse won the Derby. From the year 1784 to 1792, inclusive, the Prince of Wales was a winner to a large extent. To the sporting reader it is unnecessary to mention that the stakes in those times were nothing to be compared with those of the present day, and therefore the produce of the above-mentioned nine years will be deemed considerable. The Prince's winnings, prizes included, were as follow:—His Royal Highness won 185 races, including 18 King's Plates, 1 Derby, 2 cups, 1 Claret, an Oatlands (worth nearly 3,000 gs.), 1 July Stakes, a Lady's Plate, and sundry Jockey Club, Prince's, and Macaroni plates and stakes. Amount of winning, exclusive of the above-mentioned stakes and plates, 32,688 gs. Of this period the years 1788 and 1792 were the most propitious. In the former the Prince won £4,000 and a Derby; in the latter £7,700—out of which Whiskey, by Saltram, won 4,650 gs.; Cleopatra, by Saltram, won 1,550 gs.; and the Queen of Sheba, by Saltram, won 900 gs.

1791 was the celebrated "Escape" year; and it is strange that both the horse and its royal master should have had such narrow *escapes;* and, if we were to carry the metaphor further, from the same cause—*the legs*. This horse was bred by the Prince of Wales, and purchased, when a yearling, at the sale of his stud, in 1786, by Mr. Franco. One night his trainer went into the

stable, and found that he had kicked through the stall, and entangled one of his legs between the boards; by good care and management he was released without sustaining any injury; the trainer hastened to inform Mr. Franco of the circumstance, exclaiming, "What a wonderful escape!" After listening to all the particulars, the owner named him "Escape." In 1789 the Prince repurchased the horse from Mr. Franco for £1,500; and two years afterwards "the event," which created a considerable excitement at the time, came off. We pass over the second escapade, and Chifney's explanatory pamphlet, "*Genus Genuine*;" thus much we may say, that there certainly can be no doubt that there are many instances on record of different horses beating each other alternately over the same course. With this remark we leave the affair (as the players say) to the discrimination of an enlightened British public.

After a lapse of seven years his Royal Highness again appeared on the turf: "the ruling passion" was as strong as ever, although he still refrained from visiting Newmarket, indignant at the treatment he had there received. In 1805 a numerous meeting of the members of the Jockey Club was held at Brighton during the races, and the circumstances attending the Prince's secession from Newmarket were fully entered into. The result was the following resolution, which was carried unanimously:—

"May it please your Royal Highness,—The members of the Jockey Club, deeply regretting your absence from Newmarket, earnestly entreat the affair may be buried in oblivion; and sincerely hope that the different meetings may again be honoured by your Royal Highness's condescending attendance."

This document was signed by the members present, and submitted to the Prince, who received it most graciously, and in his Royal Highness's reply signified his intention of assenting to it. From that time, however, we believe the Prince never carried his intentions into effect.

During this period of seven years, from 1800 to 1807, inclusive, his Royal Highness won 107 races, including 9 King's plates, 2 cups, 4 Oatlands, 3 Cravens, besides the Woburn, Petworth, Pavilion, Somerset, Egremont, and Smoker stakes. Amount of winning, exclusive of the above stakes and plates, 10,295 guineas. Of this period, 1807 seems to have been the Prince's most fortunate year, as far as public money was concerned. For we find his Royal Highness a winner of 26 races, including the Petworth and Somerset stakes, and the gold cup at Brighton, the Craven and October Oatlands at Newmarket, and the Welter at Bibury. Amount of winning, exclusive of the above stakes and plates, 3,995 guineas.

In 1807 was instituted the Ascot Gold Cup, the first winner being Master Jockey (3yrs., 6st., 12lbs.) After the visit of the Emperor Nicholas of Russia to Queen Victoria in 1844, the Ascot Gold Cup was discontinued, and its value given to augment other stakes; the Emperor of Russia's Gift (value 500 guineas) won the first year by Lord Albemarle's Emperor (4yrs., 8st., 5lbs.). Since the Crimean war (1854-6) the Queen's Gold Vase has replaced the Emperor's Gift.

In the course of 1809, the turf lost several of its oldest and best supporters. Mr. Wentworth died at Towlstone Lodge, Yorkshire, August 30th, 1809, aged 88. He commenced on the turf in 1754, and continued this pursuit up to the period of his death. The following is a list of some of his best horses: 1747, Little David by Foxcub; 1748, Comet or Trimmer by Cade; 1754, Ladylegs by Whiting; 1755, Maria by Second; 1756, Star by Regulus; 1757, Patriot by Regulus; 1760, Fortune by Lot; 1760, Volunteer; 1762, Chatsworth* by Blank; 1764, Kipling by Young Snip; 1765, Carabineer by Young Cade; 1768, Ancaster by Blank; 1775, True Blue by Herod; 1776, Fearnought by Engineer; 1778, Thornville† by Herod; 1781, Rockingham by Highflyer; 1783, Poor Soldier by Eclipse; 1789, Ormond by Match'em; 1792, Prince Charles by Highflyer; 1797, Chance by Lurcher; 1799, Primrose by Beningbrough; 1803, Centurion by Beningbrough; 1804, Margaret by Beningbrough; 1806, Amethyst by Chance; and many others, too numerous to mention.

In this year died, at Newmarket, Thomas Panton, Esq., aged 87, one of the oldest members of the Jockey Club, and a constant patron of the turf. Also Hugo Meynell, Esq., at Brighton, at the age of 81, the father of Leicestershire fox-hunting, whose fame belongs more properly to the annals of the chase. To the above may be added John Hilton, many years judge at Newmarket, Epsom, Bibury, and other race-courses, and generally esteemed for his strict integrity and obliging manners.

The well-known Colonel Mellish died in August 1817, at his farm at Hodsack Priory, aged 37. Had this gentleman confined himself to the turf, there is no doubt but that he would rather have increased than injured his fortune, as he was generally allowed to be a perfect judge of the powers, the qualities and capabilities of race-horses; however, by other imprudences the Colonel ran through his immense paternal property at Blythe, which was accordingly sold, and he retired to his farm at Hodsack Priory, bearing his change of circumstances with perfect equanimity. During the short period he served in the Peninsular War, he obtained much credit for his military talents, his activity, and patience of fatigue, and was appointed aide-de-camp to General Sir Ronald Ferguson.

He made his first appearance on the turf at Durham races, in 1801, when his horse, Welshman by Sir Peter, (rode by W. Pierce), won a match of 50 gs., and from that period up to his death, we find him constantly running horses for the principal plates and stakes in the kingdom. In 1804, his

* In 1769, at York, this horse won the Great Subscription purse, beating Gimcrack, Bay Malton, &c., running in the name of Sir Lawrence Dundas, then Mr. Wentworth's confederate. Much money changed hands on this race, and Mr. Wentworth had, afterwards, an excellent painting made of it, containing likenesses of the six horses running in it, with portraits of their riders, Charles Dawson, Leonard Jewison, Wm. Golding, Michael Mason, John Singleton, and Robert Collins, all crack jockeys of that day. This picture is, if we mistake not, still in the possession of Earl Fitzwilliam.

† This horse ran four miles, at York, in seven minutes and a half for the Subscription Purse.

famous horse, Sancho, won the St. Leger at Doncaster, and in the year following it was won by his horse Staveley.

From 1807 there was a long chasm in Royal patronage to 1827, when we again find the Prince, as George IV., patronising the turf. But the royal star was not in the ascendancy, for from that year until 1830 we only see his Majesty's name as winner of 21 races, including 2 Goodwood and 3 other cups, 3 King's plates, 2 Oatlands, 2 Cravens, the Swinley, Windsor Forest, Somersetshire stakes at Bath, and Royal stakes at Ascot (9 subscribers, 100 sovs. each). Amount of winnings, exclusive of the above, 1,645 guineas.

Taking the entire period of twenty years that his Majesty was upon the turf, we find the following results, independent, as a matter of *course*, of private bets:—His Majesty won 313 races, including 1 Derby, 30 King's plates, 10 cups, 7 Oatlands, 5 Cravens, 1 Claret, &c., &c. Amount of winning, exclusive of the above stakes and plates, 44,628 guineas. Add to this the average value of the plates and stakes won—say 13,000 guineas—and the "tottle of the whole," as Joe Hume used to say, will be 57,628 guineas. Yet he was declared to have lost heavily by his turf connexion.

The 2,000 Guineas Stakes at Newmarket were established in 1809, and won by Mr. Wilson's ch. c. Wizard by Sorcerer.

Goodwood races were established in 1803, upon the Earl of Egremont giving up the races in his park at Petworth. They were revived in 1812, having languished during the war, from the absence of the Duke of Richmond in the Peninsula. The Goodwood Cup was first given in 1812, and won by Shoestrings (4 yrs., 7st., 9lbs.)

The 1,000 Guineas Stakes at Newmarket originated in 1814, their first winner being Mr. Wilson's b. f. Charlotte by Orville.

The Duke of York was said to have met his losses by selections from his grey carriage horses (of which he used to keep a large assortment in the highest possible state of carriage discipline and condition), and many of these he disposed of at a large figure. Racing was not his forte, neither was he sufficiently wary; but, on the contrary, too confiding and unsuspicious for a turf-man. Nor was his judgment, as relates to racing and race-horses, at all on a par with that of his elder royal brother, who was a judge far beyond mediocrity in such matters, and who, independent of this, got persons about him as deeply versed in all the intricacies and mysteries of racing on every point as any man living. Not that any insinuation is contemplated that this prince wished to avail himself of the knowledge and experience of those persons for any improper or even equivocal purposes; but all turf-men, even in those days, were far from immaculate, and the prince found it absolutely necessary to meet the manœuvres of such men by proper caution. Racing is often ruinous to those who do this; but the loss increases manifold with such as do not, and unfortunately, the Duke of York was one of those. Some fortunate sales of his admirable grey carriage horses might have paid a portion of the cost of his racing stud, but he lost far too heavily on the turf for his expenses to be materially lightened by these resources.

Among the eminent men of the Georgian era, we find the name of the Right Hon. Charles James Fox. In a memoir of this celebrated statesman, we find the following notice:—"An orator from his infancy, and a sportsman by intuition, or the prevalance of fashion, it can create no surprise that we find him a blazing comet of the senate and a member of the Jockey Club. Upon the turf he was always accustomed to animadvert upon his own losses, and repeatedly observed 'that his horses had as much bottom as other people's, but that they were such slow, good ones, that they never went fast enough to tire themselves.'"

He had, however, the gratification to experience some few exceptions to this imaginary rule; for in April, 1772, he was so lucky at Newmarket as to win nearly sixteen thousand pounds, the greater part of which he got by betting against the celebrated Pincher, who lost the match by only half a neck. The odds at starting were two to one on the losing horse. In the year 1790, his horse Seagull won the Oatlands stakes at Ascot, of one hundred guineas each (nineteen subscribers), beating the Prince of Wales's Escape, Serpent, and several of the very best horses of that year, to the great mortification of His Royal Highness, who immediately matched Magpie against him, to run four days afterwards, two miles, for five hundred guineas. This match, on which immense sums were depending, was won with ease by Seagull. At this period, Lord Foley and Mr. Fox were confederates.

In the same year, these spirited turfites had thirty horses in training, the majority of which were of no great celebrity; but the winnings of Seagull, in stakes alone, amounted to no less than fifteen hundred and twenty guineas, exclusive of at least double that sum in bets. In those days, we must remind our readers that the plates averaged from fifty to one hundred pounds, which will account for what in that time was looked upon as a large sum of public money to win, but which in ours would be trifling.

The death of Lord Foley in 1793, the friend in whose judgment Mr. Fox most confided, relaxed his ardour for horse-racing. His Lordship entered upon the turf with a clear estate of £18,000 a year, and £100,000 ready money, which was considerably diminished by his losses at Newmarket, Ascot, and Epsom. At the Spring Meeting at Newmarket, in 1789, Mr. Fox is said to have won not less than fifty thousand pounds; and at the October meeting, at the same place, the following year, he sold two of his horses, Seagull and Chanticleer, for four thousand four hundred guineas. In the course of 1788, Mr. Fox and the Duke of Bedford won eight thousand guineas between them, at the Newmarket Spring Meeting, and during these races, Mr. Fox and Lord Barrymore had a heavy match, which was given as a dead heat, and the bets were off.

On coming into office with Lord North, in 1783, Mr. Fox sold his horses, and erased his name from several of the clubs of which he was a member. It was not long, however, before he again purchased a stud, and in October, 1783, he attended the meeting at Newmarket. The King's messenger was obliged to appear on the course to seek the Minister among

the sportsmen on the Heath. The messenger on these occasions hid his badge of office, the greyhound, not liking that the world should know the King's adviser was amusing himself on Newmarket Heath: but Charles Fox preferred the betting rooms to Downing Street.

As a lover of the turf, and a general sporting character, the Duke of Queensberry stands conspicuous. We shall leave his eulogy to the pen of Nimrod, in the *Quarterly Review*, No. xcviii. — "The name and exploits of the late Duke of Queensberry will never be forgotten by the sporting world; for whether we consider his judgment, his ingenuity, his invention, or his success, he was one of the most distinguished characters of the English turf. His horse Dash, by Florizel, bred by Mr. Vernon, beat Sir Peter Teazle, over the six-mile course at Newmarket for 1,000 guineas, having refused 500 forfeit; also his late Majesty's Don Quixote, the same distance and for the same sum; and, during the year 1789, he won two other one thousand-guinea matches, the last against Lord Barrymore's Highlander, eight stone seven pounds each, three times round 'the round course,' or very nearly twelve miles. His carriage match, nineteen miles in one hour, with the same horses, and those four of the highest bred ones of the day, was undoubtedly a great undertaking, nor do we believe it has ever been exceeded. His singular bet of conveying a letter fifty miles within an hour, was a great trait of genius in its line. The MS. being enclosed in a cricket ball, and handed from one to the other of twenty-four expert cricketers, was delivered safe within the time. The duke's stud was not so numerous as some of those of his contemporaries on the turf, but he prided himself on the excellence of it. His principal rider was the famous Dick Goodison, father of the late Goodison, in whose judgment he had much reliance. But, in the language of the turf, his grace was "wide awake," and at times would rely on no one. Having, on one occasion, reason to know—the jockey, indeed, had honestly informed him of it—that a large sum of money was offered his man if he would lose—'Take it,' said the duke, 'I will bear you harmless,' When the horse came to the post, his grace coolly observed, 'This is a nice horse to ride; I think I'll ride him myself;' when, throwing open his great coat, he was found to be in racing attire, and, mounting, won without a struggle."

On the 31st of March 1822, the turf was deprived, by death, of one of its oldest patrons, Sir Charles Bunbury, who died at his residence in Pall Mall, at the advanced age of 82. This excellent sportsman had been on the turf for nearly a century, during which period he kept a numerous and valuable stud of race-horses, which he ran for all the principal stakes and plates throughout the kingdom, and with no small share of success. His horse Diomed won the first Derby stakes at Epsom in 1780, and among the performances of his best horses, we may mention those of Eleanor and Smolensko. The former famous mare won both the Derby and Oaks in 1801, besides many other stakes, and in 1813, Smolensko carried off the Derby, and afterwards gained enormous sums.

In private life Sir Charles Bunbury was generally esteemed for his amiable temper and kindness of heart; while on the turf he was reckoned a first-rate judge of race-horses; and as he bore throughout his career the highest character for integrity, he was for many years the great authority on all subjects connected with racing.

In 1824 the first Royal Plate at Manchester was run for, His Majesty signified his intention of giving, in October, the sum of 100 gnineas, to be run for annually at Manchester, to commence in the year 1824, by horses, mares, or geldings, carrying the following weights, viz: four years old, 10st. 2lb.; five, 11st.; six, 11st. 5lb.; and aged, 11st. 7lb. Heats, three miles, and a distance, &c. Hampden, the winner of the King's plate at Newmarket, performed the distance, 3 miles, 5 furlongs, and 187 yards, in seven minutes, four seconds, carrying 10st. 4lb.

In the month of November, the Marquis of Sligo was the holder of the Northumberland Gold Cup, the Peel Cup, the Whip, the Sligo Whip, and the King's, an extraordinary instance of success on the turf, and the first time these prizes ever fell together into the possession of one individual.

In 1825 the Goodwood stakes were established, Stumps being the first winner.

That distinguished sportsman, Earl Fitzwilliam, departed this life on the 8th of February, 1833, at Milton Abbey, near Peterborough, Northamptonshire, at the advanced age of 85; during seventy-seven years of which period he was a peer, having succeeded to the title when only eight years of age. Devotedly attached to the manly field-sports of his native country, the late Earl "won golden opinions" from his fellow sportsmen, by his amiable manners and good nature. His first connection with the turf was about the year 1770, with his uncle, the Marquis of Rockingham, then considered the leading patron of racing. The partnership continued till the Marquis's death in 1782, upon which Earl Fitzwilliam took the stud and stables to himself.

Among the many celebrated race-horses which this nobleman's stables produced, may be mentioned the following, viz:—Pewit by Tandem, Minstrel by Phenomenon, Cade by Phenomenon, Sir Solomon by Sir Peter, Orville by Beningbrough, Woodpecker by Buzzard, Paulina by Sir Peter, Knowsley by Sir Peter, Cervantes by Don Quixote, Pumpkin by Stamford, Amadis by Don Quixote, Cid by Sancho, Cossack by Sir Paul, Anselmo by Cervantes, Cardenio by Cervantes, Peppercorn by Capsicum, Civet by Cervantes, Beatrice by Ardrossan, Dramatist by Comus, Humphrey Clinker by Comus, Mulatto by Catton, Medora by Cervantes, Ballad Singer by Tramp, Leo by Comus, &c. &c.

Earl Fitzwilliam was by no means fortunate in winning many of the great stakes, with the exception of the St. Leger, which he won in 1789 with Pewit, in 1802 with Orville, and in 1807 with Paulina.

In 1831, the Earl retired from the turf, occasioned by some circumstances connected with the race at York in that year, when his horse, Medora, was beaten by Lord Scarborough's Cambridge, and the Duke of Leeds' Jenny Mills, owing to the

bad riding of Edwards—which was so bad as almost to warrant the conclusion of its having been intentionally so.

On the 9th of March 1833, Ralph Riddell, Esq., of Fenton Park, near Morpeth, Northumberland, died, universally esteemed. Mr. Riddell made his *début* on the turf in 1791, and from that period, to the day of his death, was one of its firmest and most honourable supporters. Among his horses, we find some of the most celebrated racers this country ever produced, and which made their appearance in the following order viz.: in 1800, Merry Andrew by Walnut out of Sylvia; in 1811, XYZ, by Haphazard, dam by Spadille; in 1813, Encore by ditto, dam by Star; in 1814, Dr. Syntax by Paymaster, dam by Beningbrough out of Jenny Mole by Carbuncle; in 1816, Lydia by Remembrancer out of Helen, by Hambletonian; in 1824, Caccia Piatti by Whisker, dam by Walton; in 1828, Zodiac by Centaur, dam by Eaton; in 1829, Principe by Whisker out of Princess by Comus, &c. &c. The most celebrated of these was Dr. Syntax, which he purchased of Mr. Knapton, of York, a well-known breeder of blood-stock, who had bought him when a foal, from Humphrey Osbaldeston, Esq., of Hunmanby, near Scarborough, Yorkshire, by whom he was bred.

It appears that Dr. Syntax ran no less than forty-nine times, out of which he won thirty-six races, in which he defeated all the first rate horses of the day, and gained his owner the sum of 3,654*l.* in ten years, in addition to twenty gold cups: one at Middleham, five at Lancaster, seven at Preston, one at Pontefract, five at Richmond, and one at Northallerton.

The late Duke of Dorset likewise joined in himself the qualities of an admirable judge of a racehorse, with a politic method of making his engagements. When he was Lord Sackville, he was probably the best gentleman jockey on the turf, in which character he often officiated at Bibury for his majesty King George the Fourth.

The Duke of Grafton was also a well-known patron of racing, and always possessed an excellent stud, which he managed with such judgment as to be a great gainer by his engagements, when thousands of reputed judges were losers. He was a winner of the Derby stakes once, and of the Oaks six or seven times; besides being in for very many of the best pickings at Newmarket.

In 1837, Sir Mark Wood, Bart., closed his short but brilliant sporting career with his life, being only in the 42nd year of his age. After the timely sale of his estate and borough of Gatton, in Surrey, to Lord Monson for 180,000, in 1829, Sir Mark resolved to devote himself to the pursuit of the turf, and for this purpose, took up his residence at Hare Park, about five miles from Newmarket. The late Baronet won the Oaks with Vespa, besides numerous prizes with his famous mares, Lucetta and Camarine.

On November 11, 1845, died at his seat, Petworth, Sussex, the Earl of Egremont, aged 86, during fifty years of which period his lordship was the owner of race-horses. His breeding establishments at Petworth contained nearly seventy thorough-bred mares. His lordship's stock was remarkable for their stoutness. Among his principal successes on the turf, it is sufficient to refer the reader to the years 1782, 1804–5–7–26, in each of which he won the Derby; he also won the Oaks exactly the same number of times, viz.: 1788–89–95, 1800–20. His successor Lord Leconfield died at Petworth in 1868, and is succeeded by his eldest son, Captain Henry Wyndham, now Lord Leconfield. The present Lord continues to hunt an extensive country, has two packs of about fifty couples of handsome and efficient hounds, and hunts five days a week. These hounds are under the management of Shepherd, an excellent huntsman and first-rate rider; they have already killed more than fifty brace of cubs.

In the commencement of 1838, Lord Berners, long and generally known as "the Sporting Major Wilson of Newmarket," died in the 77th year of his age. His Lordship, who at the period of his death, was perhaps the oldest patron of the "Turf," of which, indeed, he was commonly styled the "Father," became latterly very eccentric, while the parsimonious ideas he contracted would not allow him to keep up his stud in good form. The public were, therefore, not a little astonished when, in 1834, his horse Phosphorus, with a "queer leg," and 40 to 1 against him, being besides under the direction and management of a person of no experience as a trainer, carried off the Derby, to the great delight of his noble owner—it being the first time of his winning that great stake.

On Tuesday, the 10th July, in the same year, the Duke of Leeds expired in London, after only three days' illness, in the 63rd year of his age. The Northern Turf sustained a great loss by his death, as he had long been at once its brightest ornament and most liberal patron. His Grace commenced running horses in 1797, when Baron Conyers; and among the best of the long list of horses which passed through his hands, we may mention the names of Mowbray, Rasping, Mercutio, Blue Beard, Jenny Mills, Zohrab, &c., &c. His best horse, however, was the celebrated Octavian, the winner of the St. Leger (1810) which he purchased when a foal, with its dam, from one of his own tenants, having taken a fancy to it while following its dam in the plough.

It would appear invidious, even in this slight sketch, to omit the names of the Dukes of Portland, Richmond, Cleveland, Bedford, and Beaufort; the Marquises of Exeter and Westminster; the Earls of Egremont, Burlington, Jersey, Orford, Chesterfield, Sefton, Wilton, Eglintoun, Glasgow, Stradbroke, Verulam, and Lonsdale; the lamented Lord George Bentinck, and Lords Foley, Kinnaird, Generals Peel and Anson, and Admiral Rous. Lord Egremont especially deserves mention, and also General Grosvenor.

The Sailor King, William IV., although not fond of racing, patronized Ascot, and farther gave a grand annual dinner to the members of the Jockey Club. In May, 1832, William IV. gave a new prize at Ascot. This consisted of a handsome piece of plate, a salver bearing the real foot of the renowned Eclipse. This was a right royal and truly sporting prize, emblematic of the taste and munificence of the kingly donor. Nor can we omit the mention of a characteristic trait of

naïveté, and of the force of early impressions, which is related of his Majesty, who, during these races, being asked how many of his horses should start for a certain plate, immediately replied, "Oh! let all the fleet make sail."

In 1837, the "Sailor King" was gathered to his fathers, after a brief reign of seven years.

Of her present Majesty and her princely Consort, the turf has seen but little, save at the annual Ascot, since 1840, when the royal party visited Epsom, and witnessed Little Wonder's surprising win of the Derby—Prince Albert, on that occasion, presenting the fortunate jockey, Macdonald, with a whip. Under the Ascot Cup (first given in 1807) we have noted the visit of the Emperor of Russia in 1845, the substitution of the Emperor's Cup, and the return to the Ascot Cup, in 1854, on the breaking out of the Crimean War.

In 1839, in the Second October meeting, the Cesarewitch stakes were instituted in honour of the Grand Duke Michael, the first winner being Lord Milltown's ch. m. Cruiskeen, by Sir Hercules (5 yrs., 6st., 6lbs.)

In the same year the Cambridgeshire Stakes, run in the Newmarket Houghton, had their origin, Mr. Ramsay's br. c. Lanercost, by Liverpool, being the winner.

1839 was remarkable for a disputed Derby. Bloomsbury, the winner, being objected to on the ground of false pedigree by Mr. Fulwar Craven, owner of Deception, who ran second, and won the Oaks on the following Friday. The objection was sustained by the Earl of Litchfield, who protested against the decision of the stewards of the Jockey Club. Mr. Ridsdale, the owner of Bloomsbury, therefore, went into the law courts against Mr. Fulwar Craven, and, proving that the error was in Messrs. Weatherby's office, and the true pedigree by Mulatto out of Arcot Lass, obtained the stakes.

In the Leger of 1839 occurred the first dead heat since the institution of the race in 1776, between Major Yarburgh's Charles XII. by Voltaire, rode by "Bill" Scott, and Mr. Thornhill's Euclid by Emilius, rode by Conolly. The year 1850 saw a repetition of this *contretemps*: Lord Zetland's Voltigeur, also by Voltaire, rode by Job Marson, running a dead heat with Mr. Mangan's Russborough. It may be observed that in the first named race the dead heat was run in 3 min. 25 sec., the deciding one in 3 min. 45 sec. In the latter the dead heat in 3 min. 21 sec., the final race in 3 min. 24 sec., distance 1 mile 6 furlongs, 132 yds. While on the subject of dead heats we may note that there has been but one dead heat for the Derby since its origin, in 1780; that in 1828, between the Duke of Rutland's Cadland, by Andrew, rode by Robinson, and the Hon. E. Petre's Colonel, by Whisker. The deciding heat went to Cadland, after a desperate struggle; "Bill" Scott rode the Colonel. The Oaks had its first dead heat in 1858, between Mr. Gratwicke's Governess, by Chatham (Ashmall), and Admiral Harcourt's Gildermire; in this race the first heat was run in 2 m. 56 secs., the deciding one in 2 m. 53½ secs., (distance 1½ mile.)

It may somewhat relieve the dryness of this bare historical record to quote a few passages from a description of the race of Charles XII. and Euclid from the pen of one of our best and most facile of sporting writers.

"On reaching the end of the white rail, the excitement became redoubled. It was now evident that the struggle rested between Charles and Euclid, and it became extremely doubtful whether the favourite could win. Euclid was running in as true and beautiful a style as can possibly be imagined. On approaching the distance, he fairly coupled his competitor. Then commenced the slashing work, and the multitude was in commotion, swaying to and fro. The spurs were applied, the whips were elevated, each jockey appeared to fairly lift his horse onward; but it appeared, from the position occupied by Euclid, that he was pressed so near the rails that Conolly had not sufficient room for the full exercise of his strength. In proof of this, it need only be mentioned that the first stroke he gave with his whip caught the tip of the bonnet of a lady who was leaning over the rails, and it was cut as clean through (fortunately missing her face) as if it had been done with a sharp knife. The two rivals were then head to head, and a struggle of the most determined and terrific character ensued, amid the roar of 'Euclid, Euclid! Charles, Charles! Euclid wins! Well done Conolly!' from ten thousand voices. On reaching opposite the Grand Stand, where every hat was off, Euclid appeared to have the best of the race: he was a clear head in advance of his opponent, and threatened to defeat him; but his position was not the most favourable. Scott appeared to be aware of this, and concentrated all his energies. In each competitor every muscle, sinew, and tendon were visibly at their utmost stretch. The head and neck of each horse outstretched to the utmost length, the ears laid back, the eyeballs fit to start from their sockets, and the nostrils distended, formed two parallel lines; and everything seemed to depend upon the reach of the last stride. For a moment the multitude was hushed into silence; then the roar became doubly loud. Euclid fetched up his hind-quarters in the most racing Eclipse-like style possible, and it seemed fearful that he would strike his fore legs with the hind ones, and dash himself head over heels. It should be borne in mind that Euclid, whose game and stoutness were, perhaps, never surpassed, was a less horse than Charles, and his stride, however rapid, was much shorter. At this moment, in a racing point of view, nothing could possibly surpass this picture of fleetness and endurance, as each competitor struggled against the other, head to head; a sight, indeed, which had never been surpassed, and, as was said at the time, will never be equalled. No one could tell—not the most discriminating and experienced eye—which had the advantage: indeed, they were both perfectly equal; and as the two noble animals, with their jockeys still hard at work, reached the post in the manner described, a loud roar, which was heard at several miles distant, burst like thunder from the assembled mass. The judge instantly declared, without the least hesitation, 'A dead heat!'—the expanded nostrils of each horse were quite equal. The words, 'dead heat,' flew through the crowd like wild-fire, and were repeated again and again, and immediately drew forth the exclamation, that such

a race for the St. Leger beat all that had ever been witnessed. The race was run in three minutes twenty-five seconds over heavy ground. The subject of the dead heat which had just been witnessed, became the subject of discussion, each party taking their own sides, and each vindicating their own jockey; but the best and most experienced judges in racing matters condemned Scott for making too free with his own horse over the heavier portion of the ground, instead of reserving his powers till the required moment, and that the result of the final trial would all depend upon the manner in which Charles was handled. Conolly soon became lively and pleasant. Scott assumed a subdued, if not a sullen, tone and bearing; and when he was asked by one who had influence over him, and whose opinion he could not but regard, why he had come away from his horses on the far side of the ground, he merely shook his head; and when the remark was further made, that, at the pace he was going, when there was no occasion for it, he might be sure that Euclid would couple him before he got home, he merely replied by saying, in a low tone of voice, that he knew he had done wrong and had been too hasty; and when, too, the words were added, 'Mind you don't do it again,' he also remained silent, but appeared full of thought. It will be seen that, at the final trial, Scott's mode of riding was reversed. Conolly received the highest commendations for the admirable manner in which he handled Euclid throughout the whole of this desperate and exciting race. * * * *

"On the two competitors again presenting themselves on the course, Charles appeared, if anything, the more lively of the two; but Euclid still looked well, and ready for the final struggle. Never were two opponents so closely scrutinized; never did two jockeys appear more anxious to do their duty, or to feel more intensely the importance of their personal responsibility. There was no swagger, brag, or joke, but an unbroken silence which told its own impressive tale; nor the least possible indication of superiority one over the other. A cautious earnestness was the prevailing feeling. The interest of the spectators, perched on every available elevation, as well as crowding on the ground, became increased, as the two competitors approached the post to run over the same course a second time. There was no difficulty in getting off; but excessive care and caution were manifested by each rider. They started in silence, the attention of the spectators being absorbed as to which should take the lead. The mode of running was reversed. Instead of Charles bounding off at score, as some had been led to anticipate, in the Don John fashion, the lead was assumed by Euclid at a slow pace; but at the rise of the hill the speed was increased, Euclid still keeping his position. In this way the two horses proceeded; over the hill, along the far side, the Red House bend, and past the end of the white rails, Scott evidently making a waiting race of it. The multitude were held in almost painful suspense. On reaching the distance, Charles challenged his opponent. Euclid still looked well, and ready for a second struggle. Again head was placed to head—rush answered rush—bound followed bound; and so equal seemed the chance of both, that a second dead heat was confidently expected. The contention again became desperate, and the masses of people surged from side to side. The powers of each horse—speed, courage, and endurance—and the qualities of each jockey—skill, nerve, and judgment—were again brought into full operation. Again were the whips elevated; again were the spurs at work. Victory seemed, once more, hung in the balance, as every muscular action was brought into full play, with head to head, and each determined to reach the post victoriously. Again rose the roar of 'Euclid' against Charles, and 'Charles' against Euclid. No one could tell which might eventually prove the winner; but at length the superior size and larger conformation of Major Yarburgh's horse over that of Mr. Thornhill's, with his immense stride successfully accelerated at the proper moment, enabled Charles the Twelfth to win the race by only just, or scarcely, a head, amid loud cheers of exultation from the friends of the gallant Major and the backers of his splendid horse. The public feeling, however, was with Euclid, mainly in consequence of his less size; and although his opponent proved the winner, Euclid, from this second manifestation of his excellent qualities, was the almost universal favourite with the masses, with the expression, 'Well, Euclid has been defeated by the chance of a stride; but he's a true runner, a real good horse, and worthy of the blood of Emilius and Whisker!' The second trial was run in three minutes forty-five seconds. It is worthy of being placed on record that the stride of Charles the Twelfth, on the occasion of the dead heat, immediately after he had been passed by Euclid by a head, opposite the Grand Stand, was exactly twenty-four feet six inches and a-half, as measured by his foot-prints left plainly visible on the turf. The stride of Euclid was much shorter, but much quicker, and more clean and elastic than that of his opponent."

The reader will need no apology for this slight digression; the spirit and life of the description, and the interest of such a record in the history of racing justifying its preservation.

In 1842, the turf sustained great loss in the demise of two of its most generous supporters—the Duke of Cleveland and Christopher Wilson, Esq. His Grace expired in London, January 29th, in the sixty-seventh year of his age; and Mr. Wilson on the 25th of May, in his seventy-ninth year. The noble Duke won the St. Leger in 1831, with Chorister. Mr. Wilson bore the title of the Father of the Turf; and up to that time, was the only gentleman who had won the Derby and St. Leger with the same horse, Champion, in 1800; it is a remarkable circumstance that the Father of the Turf breathed his last on the Derby day.

The Great Yorkshire Handicap, run at Doncaster, dates from 1842, its first winner being Galanthus, 3 yrs., 5 st. 12 lbs.

In 1844 another disputed Derby was run, and "the gentlemen of the long robe," as newspaper writers delight to term them, were the judges of the Epsom event. On this occasion Colonel Peel, and some other gentlemen of high honour and standing, were instrumental in clearing the turf of an organized gang of nefarious gamblers, who, there is no doubt, had on

more than one occasion substituted horses of a greater age than those permitted to run by the conditions of the race in which they were engaged. Among their other frauds were false pedigrees, and impositions on the keeper of the Stud-book and Calendar. The Derby of 1844 was their rock of ruin. A horse described as Running Rein, by the Saddler, out of Mab, by Duncan Grey, was first past the post; Colonel Peel's Orlando, by Touchstone, second. A protest was raised; and after a trial before Baron Alderson—in which it was clearly shown that Running Rein was a four-year old colt, called Maccabæus (afterwards Zanoni) by Gladiator, dam by Capsicum—the stakes were awarded to Orlando. There was another animal of the same class, a four year old, entered as Leander—whose leg, by a species of retributive justice, was broken by Running Rein during the race—started. The owners of the last named, the Lichtwalds, and some confederates in these frauds, "left the country, for their country's good," on the exposure of their malpractices.

The Great Yorkshire Stakes (run at York in the August Meeting) were established in 1843,—the first winner being Prizefighter. The Great Ebor Handicap (York) was also instituted this year,—Pagan, 5 yrs., 7 st. 13 lbs., carrying off first honours.

The Great Northamptonshire Stakes date from 1844; the first winner was Vitellius, 4 yrs., 7 sto. 6 lbs. These are proofs of the great public favour into which handicaps were fast growing. On Handicaps we shall speak further in a subsequent Chapter, where this and other kindred subjects will be treated.

The Newmarket Handicap, of which the first winner was Vol-au-Vent, 4 yrs., 6 st. 6 lbs., dates from 1845.

In 1846 the Great Metropolitan Stakes, at Epsom—originated and liberally contributed by the Licensed Victuallers of the metropolis—was added to the list of leading handicaps. Its first winner was Chamois, 3 yrs., 5 st. 7 lbs.

The year 1848 was remarkable for settling the "Champion" problem about one horse winning the Derby and St. Leger, Lord Clifden's Surplice winning both the great races that year, and being followed in the two following years by Lord Eglinton's Flying Dutchman and Lord Zetland's Voltigeur. The other great turf event of 1848 was the sudden death of Lord George Bentinck. On the week following the St. Leger (Thursday, Sept. 21st), his Lordship was found dead in the Flood Meadows, near Welbeck Abbey, the seat of his venerable father. Lord George had attended the races every day, and returned to Welbeck each evening. His presence on the ground was hailed by all parties with no ordinary feelings of congratulation; because his long experience, unerring judgment, and strict integrity in all matters connected with the turf, could, if necessary, be rendered immediately available. In the enjoyment of the repose and quietness of the Abbey, he had accepted an invitation to spend two days with his old and valued friend, Earl Manvers, at Thoresby Park, a short distance from Welbeck, and had arranged to dine with him at seven o'clock on the Thursday evening. Lord George left Welbeck, on foot, at a quarter to four o'clock, distant by the foot-road about four miles; and had sent his gig, with his groom and valet, by the usual route. He never made his appearance at Thoresby, and in consequence deep alarm prevailed. An anxious search was made for him, and he was found at the time stated on the Flood Meadows dead, about a mile and a half from Welbeck. He was lying flat on his face, with his walking-stick in his hand, and both his arms under his body. His hat was lying at a short distance in advance; and judging by the appearance of the surrounding grass, the body, after it had fallen, had remained perfectly motionless. His watch was in his pocket, still going. His pocket-book, containing a considerable sum of money, as well as his betting-book, was undisturbed. His lordship had died from "spasm of the heart," in the forty-seventh year of his age.

Lord George Bentinck was the great reformer of the turf. All his racing transactions, from Elis in 1836, down to what had been his pet foal, were strictly honourable. And the best evidence of the goodness of his heart is to be found in the fact that the large sum of £2,649, subscribed for him as a public testimonial of his worth, was vested in trustees as the "Bentinck Fund, for the relief of trainers, jockeys, their widows, and children." This is his best and most enduring monument, in comparison with which "the storied urn and animated bust,"—brass, bronze, and marble—pyramid, arch, and column, are as nothing. These pass away; but the Bentinck Fund endures. In the long list of noblemen, whose titles and character shed a lustre on the page of turf history—from Egremont, Bedford, Grosvenor, Grafton, Rutland, and Jersey, down to the present age—no name will be held in higher honour, or in deeper veneration, in succeeding times, than that of Lord George Bentinck.

For some years an immense development of a betting mania had been visible in classes hitherto ignorant of, or uninterested in, that almost necessary excrescence of the sport of horse-racing. Lists were posted in most public towns, betting houses sprung up in every quarter of the metropolis, and the columns of the newspapers teemed with "monster sweeps" upon every race of importance. That an immense number of swindles and swindlers were set afloat by this mania none can doubt. Some of these persons advertised themselves as having accounts with the London and Westminster, Ransom's, and other banks, cheques on which would be forwarded "the day after the race." Several of these pretentious affairs having collapsed, and the list-shops and betting houses proving, as might be expected, mere "half-crown traps" to the ruin, socially and morally, of the humbler and working classes, they were legislatively suppressed—as E. O. and roulette tables, and the humbler thimble-rigger's and garter-pricker's dexterities had been chased from the race-course by Sir James Graham, to the gratification of every well-wisher to the turf, and supporter of what William the Fourth nobly called, "racing, the manly sport of a free people." Some men of a different stamp, however, arose from this corrupt

fermentation, and foremost among these Mr. Davis, familiarly known as the "Leviathan." This is not the place for the biography of a betting man, but we may note that by strict integrity in his engagements, the quondam carpenter, and list-keeper of the Strand and Long Acre, rose to a position in which his "ticket" was equivalent, with the betting public, to a bank note, and subsequently took a foremost position in "the ring." Daily and nightly railway travelling, accompanied by constant rubbers of whist while in transit, daily betting of thousands, and the wear and tear of unremitting calculation, broke down an iron constitution, and shattered the firm-strung nerve. In 1857, at the Houghton meeting, Mr. Davis laid down his pencil, and retired, with a noble fortune, to Brighton. We have interpolated this little tribute to illustrate the trite maxim of "honesty is the best policy;" the reader's experience will supply the *per contra*, among the cases of those who, by an opposite course, have "come to grief." Among these "blots on the 'scutcheon" of a noble sport, William Palmer of Rugeley will prominently suggest himself. His name first appears in 1847, as winning a sweepstakes at Warwick, with a horse called Ferry-hill, by Plenipo, out of Memphis. Winning some hundreds on the Flying Dutchman in 1849, at Epsom, and at Liverpool, he followed the son of Bay Middleton to Doncaster, and again "threw in." In 1850 he won the Leamington stakes (955*l.*) with Doubt, and netted 2,500*l.* in bets. In 1851, he won the great Shrewsbury Handicap with Goldfinder, making 3,000*l.*, and at Warwick, the Leamington Stakes, value 900*l.* and 6,000*l.* in bets. In 1853, after some heavy losses *ad interim*, Palmer is reported to have cleared 3,000*l.* by winning the Chester Cup with Goldfinder, and 12,000*l.* in bets. In 1855 he started Nettle for the Oaks at Epsom, and backed her for such an enormous sum as to carry her up to 2 to 1 at the post. Her accident, by which that honest and clever jockey Marlow broke his leg, was fatal to her chance, and the hopes of her villanous owner. Nettle was purchased with the money he received from the insurance office by the murder of his wife. The Chicken, too, bought from the same fund, accelerated his ruin by running second for the Leamington Stakes at Warwick. The rest of this fiend's career is a dark page in our criminal records.

We turn with pleasure to the memory of two turf celebrities whose mortal career closed in 1857—the first, Mr. Stanlake Batson, at the age of eighty-four. Mr. Batson was in the army, and known as Captain Batson until 1803. His best horse was the renowned Plenipotentiary by Emilius, the contemporary of Lord Jersey's celebrated Glencoe, both making their first appearance at Newmarket Spring meeting, 1834, Plenipo carrying off the Newmarket Derby, and Glencoe the Tuesday's Riddlesworth in a common canter. Of these two famous rivals Plenipo proved eventually the superior in both speed and stoutness. The race was for 100 sovs. each, over the Rowley mile, which Plenipo won easily by four lengths.

After this race, offers up to £5,000 were made to Mr. Batson for his horse, all of which were declined by that gentleman, who declared his intention of keeping him to run for the Derby. These offers must be looked upon with great suspicion, as few persons would give so enormous a sum for a favourite for a great stake, for the mere chance, however good, of winning it; while by losing, they might acquire large sums, without running any risk.

Nothing could exceed the style in which Plenipo carried off the Derby stakes at Epsom, winning, with ease, by two lengths; the race being run at a speed seldom before witnessed. Among the rejoicers at Mr. Batson's splendid victory, his tenants were, no doubt, the most sincere; that gentleman having promised them, that if he should win the Derby, they should all hold their farms rent free for a year.

Plenipo's next appearance was at Ascot Heath, where he walked over for the St. James's Palace stakes; Glencoe, and sixteen other crack horses, declining the contest.

His defeat for the Leger by Bubastes, when at the odds of five to two on him, coming in last but one, behind horses he had distanced at Epsom, was one of the "lotteries of horseflesh." His other victories and defeats will be found in the "Calendar."

Mr. Batson's Plenipotentiary was foaled in 1821, and got by Emilius out of Harriet by Pericles, (son of Evander); grandam by Selim. Among his ancestors were sister to Diomed (winner of the Derby in 1780), Childers, Paget Turk, Leede's Arabian. (?) Plenipotentiary died in 1856; his best colt was the Era.

The other turf celebrity was General Anson. In early life he was a close associate of the Duke of York, and the crack shot of the Red House Club, Battersea, when, in 1828, the pigeon-shooting mania was at its height, and not a dove-cot for fifty miles round the metropolis was safe. In the General's great match with the Squire, (Osbaldeston), the latter was the favourite at two to one on him at starting, but it was only evens when they entered on the fifth and last day, though "the Squire" then led by two birds. General Anson won the Derby with Attila, by Colwick, in 1842; and the Oaks with the Princess, by Slane, in 1844.

A yet later link in turf history has gone from us in 1860—the eccentric Mr. Fulwar Craven. In 1807 he ran his first horse, Pic Nic, at Reading; next season appears as a subscriber at Newmarket, and wins a match with Fly-by-night. A disappointment with Jannette, once an Oaks favourite, and another failure with Miss Jiggs for the same stakes, yet a third with Pastime for the same, did not shake his confidence; and in 1839 he carried off the "ladies' trophy" with his filly Deception by Defiance, after a narrow chance of winning the Derby; in which case the spell, broken for the first time in 1857, of a mare winning both Derby and Oaks, would have been unriddled by Fulwar Craven. His best horse, perhaps, was Longwaist. He quitted the turf as an owner of race-horses in 1842. Longwaist was purchased of Fulwar Craven, Esq., by John Mytton, Esq., of Halston, for £3000, and lost the first race he ran after the purchase, at Chester, for £1000 against Brutandorf. Longwaist was ridden by Mr. Mytton's own jockey Whitehouse, and Brutandorf by Scott; it was so close that many thought Longwaist had won.

CHAPTER II.

HISTORY OF HORSE-RACING (CONTINUED).

The year 1860 is chiefly memorable from the attempt made by Mr. Ten Broeck, a well-known transatlantic sportsman, to win the Derby with an American horse, Umpire. The excitement caused by this horse was immense, and was by no means lessened by the rumours set afloat to the effect that he was a four-year old, and that in the event of his winning, a repetition of the Orlando and Running Rein business would be certain. There were thirty runners for the Derby of '60, and The Wizard was the actual favourite at 3 to 1, 4 to 1 being freely taken about Thormanby, and 6 to 1 about Umpire. The American party backed the latter horse heavily, but the English "talent" would have none of him, for in addition to what they considered his lack of quality he showed signs of a hurried and unskilful preparation. The pace was very slow at first, and at Tattenham Corner, where Umpire ran up to the front, Mr. Ten Broeck and his friends were in ecstacies; but their triumph was very short-lived, as the Yankee tired right away to nothing, and The Wizard was, nearing home, left with the lead. At the distance, however, the champion of the ever-popular yellow and black, Thormanby, came out, and after a short struggle with the favourite won by a length and a half. Horror, a 25 to 1 chance, was third, four lengths from The Wizard. The victory of Thormanby was very popular; and it was said at the time that Mr. Merry, who always backs his horses heavily when he thinks they have any chance, won £70,000. Mr. Ten Broeck lost very much money, as in addition to his ordinary investments on Umpire, he had laid against every horse but his own and Horror, and had made special bets on Umpire against the actual winner. A great mistake must have been made with Umpire, as he nearly always failed afterwards, and his supporters were always making excuses for him. It is invariably bad business to have anything to do with horses that have to be excused, as if a horse once gets into a habit of running behind he will want a deal of curing. The victory of Thormanby brought Custance into notoriety, and he has now for a long time been regarded as a fashionable rider. His forte is punishment, and once or twice he has been called "butcher," from his slaughtering way of riding a horse home. Few men can get more out of a lumbering lazy horse than Custance; but he is rather too severe on delicate animals, who must often wonder what they have done to deserve the tremendous flagellation which descends on them when the time for a final effort arrives.

About this year a demand for the West Australian and Stockwell blood began to show itself, and the stock of both sires fetched fancy prices. At the sale of Lord Londesborough's stud West Australian brought the then magnificent sum of 3000 guineas, being purchased for the Count de Morny; but Stockwell, though not so good a racehorse, had achieved a greater reputation as a sire, and brought 4500 guineas, his buyer being Mr. Naylor. Had The Wizard won the Derby, possibly West Australian, his progenitor, would have run the great Stockwell a closer race in the bidding. Subsequent events, however, proved that the price given was quite enough. At this sale Mr. Blenkiron bought some of the produce which was to make the Middle Park stud farm most famous of modern days. The St. Leger resulted in a severe blow to Mr. Merry, who backed Thormanby heavily. The Derby winner was nowhere, and St. Albans, whose pretensions had been ridiculed by many clever folk, and who started at 8 to 1, won by a length and a half from High Treason, a rank outsider, The Wizard being a good third. Umpire, the American racehorse, ran in this race and received plenty of support, but as usual tired away to nothing as soon as the last desperate effort had to be made.

In 1861 Diophantus, who had won the Two Thousand Guineas in great style, was an immense favourite for the Derby. There had been rumours of foul play in connection with Klarikoff for the Newmarket race, and some unpleasantnesses had taken place; but these cleared off towards Derby day, and everything looked promising for the Guineas winner, who had only Dundee to fear, it was supposed. Towards the close of proceedings, however, the latter became the bigger favourite, and when the flag fell 3 to 1 was taken about him, while 4 to 1 could have been easily obtained about Diophantus. Yet at the same time there were many rumours about in connection with Dundee, who was said to be dead amiss, to have kicked himself, and to have done many of the things which so often result in the downfall of Derby favourites. Custance rode Dundee, and it is said by many that the severity of his treatment coming down the hill lost the horse he bestrode the race. Dundee ran very gamely, but he broke down near home, and finished behind Kettledrum, who won by sheer soundness, and who was excellently ridden by Bullock. The winner's starting price was 14 to 1, and as Colonel Towneley was very popular, many of the public took this tempting price. Dundee was beaten by a length, but it was the opinion of many that Diophantus, who was third, close up, was the second best horse in the race. The time was the fastest on record up to that time, 2 min. 43 sec., and it has really never been beaten since, though Blair Athol's performance, which is the same in figures, is actually better, as in his day the weights were raised 3 lbs.

The Leger of this year will long be remembered, as in it Kettledrum, notwithstanding his immense favouritism (he

started at 6 to 4), was beaten by a head: an obscure outsider, a mare, Caller Ou, against whom 66 to 1 was offered in vain, gaining a place on the beadroll of St. Leger winners, and once again proving the uncertainty of the turf, which is now and again called glorious, the glory of which, however, as well as the profit, seems mostly to lie with the bookmakers. Caller Ou was one of Stockwell's produce, and did much to send up the reputation of the popular stallion, as she made the fastest time ever recorded, 3 min. 16½ sec. In the Doncaster Cup of this year Kettledrum and Brown Duchess, winner of the Oaks, ran a dead heat, the former carrying 7st. 7lbs. and the latter 6st. 11lbs. The mare was afterwards drawn by consent, and Kettledrum walked over and divided. For this race The Wizard was an immense favourite at evens, but 8st. 8lbs. was too much for his four years in such company, and he was a very bad fourth, The Lawyer, an indifferent three-year old, carrying 7st, being third. Mr. Naylor's great success with Stockwell was apparent at the end of 1861, as up to that time sixty-nine horses got by that stallion won £24,000, and the demand for his services was very excessive. The Flying Dutchman, although unfortunately out of the country, left representatives sufficiently good to win him £13,579; Orlando was also prominent with £13,471, and Newminster was above £13,000.

1862, known as Caractacus's year, was most celebrated for the victory in the Derby of a horse trained on a common, and until a few days before the race hardly considered to have the ghost of a chance. The Marquis, who had won the Two Thousand Guineas, was a great favourite, and no one thought it worth while looking at Caractacus in the paddock at Epsom, while the small chance even his owner considered him to possess is best shown by the fact that he put a stable boy, Parsons, up on him; and the horse literally overpowered his rider, and ran in a winner, while the cracks, Buckstone and The Marquis, were doing their best, with their riders at full work on them. It was at first rumoured that owing to the negligence of the starter the race would be declared void; but it was not so, and the "van-horse" was left in possession of his honours. In the Leger The Marquis compensated those who had placed their confidence in him, for, not having to meet his former conqueror, and though Buckstone was a great favourite, he managed to get home in front after a terrific struggle. Buckstone, who was only a head behind, was magnificently ridden by George Fordham; but Chaloner on the winner was quite equal to the task imposed on him. The "starting difficulty" was unusually apparent this year, and events occurred in it which eventually led to the retirement of Mr. M'George, and the substitution of his son instead.

Early in 1863 Gully, a turfite of a very unique kind, was gathered to his fathers. Originally a pugilist, whose battles with Gregson and others will never be forgotten while the memory of the prize-ring exists, he found in the ring at Tattersall's and elsewhere an atmosphere as congenial as that he had deserted. It must not be imagined that John Gully was, however, a pugilist of the type with which we have unhappily become too familiar; in his young days there was nothing much more derogatory in a man's entering the cords to fight for a money stake than there is now in a glove competition for the Marquis of Queensberry's cups or any club trophy. The fighting man of the present century's early days was rather a superior creature, and Gully was in advance of even that time. After he left the P. R. he was, though, in no way identified with it, but confined his attention almost entirely to betting on horse-racing, until he entered Parliament as member for Pontefract, Mr. John Gully's successes on the turf—with Mameluke, winner of the Derby in 1827; The Hermit, winner of the Two Thousand in 1846; Andover, winner of the Derby in the same year, and with many others—are too well known to need recapitulation.

Macaroni's year will ever be memorable on account of the sensational finish for the Derby between the two first horses, and for the fact that this year the weights for the great three-year-old events were raised from fillies 8st. 2lbs., colts 8st. 5lbs., to fillies 8st. 5lbs., colts 8st. 10lbs. Macaroni had won the Two Thousand Guineas, but the reputation of Lord Clifden, and the knowledge of his immense stride and fine powers, caused him to be far and away the favourite—the betting being 4 to 1 against him, 9 to 1 each against Hospodar and Gillie, 10 to 1 each against Saccharometer and Macaroni, and long prices against others. The weather was awfully bad, and the block on the railways was such that the road for once was the fastest way to the Derby. The delay at the start was very great, owing to the irritability of a brute called Tambour Major, who actually tried to bite the spectators, and lashed out repeatedly at his opponents, happily without much harm being done. Coming up the straight for home Lord Clifden looked all over a winner, and until Macaroni's number went up every one believed that the Lord had won. It is said that a hundred to one was laid by Lord St. Vincent, when he saw the animals pass the post, that his horse had carried off the blue riband; and he certainly did go down to lead Lord Clifden into the paddock, as is the custom with owners of Derby winners, and received an awful check from the judge, who told him Macaroni had won. Considerable excitement was of course caused by this, and there were not wanting hundreds ready to lay anything—in opinions—that fairly and honestly Lord Clifden was entitled to the stakes, a mistake in the placing of the third strengthening their case. There can be no doubt, however, that Judge Clark's decision was correct. Rapid Rhone was really third, half a length away. This race led to Wells, the famous jockey, giving up the service of Count Batthyany, the nobleman being disappointed with the manner in which Tambour Major was ridden. It seems hard that an excellent owner and a first-class rider should be separated on account of a beast like the Major; but the Count was extremely partial to the horse, and for a long time believed that had not his temper been exercised at the post he would have won the Derby, or been very near it. Poor Wells, who but recently "passed in his checks," and departed to that

bourne from which no jockey or other traveller returns, was always sore on this matter, and required little provocation to make him give a pretty plain opinion of Tambour Major and his merits. The excitement of the year was maintained at Ascot by the dead heat between Tim Whiffler and Buckstone for the Cup, and by the latter winning the decider in the face of the favouritism of the Newmarket horse. At Goodwood, in the race for the great trophy of that meeting, Buckstone, who was a great favourite, failed miserably, and let in an outsider, Isoline, who started at 100 to 15. Buckstone was no nearer than fifth.

The Leger of 1863 was by no means deficient in interest, as Lord Clifden's mishap at the post, where he was left till the field had gone more than a hundred yards, is one of the leading events of turf history. When this was seen, the adversaries of the Lord, who were many, and had been knocking him about terribly in the market for some weeks, raised a triumphant howl, and any odds could have been obtained about his chance. A well-known writer at the time commented on the race and its surroundings as follows:—All got through their preliminaries well with the exception of Donnybrook, who was anything but Donnybrook fair; but as with Surplice, West Australian, and the Flying Dutchman, the crack towered high above the others, and, in fact, advertised himself. The scene at the moment was indeed a striking one, and such as no other country but our own could produce. On the moor the masses of England were packed like bees in a hive, and on the roof of the Stand the proudest patricians were established. The ring were stationed beneath them, Hodgman on his ladder and Stephenson on his perch. All were pervaded with but one idea, and their curiosity was soon set at rest. Fearful of being hemmed in, John Osborne (the rider of Lord Clifden) had taken up a position which prevented any fear of a collision, but left him at an enormous disadvantage, for when the flag fell he was quite away from his company; and as Blue Mantle and Le Boo took them along at a cut-throat pace, the long stern chase of Lord Clifden seemed perfectly hopeless, and he really seemed to be beaten further and further every stride he went. To the ring nothing could be more welcome than this intelligence; but to Lord St. Vincent and his trainer the torture seemed almost insupportable, and "All is lost now" was the refrain of their song as, going over the hill, *he was a hundred and fifty yards from the leading horses*. By the time, however, they had got on to the flat, there was a more favourable change in the weather, for he was not the last, but the last but two. It was then, and for the first time, that Osborne felt he had a *Great Eastern* under him, and crowding on his canvas he went through the lot one after another, until he had overhauled Queen Bertha. The race between them was not long but decisive, and amidst an amount of excitement unsurpassed since Voltigeur's year, Johnny came into port with his corpse. The scene that followed beggars description, and the carrying of Johnny into the weighing room by the mob we shall never forget, nor the struggle with the policeman which Edwin Parr had before he could be permitted to see him in the scale. Of the cheering, the champagne, the congratulations, objurgations, and maledictions that followed we need not say a word, as they are the accompaniments of every St. Leger. But they have never been exceeded in our time, and the whole *tableau* will render the Clifden Leger day the most memorable in the annals of Doncaster. The casualties in the race were confined to Avenger and The Ranger, and both, of course, were winning at the time they occurred." The prophets had a very bad time of it over this race, few of them fancying Lord St. Vincent's disappointed animal. He proved himself, however, to be one of the greatest horses of modern days, and his most signal victory well deserves the space we have awarded it.

The year 1864 is noticeable for, among other things, Flash-in-the-Pan's Chester Cup, one of the least anticipated victories of modern days, and one of the events which prove the triumph of the handicapper. Flash-in-the-Pan was thrown in with a feather, but nobody except those connected with the animal knew anything about him, and few, until the numbers were up, cared. Those few commission agents who had to bear the weight of the investments made suffered very heavily indeed; but, as a rule, the book-makers had a very good haul, most of the punters regarding it as a decided waste of time and money to touch the old horse. So, when he won, the excitement was sufficient to cause us to mention the matter here, as one of the most noticeable incidents of the year in which it occurred. He was a good many years old, and carried 6st. 4lbs., so the performance itself is hardly worth recording were it not for its surrounding circumstances.

But the Chester Cup result was very soon lost sight of in the vast excitement which attended on Blair Athol's Derby, one of the most unique and wonderful coups of any time. Now and again in the Derby lists the name of Blair Athol, a chestnut colt by Stockwell out of Blink Bonny, who was said to have a great chance, was mentioned; but as he had rarely been seen and had never shown in public, people were sceptical, and some even went so far as to doubt his existence. As, however, the time for the race approached, and commission after commission was intrusted to him, excitement increased considerably, and the public, who are always ready for anything of this kind, became bitten with enthusiasm, and went as one man for the mysterious colt which I'Anson declared to be the best he had ever seen, but about which experienced bookmakers and others were sadly doubtful. Acting on the principle that it is always good enough to lay against a totally untried horse for the Derby—a principle which is, as a rule, most excellent, and appeared better this year from the known quality of the competitors—they laid against him until the last moment; but there was a good deal of getting out when the blaze-faced animal was seen on the course taking his preliminary, and going, as was said at the time, like a cricket ball. Still with such horses as Scottish Chief, General Peel (winner of the Two Thousand Guineas), Cambuscan, and other first-class animals in the race, the pencillers fancied themselves pretty well secure, and the lists closed at 9 to 2 against Scottish Chief, 5 to 1 against General Peel, 11 to 2

against Birchbroom, 7 to 1 against Cambuscan, 13 to 1 each against Blair Athol and Paris, 16 to 1 against Ely, and from 16 to 200 to 1 against any other. General Peel made the whole of the running, but Blair Athol was always handy; and when his time came, as it did just about the Bell, he went in front and won by two lengths, which in such company was for a perfectly dark horse a most remarkable performance, especially as the time test, 2 min. 43 sec., the same as Kettledrum's, but with 3lbs. more on his back, is the very best known. Scottish Chief was third, three lengths from General Peel. The victory of Blair Athol was received with great enthusiasm, of course, by all who had benefited by it, and was of course objected to in strong terms by those who suffered. Lord Glasgow, who was never a mild-spoken man, regarded the defeat of General Peel as a personal injury, and consigned his trainer and all confederates to eternal perdition with great energy. The owner's policy in keeping the horse entirely dark was much canvassed at the time, but he always seemed to consider, and most unprejudiced folk are likely to be with him, that he had a perfect right to do as he liked so long as what he did injured nobody, and was not in opposition to any known rule of the turf or of fair play.

The excitement in connection with the Derby had its corollary on the Oaks day. Fille de l'Air, a beautiful mare, the property of Count Lagrange, who had just then become well known on the English turf, had been heavily backed for the Two Thousand Guineas, and had run nowhere. Suspicion attached to this business, and when it was seen that many investments were being made on the mare for the Oaks public feeling ran very high indeed. There was no doubt that a nefarious roping transaction had taken place in connection with the Two Thousand Guineas, and it was said that so much money had been got out of the mare over that event that her party would not dare try in the Oaks. These prognostications were, however, wrong, for the really astute performers were not to be frightened out of a good stake which they regarded as just within their grasp, and so they determined to win it if possible, and engaged a lot of fighting men to prevent any violence after the race. Fille de l'Air, with Arthur Edwards up, started, as everybody now knows, at a very short price, less than 2 to 1 being taken about her, and almost walked in, and then commenced a scene with which Epsom is happily unfamiliar. At one time the mob was so infuriate to obtain possession of the saddle, so as to destroy it and prevent Edwards weighing in, that the mounted police had to draw their sabres, and the fighting men to do much of their usual bullying, before any progress towards the paddock could be made. Custance, who had been riding in colours very nearly resembling those of Count Lagrange, was mistaken for Edwards by one lot of excited backers, and ran a very narrow risk of being lynched. Indeed, it was only by calling out loudly who he was that he escaped. Edwards got away no one knew how, and he always considered that he had been taken away from the row as by a miracle, for he never could tell how it was done; but the fright was a lesson to him, and he never forgot it till the day of his death. Jennings was very near being roughly handled, and the Count himself was locked up for about an hour in a room at the back of the stand, until the angry passions of the multitude had cooled down. It was afterwards discovered, or generally admitted, that Count Lagrange had nothing to do with the Two Thousand Guineas business, and that instead of drawing a share of the nine thousand pounds obtained by the pulling of the mare, he himself lost three hundred pounds on the race.

The Grand Prix de Paris of '64—about the inaugural race for which, in 1863, and the prizes given by the Emperor, as well as on account of the victory of The Ranger over Lord Clifden, much was written and said—saw the defeat of Blair Athol, who was unable to stand the sea-voyage, and who, though an immense favourite, succumbed to Vermuth, and once more Waterloo was avenged. The narrow passage from Dover to Calais, and the crank boats which make it, seem to have almost the same effect upon our horses that they do upon ourselves, for our representatives are generally seen to terrible disadvantage whenever they run on French ground. This year the dreadful accident to the special train returning from Ascot took place, and many turfites were injured, several fatally. Some of the escapes were marvellous, and many a small backer was quite set up by the compensation obtained from the railway company. Heenan, the opponent of Sayers, who died recently, was one of the injured, and he received a thousand pounds and a full settlement of expenses incurred, medical and otherwise. At Ascot Scottish Chief somewhat compensated for his defeat in the Derby by taking the Ascot Cup in fine style from Lord Clifden, The Ranger, and others; and Dollar upset all preconceived ideas by taking the Goodwood Cup. At Doncaster this year, in very bad weather, the principal opponents in the struggle over the Epsom course met to settle the question of the Leger, and notwithstanding the unfavourable surroundings the crowd was immense on the Town Moor. Very little of the race could be seen from the stand, the rain and the umbrellas perfectly impeding anything like a fair sight. When the horses came round the bend near home it seemed as if the finish would be between General Peel and Cambuscan, and so it was so far as any struggle was concerned, for as soon as Blair Athol was let out he passed the other two as if they had been standing still, and landed an easy winner by a couple of lengths, a head separating General Peel, who was second, and Cambuscan third. In the race for the Cup General Peel gladdened Lord Glasgow's heart by winning. It was said to be over the defeat of this favourite horse that a Job's comforter said to the old earl, "You're very unlucky, my lord." The peer, who did not care about being condoled with by everybody, rapped out in his well-known way, and with many expletives asked how, with a hundred thousand a year and only himself to please, he could be unlucky. The reply is not recorded.

1865 may be characterized as the first of those memorable years peculiar to the plungers, when rivalry was imported

from private life to the ring and the stand, when immense sums were given for almost valueless horses, and when ruin and disgrace were associated with some of the fairest names of English history. It was in 1865 that a fabulous number of thousands was given by the foolish and impulsive young Marquis of Hastings for Kangaroo, a horse that won a Newmarket Biennial, and never ran in front afterwards, a horse that was never worth eleven thousand farthings, much less eleven thousand pounds. In the four years commencing with 1865 some of the most terrible events known in the annals of the turf took place, some of the fiercest and hottests contests known in connection with modern days were recorded, more than one heart was broken, and many an estate was drained. This was the year also of other extensive purchases, Broomielaw and Breadalbane to wit, and in this year the professionals began to make many good fortunes out of the gentlemen—that is, they did when they got paid. The gambling mania was at its height, and the licence which the law allows to people who do not bet on the ready-money principle resulted in many running far beyond their credit, and proving that if a protectionary act of legislation is necessary, it is required by the lord, who squanders the property he only holds in trust, quite as much as it is by the plebeian, who if he bets does so with his own money, and in most cases with the money he can afford to lose. We are not disposed to find unnecessary fault with the law, and think that temptation should be always placed out of the way of youths and others who might yield to it; but really the privileged classes have, so far, shown themselves those who most need care, and the Betting House Act of 1853 is to a considerable extent invested with ridicule. And as its enforcement is usually of the most one-sided character, the most notorious offenders always managing to evade it, while the comparatively innocent suffer, it does almost seem as if the Act had been passed so as to give the police an opportunity of levying black mail on all who can afford it, and wreaking summary vengeance on those who cannot. Betting prosecutions, coming immediately after the ruin and desolation of so many noble families, whose fate has been accelerated by the peculiar advantages—if the word may be used—accorded them by the law, have somewhat disgusted that portion of the thinking public who are not above giving their unprejudiced attention to matters connected with the turf. But to return to the matters of 1865.

This was the famous Gladiateur year, the year when the mighty Frenchman carried all before him; when, although he took the Two Thousand Guineas in fine style, he had many influential enemies for the Derby, whose faith was pinned on Wild Charley, Kangaroo, Breadalbane, or the other candidates of that sensation year. Gladiateur won easily, the two nearest him being Christmas Carol and Eltham. Then one lot of objectors declared that Count Lagrange's horse was a four-year old, and another, that the horses he beat were so moderate that he showed himself anything but a first-class beast. When he crossed the water, and landed himself a winner once more, it only increased the rancour of his enemies, who repeated their remarks against him, and quite denied him the possession of any quality. To our taste it is quite enough to be able to win whenever wanted, and it is, to say the least, strange that there are always horses running who never do anything but lose their backers' money and ruin their owners, for whom any amount of excuse will always be made; while on the other hand, and from the same people, you may meet with the most persistent objection against a champion who does whatever he is asked in whatever company he may find himself at even weights. In the Derby Gladiateur won as he liked by two lengths, though he had been twice disappointed in getting through his horses. He would most likely have done just the same if the animals had been of a better class, for he was never put to it in a level-weighted race; and so it is rather foolish to measure Gladiateur by the form of his opponents, and not by the hard fact of his singularly-decisive and easily-obtained victories over them. Regalia won the Oaks this year, her starting price being 20 to 1, Wild Agnes, one of the favourites, being second. At Ascot, Eltham and Breeze ran a dead heat for the Gold Vase, and in the decider the former, who was most fancied, won easily; and at Goodwood Ely, carrying 9st. 7lbs., took the Cup. This has always been regarded as a very great performance, and so it was; and it is a pity, so far as the settlement of opinions is concerned, that the Frenchman was not in the race. At the same meeting Gladiateur won the Drawing-room Stakes, and walked over for the Fourteenth Bentinck Memorial. Great disappointment was shown at his not appearing for the Cup, and when he came out to walk over for a race Grimshaw was rudely assaulted by a lot of roughs, who swore they had been swindled by not having a run for their money. They were, however, soon dispersed. For the St. Leger Gladiateur started at odds on, and justified this confidence, as usual, by winning with great ease; and his enemies at last began to perceive that the foreigner was by far the best horse of the year. His triple victory was the second ever recorded, the first being that of West Australian in 1853, very few horses in the intervening years having been capable of taking even two out of the three great prizes. In all other Cup and weight for age races for the year in which he started, Gladiateur, whether with or without penalties, was victorious; but in the Cambridgeshire he failed to carry home the crusher of 9st. 12lbs., yet with this unparalleled impost for a three-year old he started first in fancy at 6 to 1, and many a bookmaker felt anxious until the cry of "the favourite's beat" went up, and Gardevisure came struggling on to victory. Such were the principal events of 1865, during which the appetite for huge speculation became almost unbounded, and when magnificent fortunes commenced to fade away before the eyes of their infatuated possessors. In this eventful year the new Tattersall's at Albert Gate was opened, the date being April 10.

In 1866 Lord Lyon emulated the performance of Gladiateur and West Australian, and won Two Thousand Guineas, Derby, and Leger. His Derby is extremely memorable from

the race between him and the unnamed and dark Bribery colt, who made such a desperate fight for victory, but was bound to be defeated. Superstitious people said that had the Bribery colt been named when he ran he would have won the Derby without any doubt, while others said that French's riding was wrong. Though it is easy to believe that some horses are much more fortunate than others, it seems foolish to suppose that the luck of being named could effect a result; still these obstinate folk point to the fact that no unnamed horse has ever won the Derby, and will not be satisfied when they are told that any of the horses that have won could have done so without being named. With regard to the complaint against the rider of the Bribery colt, this sort of business is so common among disappointed backers, that it need only be noticed now in reference to the fact that both classes of objectors were proved to be wrong—wrong decidedly and incontrovertibly—for in the Leger, with a name (the colt having in the interval been christened Savernake), and with another jockey, Chaloner, up, the second in the Derby was again second, and to the same horse (ridden by the same jockey) that had beaten him before. At Epsom, when the two colts flew past the stand locked together so close that it seemed impossible to separate them, those who had backed the unnamed one all through the winter, and who stood to win fortunes or be perhaps reduced to beggary, looked very anxious. We remember one worthy bookmaker, who had been bitten by the prevailing mania, and had plunged on the Bribery colt, standing between the bell and the judge's box trembling with anxiety, and wishing with all his heart, yet frightened to know the verdict. When the suspense was once over, this man, who was but the representative of hundreds of others, took the result as a matter of course, and remarked that though he would rather have won, still he was glad it was off his mind; "for," said he, "when I didn't know whether I'd won or lost, and knew it was a toss up, I felt quite sick like, I stood to win so much." Had the Bribery colt won the Derby the bookmakers would have had a very bad turn, and as it was they had to pay pretty heavily over Lord Lyon, as they did in the Leger; but at a short price this does not so much matter, and in these years, when the plungers dropped their tens of thousands over minor events and incalculable amounts over the great races, the professionals could afford losses like those caused by a Derby or Leger favourite winning.

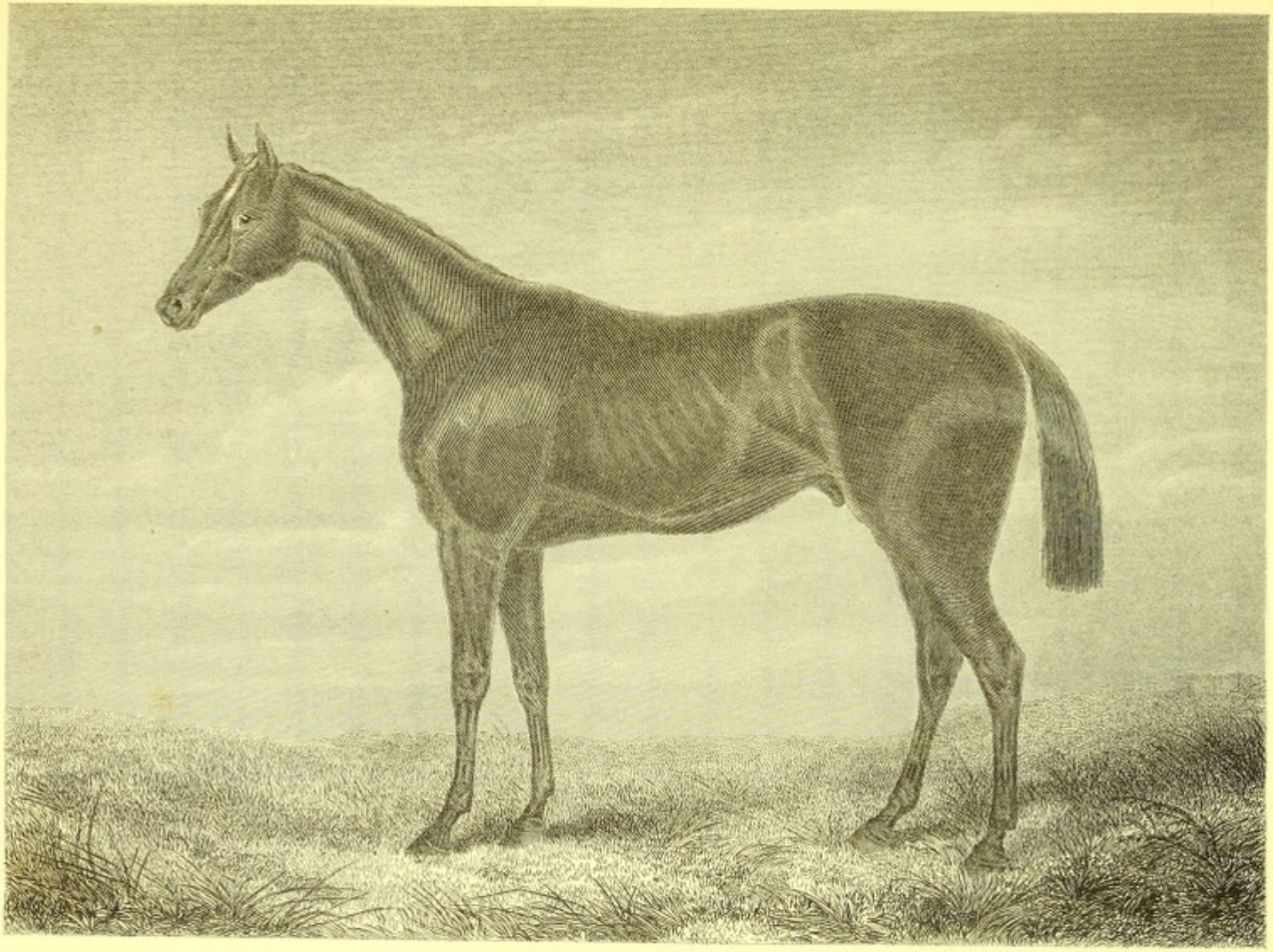
In 1866, owing to the munificence of the late Mr. Blenkiron, the great breeder, the best two-year-old race of modern days, the Middle Park Plate, was instituted. The race was named after Mr. Blenkiron's stud farm, and he in consideration gave a thousand pounds to the stake. For this rich prize we have had some good races, The Rake being the first winner; but the Jockey Club was always inimical to the event, and seemed to dread its growing popularity. Three years after its institution the Club's stewards decided to decline the gift of Mr. Blenkiron, and to add five hundred pounds of their own money; but though thus curtailed of its fair proportions, the Middle Park Plate increased rather than diminished in popularity, and despite their efforts the Jockey Club had still the mortification of seeing a race which was started by a horsebreeder securing the finest entries and fields, while the whilom great two-year-old contests were fading into nothingness. Year after year this feeling of bitterness increased, and at the end of the past season (1873) a resolution was passed, the motion being Mr. Chaplin's, to the effect that the sum of £500 was too much to give for a two-year-old race, and a notification was issued that after 1874 the Middle Park Plate would cease to exist. Public feeling ran very high at this piece of tyranny on the part of the autocrats of the turf, who have been true to their positions, and have refused to give any reason for acting as they have done. Were there a man now living like Mr. Blenkiron, there need be no fear of the greatest two-year-old race becoming a thing of the past. There is no reason why it should be run at Newmarket, and none at all why it should take place in October. There are plenty of courses where the Middle Park Plate would be a great feature, where it would secure as large a number of entries as it does now; and any lessee or stewards who would give the added money would not only receive pecuniary reward, but would do something to show that the illogical regulations of the Jockey Club, as the Club has existed for the past dozen years, must tend to defeat themselves. There can be no doubt that the Club is an effete institution, and is behind the requirements of the present age; and the best proof of this is to notice the meetings held at what is by a *façon de parler* called "head quarters," and compare them with the comparatively unpretentious gatherings at other places. A calm and dispassionate investigation of the matter will show that, while those who are least interested in a business, be it that of the turf or of anything else, have the management, matters are hardly likely to be satisfactory; and in addition the system of selecting legislators, not because they possess ability or experience, but because they are landed proprietors and noblemen, to the absolute ignoring of brains or fitness, is bound to display its errors frequently and ridiculously. We have, therefore, within the past few years seen attempts at turf legislation of the most ex-parte kind; we have seen reformed gamblers and owners, who in their hot days were none so scrupulous, anxious to impress their new views on turfites whether the latter required them or not; we have seen plans for the regeneration of the turf fail most signally because the inventors of those plans looked everywhere but straight at the evils they wished to cure; we have seen limits put to racing without any consideration for any one but the lawgivers; and now we have had ruthlessly torn from us, and not a word of explanation vouchsafed, the most popular race of its kind. We are also threatened with other innovations, and may in a few years calculate on becoming extremely virtuous, but at the expense of all that a sportsman cares about in connection with the turf. While owners can win almost everything they try for, they are satisfied with the condition of things as they are; but no sooner do they begin to feel the

galling cares of disappointment, than they seek for consolation in a course of law-making likely to make everybody as wretched as themselves. In October, 1866, Harry Grimshaw, the celebrated Gladiateur jockey, was thrown from his trap and killed; and in the Cesarewitch, "the pony" Lecturer secured for the unfortunate Marquis of Hastings one of those coups which were erroneously supposed to compensate for losses, heavy and frequent, on other events, but which by giving fresh impetus to his career, only served to drive him still deeper into difficulties.

In 1867 the plunging mania was at its height, but the beginning of the end was near. During the winter and early in the spring Hermit was a favourite for the Derby, but the victory of Vauban in the Two Thousand, and the known excellence of The Rake and other competitors, drove the confederacy horse about in the market, and for a long time his position was most dubious. Backwards and forwards he moved in the list, but eventually a decided and persistent set was made against him, and he was knocked to the extreme verge of the quotations, and nobody imagined he would see the post. Whatever the confederacy, as the junction between the stables and fortunes of Mr. H. Chaplin and Captain Machell was called, may have afterwards assumed in reference to their feelings on the matter before the race, there is plenty of evidence to show that their position was anything but comfortable, and that they knew it to be so. Hermit had broken a bloodvessel a day or two before, and though it was determined to run him, it was more with the hope of fluking into a place than with any intention or expectation of winning. Of course they knew that, fit and well, he had been tried good enough to win, but it was hoping against hope to expect him to do it now; and so both the Captain and Mr. Chaplin tried to get out of their money, but failed signally. There is no perversion of fact in the statement that either of the two gentlemen would have laid, and have been glad to lay, £66,000 to £1000 before the flag fell. The day will never be forgotten by those who were present, for the weather and the result were alike remarkable. Suffice it to say that Hermit won, and the confederacy landed a stake unparalleled in the annals of racing—Mr. Chaplin's share alone amounting to £145,000. Whether he got it all or not is unrecorded, but it is well known how notoriously bad the settling was that year. The success of Hermit was in a great measure due to the good patient riding of Johnny Daley, who became famous owing to the dislike Custance had for the mount. Whether Custance would have been as successful is a moot point, but Daley deserves the honours of the situation. It seems that the owners' instructions were to try for a place, and the jockey was agreeably astonished to find that he had at last got rid of all his opponents. Mr. Chaplin, who was on crutches that day, owing to an accident he had met with some little time before, was so astonished and delighted at the result that he threw away his supports and tried to rival the performance of his horse, who had so decidedly risen from the state of a cripple. The victory of Hermit was one of the most crushing blows the Marquis of Hastings had so far received; his rivalry with Mr. Chaplin, which had its origin away from the turf, having been the fountspring of the betting mania, and it only wanted a few more reverses to bring about the final and inevitable catastrophe. Daley's success stuck to him, as he rode Hippia, the winner of the Oaks the same week, and defeated the most wonderful mare of modern days, Achievement, who was dead amiss, but who managed to get up close to the winner. Of course Hermit was a long time favourite for the Leger, and some colossal bets were made on him against the mare, but he was doomed to succumb to her over the Town Moor, as she had by that time recovered the splendid form for which she had early been celebrated. Achievement was one of the greatest mares to be found in the beadroll of turf celebrities, and, with others we have glanced at, will be found fully commented upon in another part of this volume.

The early running of 1868 was signalized by a dead heat for the Two Thousand Guineas between Moslem and Formosa, the former walking over and dividing the stakes. This was the year when Sir Joseph Hawley had three animals in the Derby, Blue Gown, Green Sleeve, and Rosicrucian; and when Blue Gown, the horse who was officially declared not to carry the "lucky baronet's" confidence, won, it ruined lots of little men who had been "put in to lay" and had fallen into the trap. Blue Gown's course was a mysterious one, but he won the Derby, and no doubt might have won many other races had he been well and wanted. This was the year when the Lady Elizabeth bubble was burst so rudely, when "The Earl business" opened the eyes of the public to the Spider and the Fly arrangement which had resulted from the plunging mania. This is a dark page in the history of the turf, and we are glad to hurry through with it, merely chronicling the death, of what in less anatomically particular days would have been called a broken heart, of the young Marquis of Hastings. Previously to this the greater part of his stud had been sold, his estates had been mortgaged, and he himself had become the tool of unscrupulous money lenders. He was not alone the victim of a system which has happily now almost died out; many other fair estates were deeply dipped, and many famous names became shaded, some only for the time being, some for ever. The Earl won the Grand Prix de Paris, but was not allowed to compete in England, and the revelations in connection with this matter led to unpleasantnesses and exposures which doubtless hastened the unfortunate Marquis' end. Owing to scratchings Formosa was returned the winner of the Leger, though not within many pounds of the best horses of the year. 1868 was the year of the Derby difficulty, when the rapacious Grand Stand lessees at Epsom were disgusted that they should be asked for increased rent, and appealed for sympathy in the most humble way to those whom they had before snubbed. However, the matter was eventually arranged amicably.

In 1869 matters were generally very quiet. Pretender won the Two Thousand Guineas and the Derby, though in the latter the old old story of a close second being the winner



PRETENDER.

WINNER OF THE 2000 GUINEA STAKES AT NEWMARKET, AND THE DERBY STAKES AT EPSOM, 1863

By Adventurer out of Perina.—Trained by Dawson.—Ridden by J. Osborne

was revived in favour of Pero Gomez, by many who thought their story received colouring when their fancy won the Leger. Pero was the property of Sir Joseph Hawley, and since this the fortune of the erst "lucky baronet" seems to have quite deserted him; a fact which accounts, cruel people say, for his strenuous desires in the Jockey Club conferences, to lay turfites under all kinds of pains and penalties, and make them virtuous whether they will or no. The most memorable event of 1869 was the raid made by the police on the betting establishment of William Wright near Covent Garden, a descent which sent all the commission agents "over the border." Wright had been doing a most tremendous business; and it is said that his remark to a peer, who had found that he could not get anything like the price he wanted about his horse in the ring, "Ah, my lord, you should have given me the commission," gave the signal for his downfall. It was afterwards proved that Wright's business was of a fabulous character, both for extent and profits—indeed he at once retired into private life. Without wishing to enter into any discussion on the subject, it may be allowed to us to remark that after the lessons given by legalized betting in the past years, it seems very hard that the virtue of the legislature should be directed against those who stake their money beforehand, and who, therefore, are generally able to afford the luxury of losing. The anomaly that betting houses or agencies were legal in Scotland, while they were illegal in other parts of the United Kingdom, was remedied in 1874 by the Act 37 Vict. cap. 15 (known as Mr. Anderson's Act), extending the provisions of the English statute to Scotland.

1870 was the year which, according to all preconceived calculation, should have been called Macgregor's. This horse, who won the Two Thousand Guineas in fine style, and cantered off with the Bath Biennial in a manner which alarmed his enemies, was one of the greatest favourites ever known for the Derby. Never was there such a foregone conclusion, and never was there a realization so different from the prophetic vision. Macgregor was absolutely nowhere, and Kingcraft won easily. Yet Kingcraft was perhaps the worst Derby winner on record, for since then he has failed times out of number when a horse of any pretensions should have been triumphant; and only at the close of the season of 1873 he astonished every one by carrying a plater's weight and winning a handicap, this being his first success since the Derby of 1870. In this year Hawthornden won the St. Leger, and it may be said without much fear of contradiction that the horses of 1870 were remarkable for anything but their quality.

1871 was "the Baron's year." Though the coffin-headed Bothwell ran away with the Two Thousand Guineas, the remaining events of importance for three-year olds went to Baron Rothschild. Hannah won the One Thousand Guineas, the Oaks, and the Leger, while the speedy Favonius carried off the Derby. In addition to these successes Corisande, another animal from the same stable, won the Cesarewitch, carrying 7st. 12lbs. for her three years, by no means a bad performance; and at once Favonius, who had 8st. 11lbs. in the Cambridgeshire, came to the front of the quotations, and started second favourite at 11 to 2. He got no nearer than seventh, but another three-year old, Sterling, carrying the same weight as the Derby winner, 8st. 11lbs., immortalized himself by running a dead heat for second place with Allbrook, 5 years, 6st. 8lbs., only a head behind the winner, the speedy gelding Sabinus, who carried 8st. 7lbs. for four years, started at from 33 to 50 to 1, and won on the post mainly through the judicious riding of George Fordham, who is acknowledged to be the finest jockey ever seen. This was the most sensational Cambridgeshire which had been known for years, one of the principal incidents in it being Fordham's having backed Sabinus to win for such immense sums that he could not recollect all his transactions; and he afterwards accordingly advertised for information, which however he never obtained, although at the time knowing people used to wink, nod their heads, and say they could if they wished place their hands on the principal defaulter. Whether the name generally mentioned in connection with these defalcations was the correct one is no matter for consideration here, and we need only say that as until the morning of the race 66 to 1 could be obtained freely about Sabinus, those who backed him and got their money did very well indeed. This year saw the prominent position on the turf of M. Lefevre (who began racing under the assumed name of Mr. Lombard), one of the sportsmen of whom turfites are very proud. The Goodwood Cup of 1871 was by the talent supposed to be reduced to a match between M. Lefevre and Baron Rothschild, the former running Mortemer and the latter Favonius, the betting being nearly evens each, Mortemer for choice. There were three other runners, Ripponden, against whom 14 to 1 was freely offered, Shannon, whose forlorn state was represented by 50 to 1, and Dutch Skater, who was only started to make the running for his stable-companion Mortemer, and who was therefore not in bettin,. This was a great race for the bookmakers, for while Chaloner on Favonius and Fordham on Mortemer were cantering and finessing against each other, Hunt on Shannon kept well up with them, and when they all began to race near home, the mare, being a light, wiry, speedy animal, galloped past the judge's box half a length in front of Favonius, who was a neck before the Frenchman. The horses of this year were of a much better class than those of 1870. It may be mentioned, *en passant*, that owing to the war there was no Prix de Paris in 1871.

The past two years can hardly be regarded as uneventful, and yet as many of the animals engaged in the races are still running, and many of the principal topics are still open questions, criticism becomes difficult. Still there are various things that can be said, and among them is the statement that we have seen in '72 and '73 some of the best horses that ever trod the turf. Prince Charlie, winner of the Two Thousand Guineas, was reviled as an impostor when he failed in the Derby; but his subsequent career has proved him to be, up to a mile, one of the most wonderful horses ever seen, as

neither penalties imposed on him nor allowances made to his opponents have yet seemed to affect him in short races, though owing to a roaring infirmity he has proved no stayer over a length of ground. Cremorne, the winner of the Derby in 1872, is another mighty beast, who until recently, when he sprang a curb, never had to be reckoned second on even terms, except at a distance which did not suit him, viz., a mile, and then he was second, close up, to Prince Charlie. In the Derby superstitious people had another turn, as an unnamed colt, afterwards called Pell Mell, sprang from the ruck and raced Cremorne to a head, and those who believe in the fatality attending on unnamed horses on the Derby once more had their say. Cremorne was the first English-bred Derby winner who ever carried off the Grand Prix, Gladiateur being the only other animal credited with the double event. The Goodwood Cup of '72 was won by Favonius; and owing to the non-appearance of the best horses of the year, Wenlock, who had run behind on former occasions, won the Leger—Prince Charlie, for whom the distance was far too great, being second. A horse named Salvanos, who showed extraordinary speed in the October Handicap, but who bolted out of the course, won the Cesarewitch, carrying 5st. 7lbs. for three years. On account of the speed he had shown in the first-named race it was supposed that he was sure to win the Cambridgeshire, as his penalty only brought his weight to 6st. He started at the short price for a big handicap of 2 to 1, and got nowhere—Playfair, three years, 6st. 3lbs., winning easily. In the latter part of '72 a raid was made on a betting club in the neighbourhood of Fleet Street, and several well-known bookmakers were fined. This was *the* triumph of Sir Sidney Waterlow's mayoralty, and though the men who were fined interfered with no one and conducted their business among themselves, the raid was supposed to reflect the highest possible credit on the City authorities, as well as to demonstrate the vigilance of the City police. The Two Thousand Guineas race fell to Gang Forward in 1873, the property of Mr. Crawfurd; but the Derby, the Oaks, and the Leger were won by Mr. Merry—the first with Doncaster, who was a forlorn outsider when the flag fell, and the other two with Marie Stuart, who proved herself to be, not a fortunate mare, like those other winners of the Leger, Hannah and Formosa, who were winners because the best horses were absent, but to be fit for classification with such animals as Achievement, Blink Bonny, and other rare specimens of the sex. Mr. Merry was about retiring when this somewhat unexpectedly fortunate year commenced. In 1873 King Lud, four years old, carrying 7st. 5lbs., won the Cesarewitch so easily that many believed the time had at last arrived for the accomplishment of the double event, and he was a great favourite for the Cambridgeshire; but the same perverse fate that has pursued all others who have tried to break the ice, and win both races, attended his efforts. Carrying 7st. 9lbs. he was fourth, and the fiat of the judge was awarded to Montargis, three years, 7st. 13lbs. Walnut, a three-year old, was close up, second, with 6st. 7lbs., but the great thing of the race was Sterling's third carrying 9st. 7lbs. Many first-rate horses, Flageolet, Boiard, and others, have exhibited their prowess here and in France, but we have not room to enumerate their doings, and so must rest content to record, as a final and conclusive reply to those who rail about the decay of racehorses, the extraordinary feat accomplished by Sterling, to whom reference has already been made once or twice. In the Liverpool Autumn Cup (1873), Sterling, carrying 9st. 4lbs, won by a head, beating a field of our best horses, to every one of whom he was conceding weight. Louise Victoria, four years, 7st. 6lbs., was second, and King Lud, four years, 7st. 12lbs., third. As we have not space here to enumerate all the important racing events that have since taken place, the reader is referred to a complete tabulated historical list of the winners, jockeys, &c., of all the great races from the earliest period to the present time, which will be found at pages 511 to 518.

CHAPTER III.

THE RACE-HORSE.

The race-horse in his modern form, though partaking of the Barb and Eastern horse in general outline, the carriage of his head, and exterior conformation, is of far greater bulk, height, and power than his progenitors. Art is here the handmaid and improver of nature; and, notwithstanding the boasted speed of animals in the natural state, there can be no doubt of the superiority of the trained courser. Thus the British race-horse, even at an equality of size and power to carry weight, is far more swift and more stout—in turf phrase, more lasting—than the natural courser of the desert of the oldest pedigree. Such is the universal experience from trials in this country, and such would in all probability be the result, were the rival horses taken young, and trained and tried upon an equidistant and neutral soil. This opinion may not altogether coincide with the ideas of those who have been accustomed to read and swallow without investigation, those supplements to the Arabian Nights, containing relations of the speed and extent of the journeys performed in a given time by eastern horses: a little aid may be given to the judgment by the suggestion, that in the desert there are no mile posts, no clocks or watches, wherewith to measure time, no clerks of course to start the horses, nor judges to note their noses at the winning post; but that the rider himself is often the only spectator and detailer of his horse's performance; and that, in all eastern writings, ancient and modern, exaggeration is the predominant figure.

What is a thoroughbred?—This is a question so often asked and variously answered, that we shall endeavour, by a brief summary of the best writers on the point, to attain as satisfactory a solution as possible.

Osmer, *seniores priores*, deserves citation as an early writer on this subject, and, moreover, as a thoughtful and practical studier of the horse. He endeavours a definition of "blood" by saying it signifies, when applied to a racer, a certain proportion of parts, derived from air, climate, food, and training. This being suitable to the true natural conformation of the animal, enables him to perform extraordinary feats of activity and motion, coupled with wonderful endurance of the highest bodily exertion; hence, the expression, "he shows a vast deal of blood," means only true formation as a race horse. "Where," continues he, "is the blood of the ostrich, whose speed so far excels that of the swiftest horse? If the good qualities of the race-horse depend upon blood, we could not, as we often do, see one horse very good, and his brother, with equal advantages of good keep and training, very bad."

Osmer censures the folly of expecting that what is termed high "blood" in the eastern horses, unaccompanied with essential "form," will produce a race-horse; and he instances the many failures that have occurred in breeding according to this rule, without reference to the important truth, that "blood" can never be considered as independent of "form" or "substance."

Although we must allow that there is a stratum of truth in the foregoing observations, nevertheless we conceive that Osmer, in the endeavour to obtain for the *effect* the weight to which it is most undoubtedly entitled, has entirely overlooked the *cause* to which its production may be ascribed. He would have blood to consist in outward proportions of parts: we believe it to consist largely in a higher nervous organisation, a greater sensibility of the *excito-motory* system—hence a higher courage and greater impressibility. It is the peculiar descent of the thorough-bred horse, combined with a careful selection of sires and dams, and the utmost attention in management exercised throughout a lengthened period, which may be said to have combined in the formation of that excellence understood by the term blood. Already greatly improved by the introduction of racing, before the introduction directly of eastern blood, the English horse was eminently qualified to receive the good effects which so speedily evinced itself after that event.

If Osmer's doctrine held good, that there must be this elegance of form, these nice proportions in the limbs, or moving levers of the race-horse, how is it, we would ask, that so many of those called "cross-made," "plain" and apparently disproportioned horses, possess the gifts of stoutness, speed, and action.

One of the cleverest anonymous writers on this subject has thus treated this point, and we give his arguments, on the principle of *audi alteram partem*, although we entirely dissent from his view, as to first-rate horses not possessing distinguishing "game" or "spirit." "If blood can be defined to be the peculiar elegance in the texture of the external parts, how happens it, that several very ugly horses and mares have at all times distinguished themselves on the turf? Are there certain occult causes, not discernible to the eye, that produce this excellence, to which the rules and laws of action appear to be opposed? On these points it may be observed, first, that the force and effect of muscular motion are nearly beyond our ken; and secondly, such horses are really not mis-shapen, inasmuch as there are hidden virtues in the mechanism of their internal frames, which the eye cannot detect; and where deficient in one point, they are recompensed by additional powers in others; they possess the essential points, although not so elegantly displayed; and this we believe is the case with other animals than the horse, although, generally speaking, true symmetry in all is attended with corres-

ponding excellence in their useful properties, and adaptation to the purposes of man."

"Those persons who insist upon an innate quality, in what is termed, 'blood,' are led to believe that there is something in the nature of a thorough-bred horse, which enables him to struggle in a race, far beyond his natural capabilities, and which is distinguished by the term 'game.' We do not think there is. We learn from experience that horses often allow themselves to be beaten by others which are inferior to them, from sheer ill-temper; but their efforts to win a race, we consider to be merely limited by their physical powers, the effect of a proper arrangement of their parts; and that the operation of the mind or spirit has nothing at all to do with it. The hero at the Olympic games had, and the champion of the British boxing ring may have, feelings which, from the superiority of their nature, and the fact of their character, interest, and future happiness being all involved in the event, might have induced them to struggle, even to the very verge of life; but the same sense of honour, and the same spirit of emulation, cannot, at least in anything like the same ratio, be ascribed to the race-horse. If his own acting powers be unequal to those of others opposed to him in the race, he yields to that superiority; although it must be admitted, that what are called sluggish horses will not try to exert themselves to the utmost, unless urged to it by the spur and whip, and others, when spurred and whipped, slacken instead of increasing their speed."*

The anecdote of Forrester will bear repeating as immediately applicable to the point under discussion. Forrester had won many a hardly-contested race, but, overweighted, was matched against Elephant. It was a four-mile course, and at the distance post the horses were nose to nose. Between this and the winning post Elephant got a little ahead. Forrester made every possible effort to recover this lost ground, until finding all his efforts ineffectual, he made one desperate plunge, seized his antagonist by the jaw, and could scarcely be forced to quit his hold. A similar incident occurred in 1753, when a fine horse belonging to Mr. Quin was rendered so frantic at finding his antagonist gradually passing him, that he seized him by the leg, and both riders were obliged to dismount and combine their efforts to separate the animals.

Some observations of Mr. Karkeek in the *Veterinarian* (vol. vii. pp. 385-6), so completely express our views on this point, that it would be unjust not to give that gentleman the credit of their early advocacy. He says:—In tracing the organisations of animals, through all the gradations in the scale, we find man at the top, displaying faculties superior to any thing visible in the most perfect forms of brute creation. The perfection of his intellectual faculties is generally supposed to be owing to the size and structure of the brain, and, as the brain exactly fills up the cavity of the cranium, the figure of the skull has been used to denote the comparative size of that organ.

The scale of intellect is very extensive among mankind, from the civilized European to the stupid and brutal negro; for the mind of the negro is not so perfect as that of the European, nor is the organisation of the parts so perfect. And as, among men, there are different degrees of intellect, so among horses there are often remarkable differences of sagacity.

On viewing the heads of a cart and a blood-horse, we are immediately struck with the difference in their appearance; the former exhibiting a dull, heavy, stupid uniformity of features, whilst the latter shows a spirited, animated-looking countenance, that, as Shakspere says, "enforces homage."

On taking a comparative view of each, as an anatomist, we find the cranium of the thorough-bred proportionably larger than that of the cart-horse; if, then, the various degrees of intellect be explained by the difference of size in the cerebral parts in men, the same comparison may be drawn with reference to the degrees of sensibility possessed by the different breeds of horses according to this *nervous battery*. It was the opinion of the ancients, that there existed a great influence between the mind and the body, and that the *temperament* of the body could give rise to individual feelings. Gervase Markham, in his Master-piece on Farriery, contended that there were "four humours in the body; blood, bile, black bile, and phlegm;" hence horses, according as one or other of these humours abounded, were said to be of a "sanguine, choleric, melancholic, or phlegmatic temperament." This ideal philosophy, which is superseded by the light of modern science, was copied from the human surgeons: it pervaded the whole of Greek medicine, and came with other Greek and Arabian medicine into Europe. We are not, however, to infer that the doctrine itself is without foundation; the ancients erred only by limiting the number of the temperaments to four, and fixing their attention in this division solely on the quality and composition of the blood, instead of regarding the whole animal economy. For the fact appears very certain of the existence of this diversity of temperaments, and of a corresponding disposition of mental character. Thus some horses are remarkable for being spirited and lively; those are designated *sanguine:* others are slower and less irritable than the last; those are called *phlegmatic:* others that are termed

* The emulation of the horse is undeniable in many instances. Mr. Youatt thus testifies to it in his popular treatise *The Horse*, page 49, edit. 1850:—

"The horse enters into the spirit of the race as thoroughly as does his rider, and, without whip or spur, will generally exert his energies to the utmost to beat his opponent. It is beautiful to see him advancing to the starting-post, every motion evincing his eagerness. The signal is given, and he springs away—he settles himself in his stride—the jockey becomes a part and portion of him, every motion of the arms and body corresponding with, and assisting the action of the horse. On he goes, eager, yet husbanding his powers. At length, when he arrives at that distance from which the rider knows that he will *live home* at the top of his speed, the hint is given, and on he rushes. Then the race in reality begins, and every nerve is strained to head his competitor. Then, too, comes the art of the rider, to keep the horse within his pace, and with admirable *give and take*, add to the length of every stride. Then, perhaps, the spur, skilfully applied, may be necessary to rouse every dormant energy. A sluggish lurching horse may need more punishment than the humane observer would think justifiable. But the natural ardour of the race-horse, roused at the moment of the grand struggle, by the moderate application of the whip and spur, will bring him through if he can win."

choleric, are prone to anger; whilst the *melancholic* are of gloomy tempers, patient and not easily provoked.

Such is an outline of the temperaments; all the modifications seem to us to be mere varieties of the *sanguine* and *phlegmatic*. Those varieties are generated by hereditary disposition; and by the peculiar organisation of the animal.

"The predominance of any particular system of organs modifies the whole economy, impresses striking differences on the results or the organisation, and has no less influence on the intellectual than on the physical faculties. This predominance establishes the temperament; it is the cause, and constitutes its essence*."

Horses of large brains† generally possess much sensibility, great courage and sagacity; hence proceed that quickness of perception, accompanied by violent propensities to anger and impatience under control, in most horses showing much "blood."

Horses of this kind, when once properly subdued, are best managed by temperate and mild treatment. Many persons have fatally experienced the bad effects of young horses being intrusted to rash ignorant persons, but when broken by those who have acquired a thorough knowledge of what the animal is capable of performing, then, with the most ready submission,

> "The gen'rous horse,
> Restrain'd and awed by man's inferior force,
> Does to the rider's will his rage submit,
> And answers to the spur, and owns the bit."

A diminutive brain is generally connected with dull senses, or what the ancients called a phlegmatic languor; these qualities are, however, in some measure counterbalanced by being more capable of enduring slow labour.

The muscular power of animals is considerably influenced by the temperament, so far as the different degrees of activity depend. Thus, if we see two horses which correspond in figure and stature, one possessing great activity, and capable of enduring great fatigue, whilst the other, with the same apparent qualifications for speed and courage, is slow in his muscular movements, we conclude that there is a greater activity in the brain of one than the other.

Again, we perceive the difference in two horses: a small one is capable of more exertion than a large one, or small men of the sanguineous temperament can fight large men of the phlegmatic temperament: although the muscles of the latter are much larger, they are not so active.

Mr. Kerr's communication* "on the willingness of horses for work," clearly exemplifies the influence of the mind on the body. The vital principle appears to act with increased activity in small animals. This led Pliny to say, "that it was chiefly in the smallest things that Nature has shown the fulness of her power.†"

The circulation is quicker, the pulse more frequent, the determination more prompt in horses of short stature: by an obvious consequence, the diseases of ponies have a more acute character; they are more vehement, and tend more rapidly to their crisis.

The result of this discussion then, is, that when we speak of such horses as King Herod, Highflyer, or Eclipse, having transmitted their blood to the past and present generations of running horses, we must admit that they have transmitted not only that true formation of parts necessary to enable them to run races at a prodigious rate of speed, and endure the severity of training for them, but that high organization and courage which causes them to exult in the exercise of the powers with which nature has endowed them.

Much controversy has taken place in the sporting magazines, on the question of what constitutes the blood or thorough-bred horse. The foregoing observations may be thus shortly summed up. We consider the term "blood," or "thorough-bred" horse, is used to imply one whose pedigree can be traced through the Stud Book to any Eastern stallion, or to the Barb mares, commonly called the Royal mares, imported by Charles II. The assertion so often made, that, for a horse to claim the title of "thorough," it is necessary he should be of pure Eastern descent, cannot for a moment be supported; as investigation proves, that the first British race-horses were those of British origin, already much improved by the attention and management of breeding which followed the introduction of horse racing. The admixture of Eastern blood and judicious crossing, afterwards combined to form the thorough-bred horse.

Size and Colour of the Race-horse.—The thorough-bred horse varies in point of size, the preference being given to a low over a large horse. Experience teaches the justness of this preference, for we find that, while the largest horses that have ever appeared on the British turf have, with a very few exceptions, proved inferior in running to those of a medium height, many instances are to be found, on the other hand, of the best horse of his year being almost the lowest. As speed does not arise from superior height, being frequently destroyed by it—we may assume 15 hands 2 inches, the medium height, as the best stature for a race-horse and decidedly the best for a hunter. The prevailing colour of the thorough-bred horse is a bright bay,‡ with black mane and tail, and black legs to correspond, occasionally relieved with a small white star on

* Richerand.

† The skull of the celebrated horse Eclipse was exceedingly large. When shown to Dr. Spurzheim, and his phrenological observations requested as to the powers and character of that animal, "The leading characteristics," he observed, "were a remarkably large brain, not only in proportion to the size of the animal, but to horses in general; strongly indicating great and high courage, unusual sagacity, but deficient in meekness, or rather a vicious temper; and it was further remarked, that considerable difficulty must have been experienced in rendering such an animal subservient to his rider, but that, when subdued, he could best be governed by gentle treatment, and would prove docile under proper authority."

The correctness with which these remarks were made, must strike the unprejudiced and enquiring mind with more than ordinary force, when we state that our learned phrenological friend, of course no sportsman, was quite unacquainted even with the name of this matchless horse.

* *Veterinarian*, April 1840, p. 205.

† Nusquam magis quàm in minimis est tota Natura.—*Plin. His. Nat.*

‡ According to Xenophon, the ancients reckoned thirteen colours of horses, holding the bay in the highest favour.

the forehead, or a white heel of the leg. What are commonly termed vulgar colours, such as dun, light sorrel or brown, with a mealy muzzle, are seldom met with; and we remember but one instance of the piebald, and very few roans.

Black is also an uncommon colour and seldom approved of, although several of our best racers (almost all of the Trumpator blood) have been of that colour. On the other hand the real chestnut is both a favourite and more prevailing colour, and is reckoned equal to the bay, in the rich beauty of its hue. The celebrated Eclipse was a rich chestnut,* and it is a remarkable fact that a small dark spot on the quarter of this famous horse, has been frequently found in his descendants in the fifth and sixth generation.

Form of the Thorough-bred.—The perfection to which the form of the thorough-bred has attained by the efforts of skilful breeding, may be noted in the following summary of "points." But before we attempt to portray these, it is highly necessary to observe, that no rules can be laid down by which it can be determined whether or not a horse will make a racer, by the mere examination and consideration of his form. Numerous instances might be adduced in which horses, that the eye of the judge in such matters would delight to study, have turned out worthless on the turf, and the contrary. While therefore the sportsman may derive much useful information, as well as pleasure, from a proper investigation of the symmetry and proportions of the thorough-bred horse, he will do well to remember that his powers can only be safely determined by actual trial.

The peculiar elegance of form of the race-horse, is derived from the just proportions of his limbs and moving levers, coupled with the exact fitting with each other of all the mechanical parts of his frame. To this mechanical excellence of frame is united a superiority of muscular substance, joined with justly proportioned shape, giving that elegance of form in which there is no unnecessary weight to oppress the muscles. We proceed to portray the generally approved points of the race-horse, without pretending to lay down any *exact standard* of perfection. The form of the head in the racer, generally resembles that of the Arab, and is one of the leading characteristics of the thorough-bred horse. His broad, angular forehead, the tapering of the face from the forehead to the muzzle, his brilliant and rather prominent eye, and his expanded and flexible nostrils, give him that beautiful and intelligent expression of countenance, which no other breed (with the exception perhaps of a few of Eastern countries) possesses. His throat should be clean, with a good wide space between the jaw-bones,—which should be thin, but not extend too high towards the onset. His neck should be muscular, rather long than otherwise, wide, but not too high crested. What is termed a loose neck in a race-horse, has been by many considered as favourable to speed, the head being as it were the helm by which he guides his motions in the race; but we consider a *good mouth* to be of much greater service in this respect.

* Some remarks on the chestnut will be found *ante*, page 16.

The shoulders being the chief moving levers of the horse, the points on which his action in a great measure depends, demand our earnest attention. We find they vary in form more than any other part of the horse's frame, and it is difficult to discriminate between the theories of the numerous writers who have laid down the law as to the most correct formation of these limbs. While those of Flying Childers rose very high and fine towards the withers, on the other hand a firkin of butter is said to have rested on the withers of Eclipse, when in covering condition; and yet each of these matchless race-horses were unequalled in speed and power of endurance. The shoulders of Eclipse, it would appear, resembled those of the greyhound, wide at the upper part, and nearly on a line with the back. We refer our readers to an extract from M. St. Bel's celebrated Essay on the proportions of this matchless racer.* Upright shoulders being a

* M. St. Bel, the founder of the Veterinary College, St. Pancras, took the proportions of this never-beaten horse, and framed from them a scale which we here append. The memoir of Eclipse will appear in our notices of the most celebrated race-horses, and of imported sires and dams.

Proportions of Eclipse.—Although it is perfectly true, as stated by Mr. Blaine, in his "Outlines of the Veterinary Act," that "for *racing*, we require that the greatest possible quantity of bone, and muscle, and sinew, should be got into the smallest bulk, and that, in addition to great flexibility and some length, the limbs must be strongly united, the chest deep and capacious, and the hinder extremities furnished with powerful muscles; for *hunting*, we must have a similar yet somewhat bulkier horse, with powerful loins, and more powerful quarters; and for the *hackney*, while we undervalue not the strength of the loins and the quarters, we look more to the elevated withers, and the deep and muscular shoulders, and the straight and well-formed leg;" yet there is a nearer and a truer proportion between the several parts of these kindred animal than many persons are disposed to allow; and this sketch of them in Eclipse will not only be interesting, but useful, to the general horseman.

The length of the head of the horse is supposed to be divided into twenty-two equal parts, which are the common measure for every part of the body.

Three heads and thirteen parts will give the height of the horse from the foretop to the ground.

Three heads from the withers to the ground.

Three heads from the rump to the ground.

Three heads and three parts the whole length of the body, from the most prominent part of the chest to the extremity of the buttocks.

Two heads and twenty parts the height of the body, through the middle of the centre of gravity.

Two heads and seven parts, the height of the highest part of the chest from the ground.

Two heads and five parts, the height of the perpendicular line which falls from the articulation of the arm with the shoulder, directly to the hoof.

One head and twenty parts, the height of the perpendicular line which falls from the top of the fore-leg, dividing equally all its parts to the fetlock.

One head and nineteen parts, the height of the perpendicular line from the elbow to the ground.

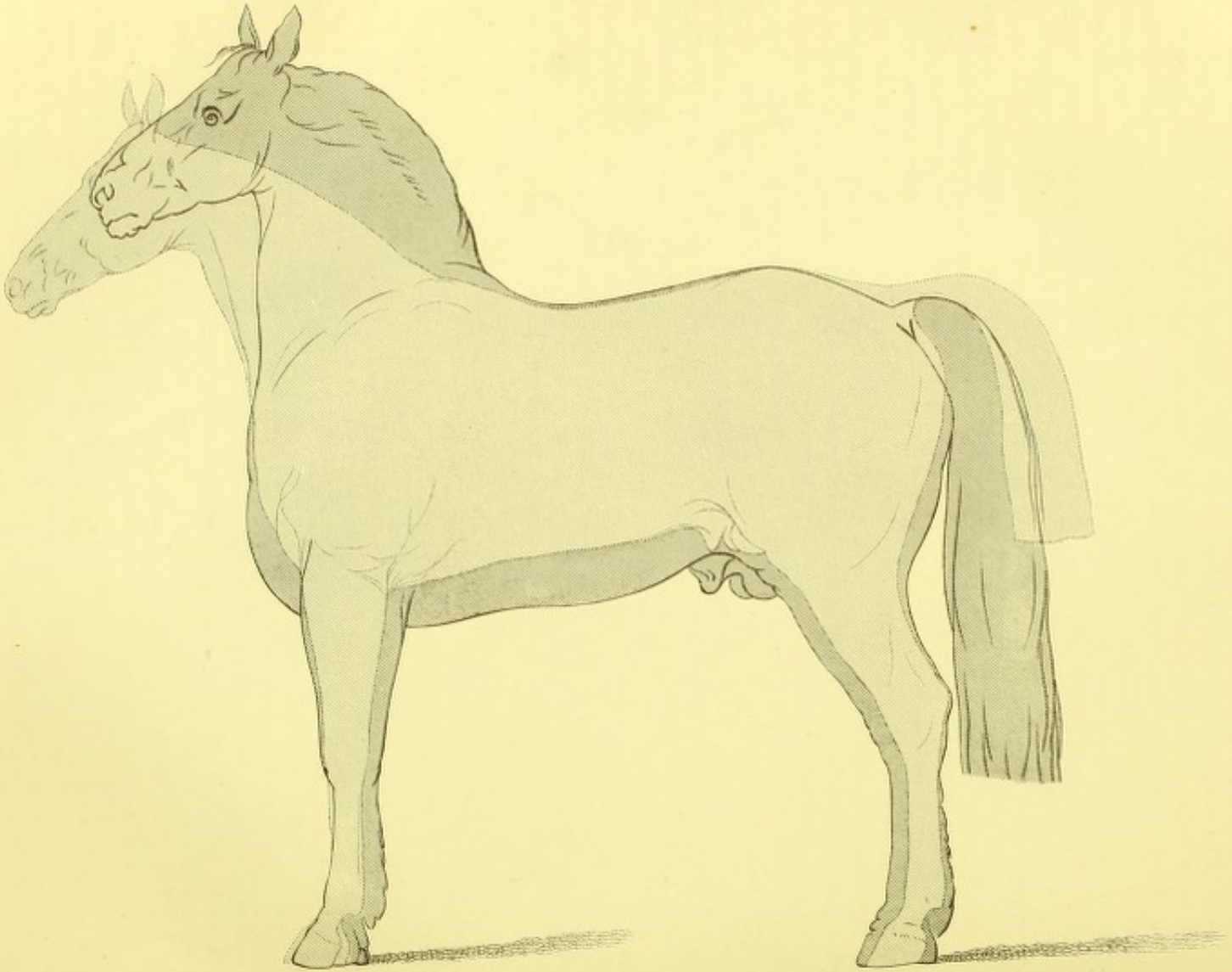
One head and nineteen parts, the distance from the top of the withers to the stifle. The same measure also gives the distance from the top of the rump to the elbow.

One and a half head, the length of the neck from the withers to the top of the head. The same measure also gives the length of the neck from the top of the head to its insertion into the chest.

One head, the width of the neck at its union with the chest.

Twelve parts of a head, the width of the neck in its narrowest part. The same measure gives the breadth of the head taken below the eyes.

One head and four parts, the thickness of the body from the middle of the back to the middle of the belly.



PROPORTIONS OF THE THOROUGH-BRED AND OF THE CART-HORSE.

great impediment to speed, a certain obliquity of the scapula becomes absolutely necessary; but not so their running fine at the withers. Thus we find large, and even what are termed coarse shoulders, no impediment to speed (being always highly conducive to strength) if there is proper declivity of the shoulder-bone or scapula. The withers should enlarge gradually downwards, there being a distance of four or five inches between the fore-thigh, and less between the feet; in fact, the shoulders should be what is commonly termed well laid back. It is impossible to go into a minute investigation of those points from which the thorough-bred horse derives his wonderful speed, without being struck with the fact, that these distinguishing features may be traced through sire and dam to the Eastern horse, from which they were originally derived. All the Herod legs had prominent knees, and yet were famous for standing work; a point handed down to that splendid racer from the Byerley Turk,* and the excellence of which consists in the great diminution of concussion in galloping which takes place in legs so formed. The setting on, and the length of the fore-arm, or part from shoulder to knee in the fore-leg, and the declension of the haunch to the hock in the hind leg, commonly known by the phrase "well let down in the thigh," are points of great importance. It is the true position of the limbs thus constituted, which causes the thorough-bred horse to stand over more ground than one wanting this formation, although of a larger frame. The hare, possessing those points in perfection, is enabled thereby to describe a larger circle in running, and to cover more ground at one bound, than any other animal double her size. The cannon or shank, from the knee to the fetlock, should be of moderate length, flat, (round being highly objectionable) with sinews and bones distinct; and the former very firmly braced. The pastern should be rather small than otherwise, but long and lax. The hoof of moderate size, although there are many who think a horse's foot cannot be too large or spread out. This we find in direct opposition both to nature and reason, the swiftest animals having generally small feet in proportion to their size; while reflection must convince, that the larger the surface which comes in frequent contact with the ground, the greater must be the resistance to its removal; to say nothing of the animal force expended in the action of moving a superfluous weight. The race-horse should have length, the length being in his shoulders and *quarters*, (the part posterior to the hips) and not in his back, which should be short, sinking a little behind the withers, which gives his rider a good seat, without diminishing his strength. His shoulders should sink imperceptibly into his neck at the points; acute angles and straight lines being destructive of elegance of shape. He should have what is termed a *round barrel carcass*, which is produced by the ribs standing well out from the spine; as well as great depth of body—a formation which not only gives strength, activity, and beauty to the whole frame of the horse, but by affording the lungs and intestines ample room to perform their functions, imparts freedom of breathing, and constitutional vigour. Care is, however, requisite that these points are not carried too far, so as to make the horse too heavy for his legs; as it is well known that horses too heavy in the body, injure their legs much in their gallop; and we find accordingly that mares and geldings stand training to a later period of life than stallions; for as they generally carry less flesh than entire horses, so they require less work in training.

After the head, the peculiar formation of his haunches may be said to be the truest characteristic of the thorough-bred horse. What little injury is done to the elegance of the parts, by the width of the hips, is amply compensated by the increased strength it imparts to the animal; and when found in conjunction with good loins, these projections of the ilium can hardly be too great for the purposes of power and action. The form and substance of the thigh form another material point. The thigh of the hare gives us the best idea of what should be the formation of those of the race-horse; accordingly we find its thighs let down to a great extent for their size, and the lower parts of the hinder legs placed under them, as those of the racer should be, from a proper curve of the hock. Well developed *muscle*, not size, is what is wanted; for although horses are said to go with their shoulders, the power to give the impetus in progressive motion comes from behind. The hock is a very complicated joint; it should be large and lean, with its points projecting behind the body. As the proper understanding of this important subject is of

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The same measure gives the breadth of the body.
Also the rump from its summit to the extremity of the buttocks.
Also the distance from the root of the tail to the stifle.
Also the length from the stifle to the hock.
Also the height from the extremity of the hoof to the hock.
Twenty parts of a head, the distance from the extremity of the buttocks to the stifle.
Also the breadth of the rump or croup.
Ten parts of a head, the breadth of the fore-legs from their anterior part to the elbow.
Ten parts of a head, the breadth of one of the hind-legs taken beneath the fold of the buttocks.
Eight parts of a head, the breadth of the ham taken from the head.
Also the breadth of the head above the nostrils.
Seven parts of a head, the distance of the eyes from one great angle to the other.
Also the distance between the fore-legs.
Five parts of a head, the thickness of the knees.
Also the breadth of the fore-legs above the knees.
Also the thickness of the hams.
Four parts of a head, the breadth of the pastern, or fetlock joint.
Also the thickness of the coronet.
Four and a half parts of the head, the breadth of the coronet.
Three parts of a head, the thickness of the legs at their narrowest part.
Also the breadth of the hinder legs or shanks.
Two and three-quarter parts of a head, the thickness of the hind-pasterns.
Also the breadth of the shanks of the fore-legs.
Two and a quarter parts of a head, the thickness of the fore-pasterns.
Also the breadth of the hind-pasterns.
One and three-quarter parts of a head, the thickness of the fore and hind shanks.

* Herod was got by Tartar, whose sire was Mr. Croft's Partner, got by Jigg, son of the Byerley Turk, and each of these horses are mentioned as having these prominent knees.

manifest utility, we cannot illustrate it better than by quoting the opinions of Darvill.*

"His head should be small and lean; his ears small and picked; his eyes brilliantly large; his forehead broad and flat . . . His throat should be clean, and fine from the butt of the ear down to its centre, with a good wide space between the jaw bones, which latter should be thin. . . . The neck should be moderate in length. I prefer its being wide; I mean its width should be formed by the substance of muscles which pass along each side of the top part of it; from the withers to the head it may gradually rise a little in its centre, but by no means to any extreme, as I have a great aversion to a high crested race-horse. Indeed, I would prefer that his neck should be as I have described his face, rather of the ewe, or deerlike shape, (this we consider a peculiarly happy expression) than that it should be loaded on top, which I will presently explain. As to the lower part of the neck, I have no very particular remarks to make, further than that the trachea or windpipe should be spacious, and loosely attached to the neck on its way to the lungs. The withers may be moderately high, and, if the reader like, they may be also moderately thin; but, with respect to this latter point, I am not so very particular, provided the shoulders lay well back. From the withers the back commences. I confess that appearance may be in favour of a horse that has his back a little low or hollow. As a saddle-horse this may be all very well; but for a race-horse, to have strength and liberty of stride, his back should be straight and moderately long, with the shoulders and loins running well in at each end. The loins should have great breadth and muscular substance, so much so as for them to have the appearance of being raised as it were on their surface; and those muscles posterior to the loins should fill up level the top part of the quarters to the setting on of the tail, which latter should be set on pretty high up. . . . I now come to speak of the body, or as it is by some people commonly called the middle piece of the horse, and which is divided internally into two cavities, by a muscular substance called the diaphragm. The anterior cavity, the chest, contains the stomach, intestines, liver, kidneys, &c. Now, with respect to the external form of the body, which contains and protects all those numerous organs so important to life, I shall first make my observations on the chest. To use a common phrase, and somewhat an expressive one, a horse in this part should be what is called well over the heart; that is to say, he should be deep in his girth, round or well arched in his ribs. I mean by this, that a rider on the back of a race-horse (as they are generally better about the chest than horses in common use), should feel he has some breadth or substance between his legs; and there should be a good swell of muscle before his knees, or the centre of the flaps of the saddle. The chest, thus spaciously formed, gives room for respiration, so that in training, the horse's wind can be brought to the greatest perfection, which enables him to run on in long lengths. The next part to be treated of is the abdomen or belly, or what is commonly called the carcass. It may perhaps appear a little strange, but I have a great aversion to what is commonly called a good carcassed horse; nor am I particularly partial to a large sheathed one. I like both these parts to be in the medium, as I do also that of his being well ribbed up. It is true that a horse being well ribbed up denotes strength, and a short close made race-horse is, in running, handy in his turns, and, as I have already noticed, he is generally a pretty good one under high weights, over a small round cock-pit course; but this description of course and sort of running is not now so much practised as formerly, or rather it is a sort of racing that does not exactly suit long-striding horses, as most of those are that run at Newmarket. Another thing is, that horses with large carcasses are mostly great gluttons; they put up flesh very rapidly, and are very difficult and troublesome to train, in consequence of their constitution being too strong, or proportionably too much for their feet and legs. Such horses not only seldom remain long in training, but they cannot remain long in condition, without their becoming stale in themselves, as also on their legs; and those are my reasons for objecting to very large carcassed horses. . . . . To return to the fore-extremities. The shoulders commence from a little below the withers. They should be most particularly well back; should be deep, broad, and muscularly strong; yet those muscular parts should appear to the eye as being moderately so, that is, not unproportionably loaded. These muscles should be distinctly seen; there should be no appearance of fat, or as it is technically termed, 'adipose membrane.' The shoulders cannot well be too oblique in their descent to the front of the chest; here, on each side, a joint is formed by the lower part of the scapula or shoulder-blade being united with the upper part of the humerus or arm bone. Those joints thus formed are usually called the points of the shoulders, which points should appear straight or level. There should be no coarse, projecting, or heavy appearance about the points of the shoulders of such horses as are intended to race; nor, indeed, does this often occur, unless where it happens that the chest or counter of the horse is unproportionably wide. In taking a front view of the chest, it should appear moderate as to breadth, and if its prominency is at all to the extreme, it should be in consequence of the fullness or substance of those muscles covering the breast, which muscles should be lengthy and their divisions distinctly to be observed. The fore-arm should be broad and long, and most particularly well furnished with muscles on its top parts, inside as well as out; I mean by this that the muscles on the top and inside of the arm should here be so large as to leave but a moderate space between the fore-legs immediately under the chest, and which muscles should appear, as those in front of the chest, distinctly divided. The posterior part of the top of the arm is called the 'elbow;' this should appear (the horse in condition) somewhat on a level with the body; if it at all elevates from this appearance, I would prefer its standing in, to that of its standing unproportionally out. The knee-joint should be large, broad, and flat in front.

* Darvill's *Treatise on the Care, Treatment, and Training of the English Race-horse*, 2 vols. London, 1834.

Generally speaking, the larger and broader all joints are, in reason, the better and stronger they are; and the longer, coarser, and rougher their projecting points or processes, the greater and more secure will be the lever for the muscles or tendons to act upon, provided such projecting parts or joints (as the hocks and pasterns) do not amount to disease, as that of producing spavins and ring bones. The legs from the knee to the fetlock cannot well be too short, neither can they well be too broad or too flat, nor their flexor tendon scarcely be too large or appear too distinctly divided, as it were, from the leg; their fetlock joint should also be large, and the pastern proportionally strong, but its length and obliquity should be in the medium. The wall or crust of the feet should also be moderately oblique, with the heels open, and frogs sound; this indeed is generally the state of racing colts on first leaving their paddocks, if their feet have been paid proper attention to during the time they remained there. Yet the feet of such of them as have been some time in work, will occasionally get out of order; they grow upright and strong; the horn gets hard and brittle, and the heels more or less contracted; almost all of which defects are too often occasioned by the want of proper attention being paid to them at the time of shoeing, and the want of proper applications in the stables. Previous to concluding my remarks on the fore extremities, it may not be amiss to observe that, supposing the reader to stand opposite to those parts of the horse, if the animal is formed in them as I have already described, the centre of the top part of the fore-arm, to be well placed, ought to be nearly or quite in a parallel line with the top or fore-part of the horse's withers; and again, from the top of the fore-arm, down to the foot, for the horse to stand firm and well, and have the power of using his fore legs well, he should stand perfectly straight on them. That is they are not to appear too much under him, or too much out or away from him. Suppose again, for example, a man standing in front of the horse, and here taking a view of the foot; the centre part of the wall or crust should be in or on a parallel line with that lower part or joint of the shoulder, commonly termed its point. A horse's feet thus placed, will neither be too much out or too much in; but should his feet deviate from this line, turning too much out or too much in, I should prefer their being a little out, to that of the other extreme of turning in, and being what is called 'pigeon-toed.'

"I shall now proceed to describe the hind-quarters or posterior extremities. As may be supposed, the well formation of those parts is of the utmost importance to a race-horse in his running; it is, therefore, necessary that they should be, in breadth, substance, and length, of very superior dimensions. The hips should have a great breadth between them; and if they are a little coarse or projecting, so much the better, provided such coarse projections are not in extreme, or appear vulgar or unsightly. From the centre and posterior part of the loins, to the top of the tail, is called the 'croup,' and should be of great length; and, if it deviates from that of a straight line, it may be somewhat arched in the centre. The croup being thus formed gives great breadth to the top of the quarters, the length of which, from the croup down to the hock, cannot scarcely be of too great an extent, in order that there may be sufficient room here for the attachment of those broad, powerful, lengthy, and distinctly divided muscles on the outside of the quarters and thighs; and there should also be a similar portion of such muscles on the inside of the quarter and thighs; so that a man who is a good judge, taking a posterior view, may observe how the horse is made. In this position he should be, as it were, struck by the appearance of the great breadth and length of the back part of the quarters, and as he moves his head to the right or left, the centre and outside of the quarters and thighs, and the swell of the muscles, should appear beyond a level with the hips. The upper parts of the muscles on the inside of the quarters should appear quite close to each other, so that no vacuous space should be visible between them, as that of an appearance of the horse being (if I may thus express myself) chucked up in the fork. Such should be the lengthy and muscular quarters of a well made race-horse.

"The stifle-joint should be in a direct line under the hip, and the length from this joint to that of the hock cannot reasonably be too long, and the farther out of the angular or oblique position of the thigh-bone the better, so as to admit of the back part, or projecting point of the hock, appearing some distance out beyond the top of the hind quarters. Those parts being thus formed, admit of a very considerable lever for the main tendon, Achillis; which, like the flexor one of the leg, can scarcely be too large or too distinctly seen, in its commencement from the lower part of the quarter to its insertion into the posterior or projecting point of the hock, the os ocilsis. The hock should be broad and wide, with a clean, lean appearance, and those parts which are occasionally the seat of thorough pins and log spavins, in a sound well formed hock, should appear more as cavities, than as having the above-mentioned projections, and which are sometimes the cause of lameness. The hind leg, like the fore one, should be short, broad, flat, and straight; the trifling angle formed by the hock, should, together with the moderate obliquity of the pastern, bring the extremity of the toe nearly under the stifle-joint."

When we consider the situation and action of the hock, the weight and stress thrown upon it must be exceedingly great, and we find accordingly that it is frequently injured in rapid and powerful motion. It is true that some provision to prevent injury is provided, in the grooved or pully-like heads of the tibia and the astragalus, received deeply into each other, and confined by powerful ligaments, admit of a hinge-like motion, but of no side motion, to which the joint might be exposed in rapid action, or on an uneven surface. The hock is, from its complicated structure and its work, the principal seat of lameness behind. Nine-tenths of the lamenesses that occur in the hind leg are to be traced to this joint, and when, after careful examination, we are unable to find any other seat of lameness, we shall usually be justified in affirming that the hock is affected.

It is to the just proportion of his limbs and their moving levers that the superior stride of the race-horse is due. To render this stride effective in the attainment of speed, it must be rapidly repeated, otherwise what the horse gains in space covered at each bound, he would lose in time. Stride, then, united with quickness of its repetition, constitutes fleetness. Eclipse, whose proportions, according to St. Bel, we have given pp. 406, 407, and whose performances we shall note hereafter, is said to have covered eighty-three feet of ground in a second, when at top speed, which would amount to about twenty-five feet of ground covered by a single stride. This is asserted by many to be the most extensive of any horse before or since, with the exception of Flying Childers, to whom the same stride is ascribed.

We need hardly say that these stories are apocryphal as well as traditional. A glance at the "points" of the old race horses, if their portraits have any pretensions to fidelity, will show their incapability for this immense stride and speed. Time was scarcely kept at all, and the popular proneness to exaggeration monstered every unusual performance. Of the stoutness of the old racer we have little doubt—indeed, it is sufficiently proved; but of his capacity to "live," either pace or distance, with the best of our modern racers, we are entirely sceptical. Nevertheless, our history would be imperfect did we not preserve the traditional accounts of the speed and lasting powers of the most renowned horses of the past century, and the earlier decades of the present. There is, however, little authority for these statements beyond Mr. William Peck's *Historical Racing Calendar*, published in 1786, from which these wonderful and incredible feats have passed into turf traditions by incessant repetition.

During the last century, the majority of the Royal Plates were given to six-year old horses, carrying twelve stone four miles, under the idea that a horse should not be trained to run a distance under that age, and Plates, weight for age, were of rare occurrence before 1770.

At the commencement of the present century, three and four mile heats, with 10st. 4lbs. to 11st. 6lbs. formed the conditions on which the Royal Plates were usually run for. Sir Charles Bunbury introduced the system of short races and light weights, and the conditions of the Royal Plates were gradually altered to suit the new style of racing. The highest authority of the modern turf, Admiral H. I. Rous, lends his dictum to the view we are here taking. He says:—"A very ridiculous notion exists that because our ancestors were fond of matching their horses four, six, and eight miles, and their great prizes were never less than four miles for aged horses, that the English race-horses of 1700 had more powers of endurance, and were better adapted to run long distances under heavy weights than the horses of the present day; and there is another popular notion that our horses cannot now stay four miles.

"From 1600 to 1740 most of the matches at Newmarket were above four miles. The six-mile post in my time stood about two hundred yards from the present railroad station, *Six-mile bottom*, and the eight-mile post was due south from the station, on the rising ground; but the cruelty of the distance, and interest of horse owners, shortened the course in corresponding ratio with the civilisation of the country. Two jades may run as fine a race for eight miles as for half a mile: it is no proof of endurance. You may match any animals for what distance you please, but it is no proof of great capacity. We have no reason to suppose that the pure Arabian of the Desert has degenerated; his pedigree is as well kept, his admirers in the East are as numerous, and his value in that market has not been depreciated. In 1700 the first cross from these horses were the heroes of the turf. Look at the portraits of Flying Childers, Lath, Regulus, and other celebrated horses, including the Godolphin Arabian. If the artists were correct in their delineations, they had no appearance of race-horses: they of course were good enough to gallop away from the miserable English garrans of that era, as a good Arab or a Barbary horse like Vengeance would run away from a common hackney in the present day. Amongst the blind, a one-eyed man is a king.

"My belief is, that the present English race-horse is as much superior to the race-horse of 1750, as he excelled the first cross from Arabs and Barbs with English mares, and, again, as they surpassed the old English racing-hack of 1650.

"The form of Flying Childers might win now a 30*l.* plate, winner to be sold for 40*l.*; Highflyer and Eclipse might pull through in a 50*l.* plate, winner to be sold for 200*l.* This may be a strong opinion; it is founded on the fact that whereas, one hundred and fifty years ago, the eastern horses and their first cross were the best and fastest in England, at this day a second-class race-horse can give five stone to the best Arabian or Barb and beat him, from one to twenty miles. I presume, therefore, that the superiority of the English horse has improved in that ratio above the original stock."

Such are the opinions of Admiral Rous; another branch of the subject, that of the undue early training and running of race-horses, and the consequent shortness of their turf career, will come to be considered further on. We return from this brief, but not irrelevant digression, to such specimens as we can glean of the speed, stoutness and endurance of the race-horses from whom our present "flyers" are descended. The events, too, of which we here preserve the memory, are curious and entertaining to the sportsman, and some of them instructive.

CHAPTER IV.

THE RACE-HORSE, CONTINUED.—PERFORMANCES, PEDIGREES, AND THE MOST REMARKABLE MATCHES ON THE BRITISH TURF, DURING THE EIGHTEENTH AND NINETEENTH CENTURIES

In the present chapter we propose to attempt by selection, condensation, and compilation, to present as perfect a resumé as the materials will permit, of the doings of the race-horse from the earliest authentic historic period; reserving for another Chapter the imported Arabs, Turks, and Barbs, with memoirs of a few of those horses whose doings on the turf, and whose transmitted blood, have entitled them to more complete and detached biographies.

First of these phenomena we have the Devonshire, or Flying Childers, a chestnut horse with part white on his nose, and four white legs, foaled in 1715. Bred by Leonard Childers, Esq., of Carr-House, near Doncaster, and purchased when young by the Duke of Devonshire, hence his names.

Childers was got by the Darley Arabian; his dam called Betty Leedes, by Old Careless; his grandam (own sister to Leedes) by Leedes' Arabian Barb; his great grandam by Spanker, out of the Old Morocco mare (Barb), the dam of Spanker.

Childers started several times at Newmarket, against the best horses of his time, and was never beaten. In April 1721, he beat the Duke of Bolton's Speedwell, 8st. 7lb. each, four miles, 800 gs., and in October following, he received of Speedwell 500 gs. forfeit. In October 1722, Childers beat the Earl of Drogheda's Chaunter, 10st. each, six miles, for 1,000 gs. In April 1723, he received of the Duke of Bridgewater's Lonsdale mare, and Lord Milsintowne's Stripling, 50 gs. forfeit, each, and in November following he received 100 gs. from Lord Godolphin's Bobsey.

About the year 1721, Childers ran a trial against Almanzor and the Duke of Rutland's Brown Betty, carrying 9st. 2lb. over the Round Course* at Newmarket in six minutes and forty seconds; and it was thought that he covered eighty-two feet and a half in one second of time, which is nearly at the rate of one mile in a minute. He likewise ran over the Beacon Course in seven minutes and thirty seconds; and it was supposed that he covered at every bound a space of twenty-five feet. He also leaped ten yards on level ground with his rider. This last feat we can readily credit, as Childers had all the points of a first-rate hunter. He was not only eminent as a racer, but a very valuable stallion, though he covered only a few mares, except the Duke of Devonshire's. He died in his Grace's stud in the year 1741, aged 26; and the last of his get that was trained, was Velter Cromwell, Esq.'s, Nestgul, foaled in the year 1740. We may here note that the running of Childers here recorded from Mr. Peck's book was sixty-five years before the appearance of that publication.

* The Round Course is 3 miles, 4 furlongs, and 93 yards in length.

Eclipse, of whom more anon, ran over the same distance, on the same course, in eight minutes.

In October, 1741, at the Curragh Meeting in Ireland, Mr. Wilde engaged to ride 127 miles in nine hours. He performed it in six hours and twenty-one minutes. He employed ten horses, and, allowing for mounting and dismounting, and a short time for refreshment, he rode during six hours at the rate of twenty miles an hour.

In 1745, we learn from the Count de Buffon, on the authority of a letter from the Earl of Morton, that a well-known turfite of the day, Mr. Cooper Thornhill, rode, for a heavy wager, three times between Stilton and London, on the turnpike road, in 11 hrs. 33 mins. 52 secs. The terms of the wager were—Number of horses unlimited, and the distance 213 miles: to be completed in fifteen hours. Mr. Thornhill used eight different horses in the first journey; six in the second; and in the third he made use of the same horses as in the former journeys, riding, however, only seven out of the fourteen. His time was as follows:—

		H.	M.	S.
From Stilton to London . .	(71 miles) . .	3	52	59
,, London to Stilton . .	(,,) . .	3	50	57
,, Stilton to London . .	(,,) . .	3	49	56

"I question," adds Count Buffon, "whether any race at the Olympic Games ever equalled the rapidity of Mr. Thornhill's performance."

In this instance we have, perhaps, a tangible and fair criterion of comparison of the average stoutness and journey-speed (a very different thing from race-speed) of the high-bred horses of the last and present century. We shall, therefore, place in juxtaposition with Mr. Thornhill's gallop, that of "Squire Osbaldeston's" 200 miles' match at Newmarket, on the 5th of November, 1831, in preference to pursuing a strict chronological sequence; it must, however, be observed that Mr. Thornhill rode on the highway, with all its inequalities, Mr. Osbaldiston on a race-course.

This remarkable match was made between Colonel Charritie, as the backer of time, for 1000 guineas, and George Osbaldeston, Esq.—the latter undertaking to ride 200 miles in ten hours: number of horses unlimited. The ground over which the match was performed was four miles in length, beginning and ending at the Duke's Stand, in the Newmarket course. Mr. Osbaldeston started at twelve minutes past seven, dressed in a purple silk jacket, black velvet cap, doeskin breeches, and top-boots, and, dividing the distance into heats of four miles each, performed it with twenty-eight horses, as follows. Mr. Osbaldeston rode 11st. 2lbs.

TIME OF THE FOUR-MILE HEATS OF MR. OSBALDESTON'S 200 MILES' MATCH, WITH REMARKS.

No. of heats.	OWNERS' AND HORSES' NAMES.	AGE.	TIME. h.	m.	s.	MILES.	REMARKS.
1	Mr. Osbaldeston's Emma	aged	0	9	0	4	Heavy rain, and continued with little intermission for three hours after his starting.
2	Mr. Sowerby's Paradox	4	„	9	20	4	
3	Mr. Osbaldeston's Liberty	aged	„	9	25	4	
4	Mr. Sowerby's Coroner	6	„	9	15	4	
5	Mr. Osbaldeston's Ebberston	aged	„	9	44	4	
6	Ditto Don Juan	aged	„	9	0	4	24 miles in 58 min., including stoppages.
7	Mr. Tilburne's Morgan Rattler	aged	„	9	13	4	
8	Mr. Sowerby's Paradox, 2nd time ...	4	„	9	6	4	
9	Mr. Osbaldeston's Cannonball	aged	„	9	23	4	
10	Ditto Clasher (his famous steeple-chaser) ...	aged	„	9	25	4	Broke down a short distance from home, and trotted in, in a sad state.
11	Mr. Shrigley's Ultima	aged	„	9	10	4	
12	Mr. Tilburne's Fairy	4	„	9	5	4	48 miles in 2h. 1m. 5s.
13	Mr. Sowerby's Coroner, 2nd time	6	„	8	40	4	Coroner started badly. Other horses went off with him, to prevent his bolting.
14	Mr. Osbaldeston's Liberty, ditto	aged	„	9	21	4	After this round, Mr. Osbaldeston drank a mouthful of weak brandy and water.
15	Ditto Emma, ditto	aged	„	9	21	4	60 miles in 2h. 33m. Emma ran on the wrong side of a post, coming down the Ditch, but Mr. Osbaldeston turned her, and made his round good.
16	Ditto Don Juan, ditto	aged	„	9	8	4	
17	Ditto Ebberston, ditto	aged	„	8	10	4	
18	Ditto Cannonball, ditto	aged	„	9	41	4	72 miles in 3h. 4m.
19	Mr. Shrigley's Ultima, ditto	aged	„	9	0	4	Rain left off, but the weather raw and cold.
20	Mr. Gully's Tranby	5	„	8	10	4	This was the best horse Mr. Osbaldeston rode. 80 miles in 3h. 25½m.
21	Mr. Tilburne's Fairy, 2nd time	4	„	8	8	4	
22	Ditto Morgan Rattler, ditto	aged	„	9	28	4	
23	Mr. Gully's Tramp colt	3	„	8	58	4	
24	Mr. Arnold's Dolly	4	„	8	58	4	
25	Lord Lowther's Acorn colt	3	„	9	2	4	100 miles in 4h. 19m. 52s. At the close of this round, Mr. Osbaldeston took a mouthful of bread and some brandy and water.
26	Ditto Smolensko colt	3	„	8	54	4	
27	Mr. Gully's Tranby, 2nd time	5	„	8	0	4	This round was the quickest in the match, and wonderful, when we consider that in the famous match between Hambletonian and Diamond, at racing weights (8st. 7lb.) the B.C. was only run in 8m. 25s., while Mr. Osbaldeston rode 11st. 2lb.
28	Mr. J. Robinson's Skirmisher	aged	„	9	25	4	
29	Mr. Rush's Guildford	5	„	8	25	4	
30	Mr. Arnold's Dolly, 2nd time	4	„	8	45	4	120 miles in 5h. 11½m. After this round, Mr. Osbaldeston rested six minutes and a half, and lunched upon a cold partridge and brandy and water in the stand, but although wet to the skin, refused to put on dry clothes.
31	Mr. Rush's Ikey Solomons	4	„	12	0	4	In this round Mr. Osbaldeston was thrown, but receiving no hurt, soon remounted; he, however, appeared a little distressed when he came in, which put the opposite party in hopes. Among other bets, 1,000 to 100 sovs. was laid that he did not perform the distance in 9 hours.
32	Mr. Henry's Tam-o'-Shanter	4	„	9	40	4	
33	Mr. G. Edward's El Dorado	aged	„	9	20	4	
34	Mr. Wagstaff's Coventry	4	„	9	0	4	
35	Col. Wilson's Ringleader	4	„	8	42	4	
36	Mr. Gully's Tranby, 3rd time	5	„	8	15	4	
37	Mr. Pettit's Ipsala	4	„	8	20	4	
38	Mr. J. Robinson's Skirmisher, 2nd time ...	aged	„	8	45	4	
39	Mr. Rush's Guildford, ditto	5	„	9	10	4	156 miles in 6h. 49m.
40	Mr. Wagstaff's Streamlet	3	„	8	50	4	Odds six to four on his doing it in 9 hours, ten to one in 10 hours. After this round the weather became again unfavourable.
41	Lord Ranelagh's Donegani	4	„	9	12	4	
42	Mr. Payne's Hassan	4	„	9	0	4	
43	Mr. W. Chifney's Surprise Filly	3	„	9	10	4	
44	Col. Wilson's Ringleader, 2nd time ...	4	„	9	30	4	
45	Mr. Gully's Tranby, 4th time	5	„	8	50	4	
46	Mr. Wagstaff's Coventry, 2nd time ...	4	„	9	30	4	
47	Mr. Pettit's Ipsala, ditto	4	„	9	0	4	
48	Lord Ranelagh's Donegani, ditto	4	„	9	0	4	
49	Mr. Wagstaff's Streamlet, ditto	3	„	10	15	4	A violent storm.
50	J. Robinson's Skirmisher, 3rd time ...	4	„	9	40	4	
			8	42	0	200	
	Allowed for stoppages, &c.		1	22	56		
	200 Miles performed in		7	19	4		

or, at the rate of "26 miles an hour; the horses whilst running covering the ground at the rate of 27½ miles per hour.

Mr. Osbaldeston did not appear much fatigued with his extraordinary task; but, on its conclusion, rode into Newmarket on his hack amidst the congratulations of his friends and the cheers of the multitude, and having taken a warm bath, and after two hours' repose, joined a dinner party, as if nothing had happened.

Although both these matches of Mr. Thornhill and Mr. Osbaldeston may be looked upon, at first glance, as trials of human endurance, rather than equine, a careful consideration will suggest many points in the latter—which is more fully recorded, offering shades of comparison with the performances of racers of the old school.

The most strenuous advocate of breeding hunters "up to sixteen stone," would hardly consider the following race, run in 1745, the memorable year of the Pretender's invasion, as legitimate racing. On the 5th of April in that year, Lord Byron matched his Robin Hood against Lord Robert S. Manvers' br. h., at *twelve stone each*, owners up, *four mile heats* for 200 guineas. His erratic lordship, the "dark-memory" of Chaworth, wins, after riding twelve miles. In the same year Mr. Parson's bay horse beats Lord Byron's grey mare, and the Duke of Kingston's bay horse, fourteen stone, heats: owners up.

We now come to the 29th of August, 1750, when the curious chaise match of the Earl of March, afterwards Duke of Queensberry, and the Earl of Eglinton on the one side, with Count Theobald Taafe, and Andrew Sprowle, Esq., for 1000 gs., came off at Newmarket.

The conditions were, to perform nineteen miles within the hour, with a carriage with four running wheels, to be drawn by four horses, and a person in or upon it. Their lordships were to give two months' notice of the week in which it should be done, and to choose any day in that week, and the hour. Three umpires were nominated, each to hold a stop watch, and if two disagreed, the decision lay with the third. The machine, which displayed some little ingenuity, was devised by Lord March (in after years the notorious "Old Q," of Piccadilly); it weighed—including a postilion of his lordship's, who was fastened on a seat on the hinder axle—24 stone. The horses, three of which had won plates, were all trained for racing; the two leaders, including rider, saddles, and harness, carried about 8st. each, and the wheel horses about 7st. each.

Tawny (formerly Mr. Greville's), the near leader, was rode by W. Everett, Mr. Panton's groom, who regulated the pace. The off leader, Roderick Random (bought from Mr. Hamford for the occasion), the near wheeler, Chance (formerly the Duke of Hamilton's), and the off-wheeler, Little Dan (Mr. Thompson's, of Beverley, Yorkshire), were rode by three boys, who had pads to save the horses' shoulders. A groom, dressed in crimson velvet, rode before to clear the way; the postilion (a boy) was dressed in a white satin jacket, black velvet cap, and red silk stockings; and Mr. Everett, and the three boys that rode the horses, were in blue satin waistcoats, buckskin breeches, with white silk stockings, and black velvet caps.

The traces of the machine were made to run into bones with springs, in order, in case any of the horses hung back, to prevent the traces from getting under their legs; and a rope went from the further end of the carriage to the pole, and was brought back from under it, to keep the pole steady. By the sides of the wheels there were tin cases, with oil dropping on the axle-tree, to prevent its taking fire. The postillion placed thereon was merely to comply with the terms of the match.

The equipage started about seven in the morning, near the Six Mile House, and ran between the Warren and Rubbing Houses, came through at the Ditch called the Running Gap, then turned to the right, and went three times round a corded piece of ground of four miles, and then back to the place it started from. The horses ran away the first four miles with their riders and carriage, doing them in nine minutes; the odds were then two to one. The distance was completed with ease in 53 minutes, 27 seconds, being 6 minutes, 33 seconds to spare. A vast crowd of spectators assembled, and large sums were pending on the result. Mr. George Tanting, and a groom of Lord March's, were the only persons permitted to ride with it, and they were to assist in case of accident.

In the same year a Mr. Girdwood and a Mr. Harris matched their horses for 100 gs., on the condition that Mr. Girdwood's Crop, a racehorse of some note, should go 100 miles before Mr. Harris's roan horse completed 80. This absurd and barbarous match came off on Banstead Downs, on the 1st of September. The horses started at six in the morning. Crop galloped ten times round the course, making 20 miles in a little more than an hour, and was a beaten horse about the 11th or 12th lap. The roan was so knocked up as to be unable to raise a trot, and the wretched animals walked with their brutal riders on their backs, until the roan had completed 80 miles, and Crop, who occasionally put on a little speed, had covered 94 miles, thus losing the match by 6 miles. Crop was sold on the ground for 5 gs., his death being fully calculated on. He, however, lived to win for his new owner upwards of 500 gs. in various matches, and died in 1758. The time of this match is not given further than that about 20 miles were galloped by Crop in the first hour—a reckless pace in beginning such a cruel match, which was properly punished by the result.

In April, 1752, a well-bred little mare, pedigree not preserved, belonging to Mr. Spalding, ran twenty times round the Curragh Course, five miles, in 12½ hours, for 100 gs. h. ft.: the time backed was thirteen hours. The next morning, for a wager of 100 gs., her inhuman owner ran her over the same ground the same distance, which she completed in the same time. She was ridden both days by a boy of Lord Antrim's. Such merciless eccentricities as these would now be visited with execration, if not deserved punishment.

Among the traditional celebrities of the Irish turf may be reckoned a gelding named Skewball, by the Godolphin Barb. He was the subject of a quaint popular ballad. We find it recorded that he was the property of Mr. Arthur Morrin, and, that on the 30th of March, 1752, he ran and beat Miss Sportly, by Victorious, at 9st. each, four miles, over

the Curragh of Kildare. Skewball is said to have run the four miles, on this occasion, in 7 minutes 51 seconds. Thornville, by Herod, is asserted to have run four miles in 7 minutes and a half, in 1788.

In April, 1754, a brown mare, the property of Mr. Daniel Croker, was backed to do 300 miles on Newmarket Heath, in seventy-two successive hours, which she completed in 64 hours, and twenty minutes. The match was for 100 gs. p. p.

The mare was rode by one boy all the way, weight 4st. 1lb., exclusively of saddle and bridle. She went backwards and forwards, from the Six Mile House to the ending post of the B. C.

It was performed as follows:—

Monday, April 22nd, twenty-four miles, and baited; twenty-four, and baited; forty-eight, without baiting	96
Tuesday, twenty-four miles, and baited; twenty-four, and baited: twenty-four, and baited: thirty-six, without baiting . .	108
Wednesday, twenty-four miles, and baited; twenty-four, and baited; and forty-eight, without baiting	96
Total	300

In 1757, Careless, a chestnut horse, foaled in 1751, by Regulus out of Silvertail, ran 4 miles, 1 furlong, 138 yards, (the Beacon Course), first heat in 8 minutes 45 seconds; second in 8 mins. 40 secs.

In 1758, Lottery, a bay mare, by Blank, foaled in 1752, bred by the Duke of Ancaster, won the King's Plate at Newmarket, beating Lord Rockingham's ch. mare, by Regulus, the Duke of Bridgewater's Miss Lester, by Regulus, and Mr. Martindale's Miss Lester, by Regulus. She ran the Round Course, 3 m. 4 fur. 185 yards, in 8 minutes 12 secs.; this is recorded as a creditable performance at the time.

In April and May 1758, Miss Pond, daughter of Mr. Pond, then publisher and compiler of the Racing Calendar bearing his name, rode on horseback 1,000 miles in 1,000 successive hours, at Newmarket, for a wager of 200 gs. It has been asserted that this was done on one horse, but there is no reliable record of this. A contemporary newspaper says that Mr. Pond undertook to ride *the same* horse 1,000 miles in two-thirds of the time, but we have no particulars of the performance extant.

In June 1759, Jennison Shafto, Esq. performed a match against time, on Newmarket Heath, the conditions of which were, to ride fifty miles—having as many horses as he pleased—in two successive hours. This he accomplished in 1 h. 49m. 17 secs., with ten horses, viz.:—

	MILES.
1. Merry Bachelor, by Tartar	4
2. Wildair, by Cade, dam by Steady	4
3. Juggler, by Rib, dam, sister to Regulus	4
4. Forrester, by Croft's Forrester, dam by Lusby ...	3
5. Rover, by Bolton's brother	4
6. Jack O'Newbury, by Babraham, dam by Lord Halifax's Justice	4
7. Adolphus, by Regulus, out of Miss Layton, Lodge's roan mare	3
8. Jessamy, by Hutton's Spot, out of Bay Brocklesby ...	3
9. Prince T. Quassaw, by Snip, out of Dairy Maid ...	3
Merry Bachelor, Second time	5
Wildair „	3
Juggler „	3
Rover, „	3
10. Hambleton, by Swiss	3
Adolphus, second time	3¼
Total	50¼

In 1761, a match was made between Jennison Shafto and Hugo Meynell, Esqs., for 2,000 gs., Mr. Shafto to find a person to ride 100 miles a-day, on any one horse each day, for twenty-nine successive days, to have any number of horses not exceeding twenty-nine. The person chosen by Mr. Shafto was Mr. John Woodcock, who started on Newmarket Heath, May 4th, 1761, at one o'clock in the morning, and finished his arduous task on the 1st of June, about six in the evening, having used fourteen horses only, viz.:—

Mr. Shafto's b. h. once.	Lord Montford's b. h. twice.
Lord Chedworth's ch. m. thrice.	Mr. Surrecolt's ch. h. once.
Capt. Winyard's ch. h. twice.	Mr. Shafto's roan h. twice.
Mr. Thistlewaite's gr. h. thrice.	Mr. Calcraft's ch. h. once.
Mr. Wildman's bl. m. thrice.	Mr. Rudd's ch. m. once.
Mr. Woodcock's b. m. thrice.	Mr. Welch's b. h. thrice.
Mr. Scott's b. m. twice.	Mr. Major's b. m. thrice.

Mr. Major's mare did not begin one day till ten o'clock, Mr. Woodcock having failed to bring in a horse called Quidnunc, after it had done sixty miles by nine o'clock, and then tired; so that he rode one hundred and sixty miles that day, finishing at about eleven o'clock at night, which was the latest hour during the whole performance.

This undertaking must have been much more difficult for the rider than for the horses. The course was from Hare Park to the Ditch, making three miles; thence he went a three mile course round the flat, on that side the ditch next Newmarket. Posts and lamps were put up, as Mr. Woodcock chose to start very early in the mornings, to avoid the heat of the day.

In 1766, Gimcrack, a grey horse, bred by Gideon Elliott, Esq., of Murrell Green, Hants, 1760, and successively the property of Mr. Green, Mr. Wildman (who owned Eclipse), Lord Bolingbroke, Count Lauraguais, Sir Charles Bunbury, and Lord Grosvenor, ran a match in France, twenty-two miles within the hour. Gimcrack was a stout game horse, only fourteen hands and a quarter high.

Bay Malton, foaled in 1760, in 1764 beat Gimcrack in a match, 7st. 7lb., for 500 gs., winning 9,000 gs. for his owner, the Marquis of Rockingham. At York, in the same year, Bay Malton won the subscription purse of £281, for six years olds, 8st. 7lb., and aged, four miles, beating Mr. Vernon's Jerkin, six years old; Mr. Coulson's Royal George, six year old; Mr. Shafto's Flyfax, six years old; Mr. Stapleton's Beaufremont, aged; and Sir John Moore's King Herod, aged. At starting, seven to four, and two to one, against Bay Malton, seven to two against Jerkin, three to one against Royal George, the same against King Herod, and ten to one against

Beaufremont and Flyfax; an exceeding fine heat, and most severely contested by the first three for the whole four miles, and won by about a length. Bay Malton ran the four miles in seven minutes and forty-three and a half seconds, "which was seven and a half seconds less time than ever the course was run before." This is contradicted if Childers' time be true. Bay Malton was rode by John Singleton, Jerkin by John Watson, and Royal George by John Kirton. Bay Malton was by Sampson, his dam own sister to Leonidas, Cade, out of Lass of the Mill. He died at Wentworth in 1786, aged 26.

Perhaps as a contemporary record of the severity and length of the races of this period, we cannot do better than illustrate it by the performances of Forester, a bay horse, by Dionysius out of Rural Lass, foaled in 1765, bred by Philip Egerton, Esq., and sold to the Hon. J. Smith Barry, of Belmont, Cheshire.

At Beverley, in May, 1769, Forester started for the sweepstakes of 20 gs. each, fourteen subscribers, three miles, when he came in first; but his rider not bringing in his weight, the stakes were given to Mr. Elleker's Lorenzo, by Sampson, who was second. At Manchester, in September, he won £50, *three two mile heats.* At Carlisle, in May, 1770, Forester won £50, *three mile heats;* and on the next day, he won £50, beating Mr. Hunter's Foxhunter, and a large field, *three four mile heats.* At Richmond, in September, he won £50, *four mile heats,* beating Mr. Hutton's Lofty by Regulus; at starting, five and six to four on Forester; two excellent heats, each being won by only half a neck. At Carlisle, in November, he won the King's plate, *four mile heats.* At Chester, in May, 1771, he won the Gold cup, value £50, *four mile heats;* and in the same meeting he won £50, *four mile heats.* At Newcastle, June 26th, 1772, he won the subscription purse of 60 gs., *four mile heats.* At Edinburgh, July 20th, he won the King's plate, *four mile heats;* on the 23rd, same place, he won the subscription purse of 100 gs., for all ages, *four miles;* and on the next day he won the 60 gs. plate, *four mile heats,* beating Philippo, Young Mirza, Royal Forester, Leith, &c.: Mr. Nisbett's Foxhunter also started, but in running for the first heat he dropped down, and died immediately. Forester was ridden for the three plates by John Tesseyman, and Philippo, twice, by Leonard Jewison. At Newcastle, in June, 1773, Forester walked over for the subscription purse of 60 gs. At Doncaster, in September, he won the Gold Cup, *four miles.* At Malton, in October, he won £50, *three four mile heats:* two to one on Forester. At Lancaster, in July, 1774, he won £50, *four mile heats:* at starting, five to four on Forester; after the heat, seven to one he won. At York, in August, 1775, he won £50, *four mile heats:* at starting two to one on Forester; after the heat, six to four he won. Forester was ridden by John Mangle. Euryalus by John Tesseyman, and Consul by Charles Dawson. At Chester, May 6th, 1776, he won the annual City Plate, at *three four mile heats:* six to four against Forester. At Manchester, May 31st, he won £50, *three four mile heats.* At Boroughbridge, in September, he won £50, *four mile heats:* at starting, six to four on Forester; after the heat, five to four he won. And at Manchester, in May, 1777, he won £50, *four four mile heats:* at starting, five to one against Forester; Forester the third from Dumpling, and fourth from Fortune. Forester started once more that year, and was beat by Mr. Ellis's Diana, &c., at Chesterfield; and twice in 1778, when he was beat by Mr. Timb's Furzecutter, &c., at Bridgenorth; and by Mr. Swinfen's Royal, &c., at Nottingham.

Forester won twenty times, viz.—Two King's plates; the Cups at Doncaster and Chester; a subscription purse of 100 gs., and three of 60 gs. each; eleven £50 plates, and the annual City Plate at Chester. He was afterwards in the Hon. H. S. Barry's stud.

In 1773, Firetail, a bay horse, foaled in 1769, by Squirrel, out of Jet, is said to have run a mile in one minute four seconds, when he beat Pumpkin at 8st., in a match for 500 gs. In the Houghton Meeting of the previous year Pumpkin had beat Firetail for 1000 gs., same weights, D. I.

In January, 1795, Mr. Sitwell's grey mare ran Mr. Johnson's chestnut gelding, four miles heats, for £200 over the race-course at Doncaster, carrying *sixteen stone* each. The "Calendar" adds: "this was a hard race, and most powerfully contested; the extra high weights exceeding *the customary rules of racing etiquette.*"

In 1795 died Mr. Edmund Tattersall, the founder of the family whose name is identified with "the Corner." We shall have an opportunity, when we come to notice "Highflyer" among a few other of the most eminent racers of past days, to say a few words on the subject of the house of Tattersall.

The system during the last century and the commencement of the present, was a cruel and unnecessary length of course, crushing weights, and the barbarism of heats. These evils are now mitigated, and, as to the last, nearly abolished.

The longest course for the more important races is considerably under three miles, and the weights, except for Welter races with gentlemen riders, are always under ten stone. In Queen Anne's time we find for the Queen's Plate (run on Clifton and Rawcliffe Ings) the horses were weighted at twelve stone, and ran four mile heats. According to the laws of racing at that period, the horse which had won the first and second heats was obliged to start for the third, and to save his distance, to entitle him to the prize!* How it could have paid the

* As turf curiosities, and matters of reference, we transcribe from Peck's *Historical Racing Calendar,* and other sources, some of the more remarkable races, in heats, of the last and present century.

1709.—York (on Clifton and Rawcliffe Ings). A Gold Cup, value £50, for six years old horses, 12st. each, four-mile heat

Mr. Metcalfe's b. h. Wart	1	1	3
Mr. Hebblethwaite's gr. h. Stout	2	2	1
Mr. Wilke's b. h. Captain	3	3	2
Colonel Norcliffe's b. h. Squirrel	4	dis.	

1714.—York, Friday, July 30. A Plate of £10 for aged horses; 11st. each. Four-mile heats.

Her Majesty Queen Anne's Star	3	3	1	1
The Lord Chamberlain's Merlin	1	2	3	2
The Hon. Mr. Cecil's Creeper	2	1	2	3

We have already noted the deaths of the winning horse and its royal owner, page 383, *ante.*

owner of a "plater" in the days of Queen Anne, with the then expensive and slow process of travelling the horse by road to the meetings, to run twelve or sixteen miles for Her Majesty's munificent 20, 30, 40, or 50 gs. would puzzle a Scotch economist to calculate. The wear and tear of leather, iron, horse and man, corn, training, jockey's fee, and the inevitable expenses and deductions, must have left the honour of winning and love of the sport the only items on the credit side of the sportsman's ledger.

"Some writers recommend an alteration of the weights of the Queen's Plates to a heavier scale, and again to run four miles, for the encouragement of the breed of strong stout horses. This is the 'Gentleman's Magazine' of 1739 over again. What prizes can be better than an income of £1000 pounds per annum for a stallion, or £400 for a yearling, and a market prize of £500 for any thorough-bred horse which can carry twelve stone to hounds? As for the miserable Queen's Plates, 100 gs. each (amounting to only 5,000 gs. for the three kingdoms), being looked upon as a premium for breeding good horses, it is a drop of water. If 50,000 gs., instead of 5,000 gs., were given in plates of 1000 gs. for heavy weights and long distances, it would influence many breeders to put their mares to very stout horses; but on the per contrâ side there is £200,000 to be won by speedy horses; and one Derby to a speculating horse-owner would be equal in amount to the whole imperial gift. Very few horse-owners would start a *first-class* horse for a paltry 100 gs., two miles: they would not think of such an act of folly for four miles." So says Admiral Rous.

1717.—York, August. A Plate of £40, four-mile heats.

Mr. Pulleyn's Sly	1	1	1
Lord Huntingdon's Bully Rock	2	2	2
Mr. Stapleton's Bridget	3	3	3
Mr. Howard's Crutches, dis.			

High odds on Crutches, who was leading, near the distance-post; when his rider, Thomas Duck, intentionally threw himself off. The horse won the heat notwithstanding, but was distanced by not bringing in his weight.

1718. Newmarket. Duke of Wharton's Chance and Lord Hillsborough's gr. m., 9st. each; four miles; 500 gs., h. ft.; *ran a dead heat.*

1719.—Newmarket, April. Three Matches, six miles each.

1719.—Newmarket, October. Two matches of *six* miles each, one of *eight*. In the latter the Duke of Devonshire's b. m. by Basto, beat Mr. Frampton's Nutmeg, 8st. 6lb. each; 150 guineas, h. ft.

1720.—Newmarket, September. Duke of Wharton's Coneyskins, 11st. 10lb., against Lord Hillsborough's Speedwell, 12st.; *twelve mile* heats, 1000 guineas, h. ft. The match was drawn. Mr. Frampton's Hobler, 11st. 1lb., received forfeit from Lord Drogheda's Pickle Herring, 11st.; *eight miles*, 200 guineas, h. ft. Lord Hillsborough's Winchester beat Lord Drogheda's Beelzebub, 8st. 3lb. each; *eight miles*, 200 guineas, h. ft.

1721.—Newmarket, October. Mr. Panton's Molly, 9st. 2lb., received forfeit from Lord Drogheda's Tickle Pitcher, 9st.; four miles, 200 guineas, h. ft. Mr. Panton's Molly, 9st. 3lb., received forfeit from Lord Drogheda's Tickle Pitcher, 9st.; four miles, 200 guineas, h. ft. Mr. Panton's Molly, 9st. 5lb., received forfeit from Lord Drogheda's Tickle Pitcher, 9st.; four miles, 200 guineas, h. ft. The second of these three matches was to have been run fourty-four minutes after the first, and the third at the same interval after the second.

1722.—Newmarket, October. Mr. Panton's Molly beat Mr. Morgan's Bean, 9st. each; six miles, 300 guineas. Duke of Devonshire's Childers, 7 years old, beat Lord Drogheda's Chanter, 12 years old, 10st. each; six miles, 1,000 guineas. Mr. Cotton's Fox beat Lord Drogheda's Snip mare, 8st. 6lb.; six miles, 150 guineas, h. ft. Lord Hillborough's Sparks received forfeit from Colonel Pitt's Merry Pintle, 8st. each; six miles, 200 guineas, h. ft. Mr. Clarke's Tinker received forfeit in a racing match from Colonel Pitt; 7st. each; twelve miles, 500 guineas, h. ft.

1723.—Newmarket, October. Town Plate of 20 guineas, 12st. each, four-mile heats.

Mr. Glassock's Neal	2	2	1	1
Mr. Morgan's Ruffler	1	1	2dis.	

Lord Drogheda's Othello, was distanced in the second heat.

1724.—Newmarket, September. Lord Halifax's Red Robin and Lord W. Manners's Venus, 10st. each; six miles, 100 guineas, h. ft.; *ran a dead heat.*

1727.—Grantham. The Whimsical Plate of £40, added to a Sweepstakes. This was the first handicap. The horse that wins the first heat to win the plate, and the remainder to run for the sweepstakes.

1728.—Newmarket. Colonel Howard's ch. m., by a foreign horse, won the King's Plate, 10st. each; four miles.

1732.—Newmarket. Mr. Hutchin's b. m. beat Mr. Levin's b. m., 7st. 7lb.; twelve miles, 50 guineas, h. ft.

1745.—Chester, April. The annual City Plate, value £30, for any horse carrying 11st. exclusive of saddle and bridle; four-mile heats.

Mr. Brograve's Smiling Rilly	5	1	4	1
Mr. Parker's Shrimp	7	2	1	2
Sir H. Harpur's Darling	1	5	5	3

Sixteen miles for £30. Six others started.

1746.—September, Curragh of Kildare. His Majesty's Plate of 100 guineas for any horse carrying 12st.; four-mile heats.

Mr. Keating's Grenadier	5	4	1	1
Mr. Dillon's Ground Joy	4	1	3	2
Mr. Johnson's Forfeit	1	3	5	3

And two others. Would any modern sportsman like to race a valued animal sixteen miles with 12st. for £100; with deductions?

1747.—Burford, September. £50 for five and six years old, which had not won a Royal Plate; four-mile heats.

Mr. Keck's Lady Charlotte	5	1	2	1
Sir J. Moore's Shadow	4	2	1	2
Mr. Dutton's Rat	1	3	4 dr.	

And two others, drawn third and fourth heat.

1749—Newmarket, October. A £50 Plate for five and six year olds; four-mile heats.

Lord Portmore's Skin, by Crab, 6 years	3	4	1	1
Mr. Greville's Noble, 5 years	4	1	3	2
Duke of Kingston's Jolly Roger	1	3	2	3
Duke of Hamilton's Chance	2	2	dr.	

1761.—Carlisle, May. £50 for four year olds, 9st. each. Two-mile heats.

Dr. Dunn's Cadabora	1	7	0	3	†	1
Mr. Dalton's Bold Burton	8	5	6	1	†	2
Mr. Lupton's Stella	3	1	4	5	3	3

Six heats! Five others started. One fell; another ran against a post, and hurt his rider so much that he expired the same night.

In 1793 Mr. Donner's b. c. by Drone (afterwards called Meanwell) ran *fourteen heats* for *three Plates* within five weeks; viz., September 11, at Stockton, four heats; October 3, at Boroughbridge, five heats—the third a dead heat; and lastly, October 16, at Malton, five heats—the fourth a dead heat. The same jockey (J. Shepherd) won both of the five heats; riding Drowsy, by Drone, at Boroughbridge, and Mr. Donner's b. c by Drone at Malton.

1797.—Doncaster, September. One hundred pounds; weight for age. Two-mile heats,

Mr. G. Crompton's Warter	5	†	5	1	†	1
Sir C. Turner's Pepper Pot	3	†	1	5	†	2
Sir F. Standish's Stamford	1	3	6	2	dr.	

Four others started. 5 to 1 against the winner at starting. After each heat the betting fluctuated pretty considerably, as might be expected.

1800.—Egham, September. The Ladies Plate, for two, three, and four year olds. Two-mile heats.

Mr. Fletcher's Allegranti, by Pigeon, three years, W. Chifney	†	†	1	1
Mr. Slark's Lady Skirmish, by Pegasus, three years ...	3	3	2	2
Sir C. Bunbury's Gig, by Whiskey, three years ...	†	†	2dr.	

As marking an epoch in the history of the race-horse, we may here note the three first winners of the three leading races of the modern turf—the Leger, Derby, and Oaks—in the pedigree and performances of Hollandoise, Diomed, and Bridget.

Hollandoise was a grey mare, foaled in 1775, bred by Thos. Stapleton, Esq., of Charlton, Yorkshire. Hollandoise was got by Match'em dam, Virago. At Doncaster, Sept. 2, 1778, Hollandoise, entered by Sir T. Gascoigne, won the St. Leger Stakes of 25 gs. each, 16 subscribers, 2 miles, beating Sir J. L. Kaye's br. c. by Wildair out of Ovid's dam, Mr. Goodricke's Trinculo, Mr. Earle's Mariner, Mr. Vever's Young Morwick and three others. 6 to 4 agt. Wildair's colt, 5 to 2 agt. Hollandoise, 3 to 1 agt. Trinculo, 4 to 1 agt. Young Morwick, won easy. The winner rode by George Herring. In 1779 she did not start. At Newmarket First Spring, 1780, Hollandoise beat Sting, over the Beacon Course for 500 gs. At Newmarket First Spring, 1781, she walked over for the King's Plate for mares, 10st. She was beat in the Second Spring by Dictator, and sold to Lord Clermont. The next day she beat Mr. Hall's Epsom, but on a dispute as to Hollandoise having carried the proper weight, the purse was divided. At Newmarket First October Meeting, she won the 140 gs., B. C. Lord Grosvenor received 85 gs. to withdraw Pot-8o's. On Thursday she won the 70 gs. purse B. C. At Newmarket First Spring Meeting, 1782, Hollandoise won the King's purse, 12st. each, R. C. In the Second Spring Meeting, she won 50*l.*, D. C.; and in the same meeting, she received 85 gs. compromise from Fearnought, B. C., 200 gs., h. ft. She died soon after.

Hollandoise was beaten six times, viz.: three times by Pot-8o's, once by Dictator, once by Buccaneer, and once by Woodpecker. She paid a forfeit to Pot-8o's, and one to Fortitude.

Bridget, first winner of the Oaks, was a bay mare, foaled in 1776, bred by the Earl of Derby. Bridget by King Herod,* out of Jemima.

At Epsom, May 14th, 1779, Bridget won the Oaks' Stakes of 50 gs. each, 17 subscribers, beating Mr. Vernon's Fame, Sir J. Shelley's Lavinia, and nine others, 5 to 2 agt. Bridget, and 3 to 4 agt. Fame. At Newmarket July Meeting, she won a sweepstakes of 50 gs. each, six subscribers. In the First October Meeting, she won a sweepstakes of 100 gs. each, seven subscribers, Ditch In. In the Second October Meeting, she received forfeit from Lord Egremont's sister to Polly by King Herod, 100 gs. h. ft. At Newmarket Craven Meeting, 1780, Bridget won a Post stake of 200 gs. each h. ft. 3 subscribers Ditch In. In the First Spring Meeting, she received 130 gs. compromise from Sir C. Bunbury's Bonnyface, 300 gs. h. ft. In the July Meeting, she won one half of the Grosvenor Stakes† of 25 gs. each, 6 subscribers, B. C. And in the First October Meeting, she beat Lord Clermont's Postboy, 2 middle miles of B. C., 300 gs., 7 to 4 on Bridget. At Newmarket First Spring Meeting, 1781, Bridget received 135 gs. compromise from

1803.—Cardiff, July. A free Plate of £50. Four-mile heats.

Mr. Phillipps's Rolla, by Overton, six years	1	1		
Colonel Kingscote's Tango, by Buzzard, four years ...	2	2	†	†
Mr. Jenner's Highlander, by Rattler, six years ...	3	3	†	†

After the *two dead heats* Colonel Kingscote and Mr. Jenner divided the stakes. Sixteen miles for £25, *rayther* sharp work!

Six days afterwards, Highlander had a twenty mile job for the Stewards' Plate of £50, at Caermarthen, beating Rolla, who won the first heat, but fell and was distanced in the third. The brave Highlander got the second heat, King Edward, by Pegasus, the third, and the fourth proved a *dead* heat (query, dead *beat*) between Highlander and King Edward; the fifth was won by Highlander.

1804.—Lichfield, September. £50 for three and four-year-olds, that never won a plate of greater value. Two-mile heats.

Mr. Clifton's Sir Ulic M'Killigut, by Whiskey, four years old	4	4	1	†	1
Mr. Coventry's Laura, by Pegasus, four years ... ,,	1	3	†	2	
Mr. Kellerman's Mary, by Precipitate, four years ...	3	3	4	3 dr.	
Mr. Brooke's Optician, by Telescope, three years ...	†	2	2 dr.		

1806.—Bibury, June. Handicap Plate of £50. Heats, the new mile.

Mr. Douglas's Ducat	5	3	1	1
H. R. H. The Prince of Wales's Pedestrian	†	1	†	3
Mr. Mellish's Norod	†	4	†	2
Mr. Lindon's La Mancha	3	2 dr.		
Duke of St. Alban's b. m. by Young Eclipse	4 dr.			

1807.—Malton Craven Meeting, March. £50 for all ages. Two-mile heats.

Mr. N. Hodgson's Lady Mary, by Beningbrough, six years	†	†	1	1
Mr. Marris's Sir Sampson, by Stamford, three years ...	†	†	2 dr.	

Six miles for a three-year-old!

1809.—Leicester, September. The Burgesses' Plate of £50. Four-mile heats.

Lord Lowther's Hylas, by Beningbrough, five years	†	2	†	1	1
Sir T. Stanley's Viper, by Serpent, five years ...	1	3	†	2 dr.	
Duke of Rutland's Ned, by Teddy, four years ...	†	1	3	3 dr.	

1816.—Newton, June. A Plate of £70, the gift of T. Blackburn, Esq., weight for age. Three-mile heats.

Sir T. Stanley's Charioteer, by Young Chariot, four years	3	4	1	1	
Mr. Sykes's Outcry, by Camillus, five years	†	†	2	2	
Mr. Garforth's by Camillus, dam by Ruler, four years ...	†	† dr.			
Mr. Fletcher's Viceroy, by Sancho, six years	4	3 dr.			

1820.—Newcastle, Staffordshire, August. Handicap Sweepstakes of 5 guineas each, with 50 guineas added, for all ages. Heats, twice round and a distance.

Sir J. G. Egerton's Astbury, by Langton	3	3	3	1	1	
Mr. Mytton's Handel, by Governor (afterwards Theodore Majocchi)	†	†	†	2	2	
Sir W. Winn's Tarragon, by Haphazard	†	†	†	3 dr.		
Sir T. Stanley's Cedric, by Walrond	4 dr.					

The horses were handicapped by Dr. Bellyse of Audlem, Cheshire, the Admiral Rous of that day; and furnished evidence of his knowledge of the turf, Handel and Tarragon running three dead heats.

1825.—Wells, July. Sweepstakes of £5 each, with £30 added. Heats, one mile and a distance. Four Subscribers.

Mr. Dundas's b. c. by Pyramus	†	1	†	1	
Mr. Dilly's Parody	†	2	† dr.		
Mr. Small's Eaglet fell					

The Pyramus colt walked over for the last heat, Mr. Dundas dividing the stakes with Mr. Dilly. Small profit this, after the expenses of jockey, winning money, &c.

1827.—Newmarket, May. Handicap Plate A. F.

Mr. Scott Stonehewer's Goshawk	†	†	1	
Mr. Wyndham's Stumps	†	†	2	
Mr. G. P. Payne's colt by Octavian	3 dr.			

Three others started. Some money must have changed hands, as before the race it was 5 to 1 against the winner. After the first dead heat, 6 to 4 on Stumps; after the second dead heat, 5 to 4 on Stumps.

* See *post*, KING HEROD, Chapter VI.

† Lord Clermont's Interpreter received one-half the stakes to withdraw.

Lord Clermont's Hammer, B. C. 300 gs. h. ft. And in the Second October Meeting, she beat General Smith's Giraldola, B. C., 200 gs.

Diomed, first winner of the Derby Stakes at Epsom, was a chestnut horse, foaled in 1777, bred by the Hon. Richard Vernon, of Newmarket, and sold to Sir C. Bunbury, Bart. Diomed was got by Florizel, out of the Spectator mare, dam of Pastorella, Fame, &c.

At Newmarket Second Spring Meeting, 1780, Diomed won a sweepstakes of 500 gs. each, h. ft. 6 subscribers, Ditch In. At Epsom, May 4th, he won the Derby Stakes of 50 gs. each, h. ft. 36 subscribers, colts 8st. each, the last mile of the Course, beating Mr. O'Kelly's Boudrow, Mr. Waller's Spitfire, Sir C. Colinson's Wotton, Mr. Panton's Drone, Duke of Cumberland's Polydore, Lord Grosvenor's Diadem, Duke of Bolton's Bay Bolton, and Mr. Delmé's g. c. by Gimcrack, out of Wolsey's dam; 6 to 4 agt. Diomed, 4 to 1 agt. Boudrow, and 7 to 1 agt. Spitfire. At Newmarket July Meeting, he walked over for a sweepstakes of 100 gs. each, 7 subscribers across the flat. On Tuesday, in the First October Meeting a sweepstakes, of 100 gs. each, Ditch In. Next day he won the Perram purse of 30*l.* with 50*l.* added. On Friday, he received forfeit from Catalpa, by Turf, R. M., 100 gs. In the Second October Meeting, he won a subscription of 20 gs. each, 8 subscribers. At Newmarket Craven Meeting, 1781, Diomed received forfeit from Susannah, B. C. 500 gs. h. ft. In the First Spring Meeting, he won the Fortescue Stakes of 300 gs. each, 11 subscribers. In the Second Spring Meeting, he won the Claret Stakes of 200 gs. each, h. ft. and a hogshead of claret each, p.p. 14 subscribers, B. C.

At Nottingham, he was beat for the first time by Fortitude, and at Newmarket in October by Boudrow. In 1782, he did not start, but paid a forfeit to Crop. At Guilford 1783, Diomed won the King's Purse, three four mile heats.

Diomed was beat six times in 1783, viz.: at Newmarket for the Craven stakes, won by Alaric, in the First Spring Meeting; for the 50*l.* purse by Laburnum and Drone; also for the King's purse, won by Drone at Ascot Heath, by Soldier, and Oliver Cromwell; at Winchester for the King's purse by Anvil; and at Lewes for the King's purse by Mercury and Diadem. Diomed fell lame in running, and was put out of training.

Diomed was sold, after covering, in 1798, by Sir Charles Bunbury, for 50 gs. to go to America, where he was again sold for 1,000 gs. He died soon after landing.

On the 4th of December, 1786, a remarkable match against time for 1,000 gs. was run at Newmarket. Mr. Hull backed his horse, Quibbler, to run twenty-three miles within one hour round the Flat. He performed the distance in 58 minutes and 10 seconds; 5 to 2 in his favour at starting. He was ridden by a boy, about 4st. 7lb., who did not appear in the least fatigued. Considerable sums of money were betted on the event, it being the greatest performance ever done in England, by one horse, before that time.

In October 1791, at the Curragh Meeting in Ireland, Mr. Wilde made bets to the amount of 2,000 gs. to ride against time, viz.: 127 English miles in nine hours. On the 6th of October he started in a valley near the Curragh Course, where two miles were measured in a circular form. During the interval of changing horses, he refreshed himself with a mouthful of brandy and water, and was no more than 6 hours and 21 minutes in completing the 127 miles, having 2 hours and 39 minutes to spare. Mr. Wilde performed this match with ten thorough-bred horses from the stud of J. Daly, Esq. Whilst on horseback, allowing the odd minutes for changing horses, he rode at the rate of 20 miles an hour for six hours. He was so little fatigued that he was at the Turf Club house, in Kildare, the same evening. This feat, however, bears no comparison with that of "Squire" Osbaldeston, at Newmarket, in 1831. See *ante*, pages 411, 412.

On Monday, March 25th, 1799, one of the most remarkable matches on record—that between Sir Harry Vane Tempest's Hambletonian and Mr. Cookson's Diamond—was run at Newmarket, over the Beacon Course, for 3000 gs. The start took place at one o'clock, in presence of one of the greatest crowds ever assembled on the heath. Hambletonian started with the lead, which he maintained till the last half-mile, when Diamond challenged, and went up to him. A struggle ensued, which all accounts agree to have been one of extraordinary severity, and which excited the feelings of the spectators to an almost painful extent. Each jockey rode his horse with great steadiness and judgment, but have been accused of a too liberal dose of punishment—a very common fault with the jockeys of that day. A crowd of horsemen followed the struggling rivals, and it appears that the general opinion of the spectators was that Diamond would prove the winner. So close was the contest, that at even a few strides from the ending post the horses were head to head; but Hambletonian, by a great and final effort, some have said in the very last stride, won by a little more than half a neck. Both horses were much punished, especially Hambletonian. Diamond was in excellent condition, and was ridden by Dennis Fitzpatrick, while Hambletonian was piloted by Buckle, both being esteemed the best jockeys of that day. According to some authorities the four miles were run in 8 mins. 25 secs.; to others, 7 mins. 30 secs.; Hambletonian is said to have covered seven yards in his last stroke by the winning post. Large sums changed hands; the north countrymen having backed Hambletonian (a Yorkshire horse) to a large amount, and the Newmarket people taking the odds freely in favour of Diamond. The betting fluctuated from 6 and 5 to 4, in favour of Hambletonian, to even, and was at about the former quotation when the horses started. In addition to the original stake of 3000 gs. the owners of the horses are said to have had large by-bets.

Hambletonian was foaled in 1792; was bred by Mr. J. Hutchinson, of Skipton, near York; his sire King Fergus, dam by Highflyer, g.g. by Alcides, g.g.g. Panton's Crab, out of an own sister to Slip-by, by Fox, out of Duke of Bolton's Gipsy, by Bay Bolton, Duke of Newcastle's Turk, Byerley Turk, Tafilat Barb, Place's White Turk, out of a natural Barb mare.

Hambletonian was only once beaten: at York, in August, 1799, when running against Deserter and Spread Eagle, he ran out of the course, just after starting. He beat Spread Eagle easily next day. Hambletonian won the Leger in 1795.

Diamond was bred by Francis Dawson, Esq., of Newmarket. He was by Highflyer, dam by Match'em, grandson Barbara by Snap, g.g. by Cade, out of an own sister to the Witherington mare by Partner, her dam by Bloody Buttocks, Greyhound, Makeless, Brimmer, Place's White Turk, Goldsworth, out of the Layton Barb mare. Diamond was a beautiful brown-bay, compact, strong, and bony, and considered the best-couraged horse of his day.

Sir Harry Vane Tempest is said to have refused an offer of Mr. Cookson to run the same match over again, and was so pleased with his victory, that he would never again permit his favourite racer to start.

Such are a few samples of the recorded feats of the racers of the past century, of whom the *laudatores temporis acti* would fain persuade us "we shall never see their like again." That our race-horses are speedier now, no man of judgment can dispute. The superiority of the modern animal in this respect is visible to every judge of a horse. Mr. N. H. Smith, in his work entitled *Observations on Breeding for the Turf*, remarks, on the point of comparison between the race-horse of the present and the last century:—

"The style of racing now is totally different from that of former days. At present they run (except at country races) with light weights and short distances, where speed only can excel: formerly they ran with high weights and long distances, where bottom or stoutness was equally necessary; and hence it may be presumed that the horse, possessing qualities which might have brought him into distinction then, would not be calculated to obtain now an equal fame at Newmarket. It is, therefore, very natural to suppose that this difference in our style of racing may, in a certain degree, have altered the character of our racing stock. By a reference to former sporting publications, it appears that the horses were then smaller (most likely shorter in the leg) and, no doubt, capable of carrying weights, and *running in* better, than the present racers; which most probably are, generally speaking, longer in the leg, with less substance. It must be allowed that the horse that can go a good distance the best with high weights, is for all general purposes (and particularly for giving a value to any intermediate breed between the racer and draught-horse) the best sort of horse to resort to as a stallion; but there is something inhuman in the former practice of running four-mile heats with twelve stone weight, which must reduce the speed of the best horse in the world to a pace to which a race-horse ought never to be reduced. It is not racing, but a severe trial of constitutional strength, of the most distressing nature to the poor animal, and better calculated to gratify butchers and hawkers than the taste and feeling of gentlemen." Nor has any alteration in the practice of racing tended so much to redeem its character from the charge of cruelty, as the almost total abolition of three and four-mile courses. Happily, in this respect, we differ from those that have gone before us, who have been used to run their horses six and eight miles, and, as it is recorded, on even longer courses. "This difference, then, between the former fashion in racing, renders it very difficult to form any accurate opinion of the relative speed or goodness of the horses, and the inference probably is, that the horses of the present day are best calculated for the present mode of racing, since every man on the turf has naturally made every exertion to arrive at the same goal."

We now open upon the history of the race-horse in the 19th century. The more humane and rational system of lighter weights and shorter courses, introduced by Sir Charles Bunbury, was naturally producing a more general running of horses at an earlier period. The preparation of two-year-old "flyers," became an object of general interest. That stoutness was thus, to some extent, sacrificed to speed, it would be idle to deny, yet this result has been much exaggerated, and the degeneracy of the modern race-horse insisted upon with an obstinacy, and a want of true data for comparison most remarkable in those who have the most superficial knowledge of the subject. As a matter of course, as the good stakes came gradually to be attained by two-year-olds, and the greatest prizes of the turf fell to three-year-olds, shorter distances and lighter weights were a necessary consequence, and accordingly adopted. The horse was put earlier in training, and the greater proportion of first-class animals who may pass uninjured through the ordeals of early training, and who win two or three of the greater two and three-year-old stakes, command extraordinary prices, and go to the stud. That the system of precocious forcing has been carried too far is clear from the stir which the Jockey Club are at length making to check the annually increasing evil of ill-using young horses, bringing out yearlings to race in November, and training two-year-olds during the winter to meet their spring engagements, which are now advertised as early as the 18th of February. There is but one opinion among the leading members of the turf, that the racing season should be limited between the 1st of April and the 10th of November. While on the subject of yearling and two-year-old races, we shall, before proceeding to the performances of the race-horse in the present century, quote the substance of a few observations on the subject by the most experienced racing authority of the day.

"As, until within a few years, horses took their age from the 1st of May, you will observe two-year olds running in the Craven Stakes (now three-year olds), until the date was altered to January 1. But, with the exception of a few matches, no two-year old stakes were introduced before Monday Houghton, 1799, when they ran the first half of the Rowley Mile; and on Tuesday, in the same meeting, two-year olds carrying a feather were allowed to run for a £50 plate for all ages, last three miles, B.C. Many years elapsed before a two-year old ventured to run for it; and this plate was won, for the first time, by a two-year old, in 1794; the Duke of Bedford's ch. colt Cub carrying a feather of 4 stone.

"In 1786, the July Stakes for two-year olds were established,

July being considered the earliest month in which a two-year old ought to appear in public.

"Two-year old racing was patronized to a small extent, for in 1797 only forty-eight two-year olds ran in public; in 1807 thirty-three; in 1817 seventy-eight; in 1827 one hundred and forty-two; but in 1859 nine yearlings and five hundred and seventy-six two-year olds ran races in the United Kingdom.

"It stands to reason that if we overwork young stock of any description, bipeds or quadrupeds, we cannot expect perfection in maturity.

"The unwise system of early training, added to the facilities which railways afford to send horses to every race-course, have produced the natural results, and there are not above twenty old horses in training with sound legs and feet. There is only one remedy for this gigantic evil, and that remedy must be introduced by vigorous measures. The Jocky Club have commenced in the right direction, by abolishing yearling races. They must carry on the war by prohibiting two-year old races before the 1st of May. And I flatter myself that every sound-headed man would stand by the Jockey Club, and prefer the amelioration of the most noble breed of horses to the selfish consideration of early races.

"The abolition of the two-year old engagements in the early spring would obviate the necessity of naming for two-year old stakes on the 1st January; and the postponement of the nominations until the 1st of March would have a beneficial result, as then there would be no inducement to try yearlings in the autumn. It is not very uncommon to try yearlings five and six times before Christmas Day. I bought a three-year old (Villiers) by Bay Middleton, out of Olive, which had been tried seventeen times as a yearling before the 1st of January.

"It is easily comprehended that, from the extraordinary changes which have taken place in the system of early training to prepare young horses for the spring two-year old engagements, that thirty per cent. are damaged or in the hospital before they are three years old. Fifty years ago trainers had no idea of the capabilities of two-year olds to stand the work which is at present inflicted on them. They are now trained to the same pitch of perfection as old horses; and, unless they have the good fortune to catch a bad cough or distemper, some of their unfeeling masters will never give them a holiday during the racing season.

"This unnatural system has upset the present calculations of weight for age. It may be observed, that in all great weight for age plates and sweepstakes the old horses have no chance of winning. In stakes for two-year olds and upwards the two-year old wins; for three-year olds and upwards the three-year old wins. In short, all our weight for age races require a revision in favour of the elders. A similar revision took place about forty years ago, the old weights in the royal and public plates being preposterously in favour of the younger horses. If we could unanimously agree to abolish the practice of handicapping two-year old still the autumn it would be a salutary reformation; but rules difficult to enforce are objectionable.

"All nursery handicaps are a premium for vice. The distance selected is generally a mile, and the handicapper is asked to bring two-year olds together for that distance, who may have never run six furlongs, many of them not above half a mile, on the principle that the popularity of a race depends upon the uncertainty of the result. The race is generally won by the horse who has probably made his first effort to win, and for the first time in his life has been brought to the post fit to run." But Admiral Rous opposed Sir Joseph Hawley's proposition to postpone the running of two year olds till the month of July, which if carried would have in all probability tended immensely to improve our breed of race-horses.

The century was inaugurated by Champion, a bay colt, the property of Mr. Wilson, winning both the Derby and Leger for 1800. Champion was by Pot-8-os, bred by Lord Abingdon, a chestnut horse, foaled in 1773, by Eclipse out of Sportsmistress. In 1778, at the Newmarket First Spring, Lord Abingdon had intimated his intention of selling some of his horses. Pot-8-os was engaged in a sweepstakes of 100 gs. each eight subscribers. As the horses were starting, Lord Grosvenor asked his lordship the price of Pot-8-os. He replied, 1,500 gs. "With the chance of this race?" "Oh, certainly!" The bargain was struck, and, in a few minutes after, Pot-8-os and the subscriptions were Lord Grosvenor's. Pot-8-os died at Hare Park, Newmarket, in 1800, aged 27. His progeny figure in our best pedigrees. Waxy, winner of the Derby, 1793; Tyrant, winner of the Derby, 1802; Nightshade, winner of the Oaks, 1788, are among the best. Sportsmistress, dam of Pot-8-os, was also a chestnut, bred by Lord Craven, foaled in 1765, and sold to the Earl of Abingdon. Her sire was Sportsman (by Cade), her dam, Goldenlocks, by Oronooko; her dam by Crab, grandam by Partner, out of Waite's dun mare, by the Ancaster Turk. Pot-8-os was sire of Waxy, who was sire of four Derby winners: Pope (1809), the renowned stallion, Whalebone (1810), Blucher (1814), Whistler, (1815); three Oaks winners: Music, (1813), Minuet (1815), Corinne (1818). In 21 years (1788—1808) the produce of Pot-8-os won £61,971. For instances of large winning by progeny, see Marsk, King Herod, Eclipse, Highflyer, which are fully described under Chapter VI.

The following year was also illustrated by that remarkable mare, Eleanor, rode by Saunders, carrying off both Derby and Oaks for the first time—a feat achieved but once since, namely, by Blink Bonny (by Melbourne) rode by Charlton, in 1857. Eleanor (Sir Charles Bunbury's) was by Whiskey, Whiskey by King Herod, for whom see Chapter VI. Whiskey was also sire of Pelisse, winner of the Oaks, 1804. A little anecdote, well authenticated, illustrative of "the ruling passion," may find a place here. It runs as follows: Sir Charles Bunbury's training groom, a well-known character, and whose admiration for Eleanor was as undeniable as his knowledge of horseflesh, was seized with a fatal disorder a few days before the great

Epsom races. His illness increased his nervous anxiety, as his favourite was entered for both the great events. Finding him *in extremis* his relatives sent for a clergyman to administer the consolations of religion. The clergyman, in soothing tones, addressed him on his state of mind. The dying groom listened with docile acquiescence to his kind ministrations. Occasionally, however, the worthy man thought he perceived an uneasiness in his auditor, who seemed desirous to disburthen his bosom of some "perilous stuff," that weighed heavily on his mind. He earnestly exhorted the moribund trainer to disclose his secret, and relieve his conscience. Thus entreated, the dying man rose, and mustering his remaining energy, to the astonishment and scandal of the clergyman, exclaimed, in a hoarse whisper, as he leaned confidentially towards him—"Don't you be agen her—for depend on't, Eleanor's a h—ll of a mare to go." "Dying men tell truth," is a proverb. She won both the great races.

On September 19th, 1801, in a match for 500 gs., Sir H. Vane's Cockfighter was beaten by Mr. H. Johnson's Sir Solomon, 8st. 12lb. Vast sums changed hands (it has been said as much as £50,000) on this event. The betting at starting was six to four, and eleven to eight on Cockfighter. Sir Solomon took the lead, was never headed, and won by about a length and a half. The first two miles are said to have been run in three minutes, and the four miles in seven minutes and ten seconds; they ran twice round the Doncaster course, being a distance of three miles, six furlongs, and thirty-two yards.

Cockfighter was by Overton, dam by Weasel, grandam by Alfred, and so back to the Godolphin Barb. Overton was by King Fergus, his dam by King Herod, grandam by Snap, (son of Childers), out of the own sister to Regulus, by the Godolphin Barb.

Sir Solomon was by Sir Peter Teazle, his dam by Florizel. Although unsuccessful at first, he afterwards trained on to be a capital racer. Sir Peter (winner of the Derby, 1787,) was by Highflyer, by Eclipse; his Dam Papillon by Snap, out of Miss Cleland, by Regulus; Bay Bolton, Bartlett's Childers, Honeywood's Arabian.

In December, 1800, a curious match was run at Doncaster, with the avowed object of testing the speed of the horse and of the greyhound. It was by no means a satisfactory test. A racing mare was started, and when she had run nearly a mile a greyhound bitch was unslipped from the side of the course; she ran with the mare head and head to the distance-post, when five to four was laid on the greyhound: at the stand it was even betting, but the mare was first past the winning-post by a head. How could it be told that the greyhound tried to show its nose first from mere unurged emulation? We doubt if the dog was not just where it pleased to be, bounding beside the mare.

On Saturday the 29th of August, 1804, the last day of the York August Meeting, came off one of the most remarkable contests in Turf history, the celebrated Thornton match, which was thus entered:—"Match for 500 gs., and 1,000 gs. bye, four miles, between Colonel Thornton's Vingarillo, and Mr. Flint's br. h. Thornville, by Volunteer. Mrs. Thornton to ride her own weight against Mr. Flint's."

Certainly the novelty of a lady riding over a public race-course, against, in one instance, a professional jockey, was one that surprised not a little the weak minds of the sportsmen of that day. Certainly, as far as horse*man*ship, courage, judgment, and seat went, few could be found in any period to have competed with this fair equestrian.

Three days before the races, the lady jockey, mounted upon Vingarillo, took a four mile gallop. She was dressed in mazarine blue, and wore a neat black jockey cap, looked very well, and was in high spirits. Starting off in a canter, she sat her horse firmly, drew him out to the top of his speed, and showed that she had all his power perfectly in her command. All the knowing ones were astonished at the style of *horsemanship* in which she performed her gallop, and declared it equal to any Chifney or Buckle of the day. Unfortunately, when within about three distances from home, the saddle-girths gave way, and Mrs. Thornton came with considerable violence to the ground. By great good luck, the bold equestrian did not sustain the slightest injury. But to the race.

"Never did we witness," says the newspaper chronicler, "such an assemblage of people as were drawn together on the occasion—one hundred thousand at least. Nearly ten times the number appeared on Knavesmire that did on the day when Bay Malton ran, or when Eclipse went over the course, leaving the best two horses of the day a mile and a-half behind. Indeed, expectation was raised to the highest pitch from the novelty of the match. Thousands from every part of the country thronged to the ground. In order to keep the course as clear as possible, several additional people were employed; and, much to the credit of the military, a part of the 6th Light Dragoons, who were on the same duty, were unquestionably the cause of many lives being saved. About four o'clock Mrs. Thornton appeared, full of spirit, her horse led by Colonel Thornton; afterwards appeared Mr. Flint. They started a little past four o'clock. The lady took the lead for upwards of three miles in a most capital style; her horse, however, had much the shorter stroke of the two, but when within a mile from home Mr. Flint came up, and passed her. Mrs. Thornton used every exertion; but, finding it impossible to win the race, she pulled up, in a sports*man*like style, when within about two distances. Before the race, the odds in favour of the lady were 5 and 6 to 4; and in running the first three miles they went up to 2 to 1. During the last mile the tables turned, and Mr. Flint was backed at high odds. Never, surely, did a woman ride in a better style. It was difficult to say whether her jockeyship, her dress, or her beauty, were most admired—the whole was perfect. Mrs. Thornton wore a leopard-coloured body, with blue sleeves, the rest buff, and blue cap. Mr. Flint rode in white. The race was run in nine minutes and fifty-nine seconds. Thus ended the most interesting event ever witnessed upon Knavesmire. No words can express the disappointment felt at the defeat of Mrs. Thornton. The spirit

she displayed, and the good humour with which she bore her defeat, have greatly diminished the joy of many of the winners. From the very superior style in which the lady took her gallop on the previous Wednesday, betting was greatly in her favour; her *close-seated* riding astonished the beholders, and inspired a general confidence in her success. Not less than 200,000*l.* were pending on this match."

The following letter shortly afterwards appeared in the *York Herald*, which shows the pleasantry, as well as the pluck of the lady. We ought to mention that Mr. Flint was brother-in-law to the intrepid horsewoman, having married her sister.

"Mr. Editor,—Having read in your paper that Mr. Flint paid me every attention that could be shown upon the occasion of the race, I request you will submit the following elements of politeness to the gentlemen of the turf, for them to sanction or reject, upon any future match of this kind taking place:—

"Element 1.—Mr. Baker, who kindly offered to ride round with me, on account of the dangerous accident I met with on the Wednesday before, from my saddle turning round, was *positively* and *peremptorily* refused this permission.

"Element 2.—At the starting-post the most distant species of common courtesy was studiously avoided; and I received a sort of word of command from Mr. Flint, as thus—'Keep that side Ma'am!' For a morning's ride this might be *complimentary;* but it was here depriving me of the *whip hand.*

"Element 3.—When my horse broke down in the terrible way he did, all the course must have witnessed the very handsome manner in which Mr. Flint brought me in, *i. e.*, *left me out*, by distancing me as much as he possibly could.

"If these should be received as precedents, the art of riding against ladies will be made most completely easy.

"CHALLENGE.—After all this, I challenge Mr. Flint to ride the same match, in all its terms, over the same course next year; his horse, Brown Thornville, against any one he may choose to select out of three horses I shall hunt this season.

"Alicia Thornton.

"*Thornville Royal, Sept.* 1, 1804."

In the August Meeting of the following year 1805, at York, Mrs. Thornton's two matches came off. The first was one for four hogsheads of Côte Roti, 2,000 guineas, h. ft., and 600 guineas, p.p. (which the lady stood herself), wherein Colonel Thornton's Mr. Mills, alias Clausum Fregit, by Otho (rode by Mrs. Thornton), cantered over; Mr. Bromford paying forfeit. The second was entered as follows:—"Colonel Thornton's Louisa, by Pegasus, out of Nelly, 9st. 6 lbs. (ridden by Mrs. Thornton), against Mr. Bromford's Allegro, by Pegasus, out of Allegranti's dam, 13st. 6lbs., Mr. Buckle to ride. Two miles. 500 guineas. The following account of the race, from a contemporaneous chronicler, will not be uninteresting to our readers:—

"Mrs. Thornton appeared dressed for the occasion in a purple cap and waistcoat, long nankeen coloured skirts, purple shoes, and embroidered stockings; she was every way in health and spirits, and seemed eager for the decision of the match. Buckle was dressed in a blue cap, with blue-bodied jacket, and white sleeves. At half-past three they started; the *she*-questrian (as Charles Mathews was wont to call female equestrians), taking the lead, which she kept for some time. Buckle then put in trial his jockeyship, and passed the lady, keeping in front for only a few lengths, when Mrs. Thornton, by the most excellent—we may truly say—horse*man*ship, pushed forwards, and came in in a style far superior to anything of the kind we ever witnessed; winning her race by half a neck. The manner of Mrs. Thornton's riding is certainly of the finest description; indeed, her close-seat and perfect management of her horse, her bold and steady jockeyship, amazed one of the most crowded courses we have for a long time witnessed; and on winning she was hailed with the most enthusiastic shouts of congratulation." Rather a good afternoon's work, 2,205*l.*, and four hogsheads of claret.

The lady's prose style may be judged from the epistolary specimen above-cited. She appears to have been good "at all in the ring," the subjoined verses from her pen appearing shortly afterwards in a monthly miscellany.

THE YORK MATCH.

WRITTEN BY MRS. THORNTON AFTER THIS EVENT.

To the post we advanc'd, at the signal to start,
Brisk I flourish'd my whip over Louisa's ears;
When springing amain, by a resolute dart,
I gain'd a whole length of the jockey of peers;
That advantage to keep, as I rode fleet along,
Behind me full many a glance did I throw—
I soon found I'd the foot, but Allegro was strong,
And the jockey of peers carried weight, as you know.

I tried then to cut the third post pretty close,
At the same time the length I had gain'd to preserve,
Gave whip to my mare, but she kick'd at the dose,
And—a vile little devil—attempted to swerve;
I chang'd, and a left-handed cut brought her to,
But Buckle 'tween me and the post made a push,
And lay neck and neck with me, all I could do,
Not seeming to value my efforts a rush.

I led him, however, at length to a slough,
Where he sunk to the fetlock at every stroke,
My Buck had the bone—he press'd hard at me now,
And seem'd to enjoy much the best of the joke;
But I cross'd at the next post, and stretching my hand—
As I hoped to be sav'd, without malice or heat—
I put all his trials of skill to the stand,
For the famed jockey, Buck, I nearly threw from his seat.

He recover'd his saddle, by seizing the mane,
My mare darted forward, as swift as the wind,
Nor heard I of the horse or of Buckle again,
Till I turn'd and beheld them come panting behind;
My pleasure alone, that sensation defines,
Which the Laplander courts from the breeze of the south,
When I saw my Buck distanc'd, and dashed up the lines
With my mare hard in hand, and my whip in my mouth.

On the afternoon of the race a fracas took place at the stand between Mr. Flint, who rode against Mrs. Thornton in 1804, and Colonel Thornton, respecting the stakes won on that occasion, which Mr. Flint declared he had not received, and it ended in that gentleman's horsewhipping the Colonel. This led to a trial, which, however, did not come before a jury until September, 1808, when Colonel Thornton obtained 500 gs. damages.

On the 2nd of June, 1809, a well-known turfite, Mr. Weston, of London Wall, Moorfields, matched his horse Scorpion, for a bet of 150 gs. to 100 gs. to be driven by himself in harness, 100 miles in 12 successive hours, which he performed as follows :—

	miles.	hours.	min.
Started at 6 o'clock from Newmarket, through Cambridge to Godmanchester	27½	3	0
Baited...		0	40
Returned to Cambridge, and back to Godmanchester	29	2	59
Baited...		0	20
Back to Cambridge and returned to Godmanchester	29	2	55½
Greased the wheels		0	27
Back to Cambridge	14½	1	10
	100	11	31½
Won by			28½
		12	0

In the year 1809, at the first Spring Meeting at Newmarket, a great sensation was created by the poisoning of several race-horses in the stables of Mr. Stevens; the crime was effected by the introduction of arsenic into the trough at which the horses were watered. A reward of a hundred guineas was offered for the discovery of the offenders, who, however, succeeded for that time in eluding the pursuit of justice; but in 1811, emboldened by their success, they again perpetrated a similar offence.

At the commencement of the First Spring Meeting, 1811, Spaniard, Pirouette, The Dandy, and Sir F. Standish's Eagle colt, died in consequence of arsenic having been put into the troughs at which they were watered. Two horses, Reveller and Cœlebs, who drank some of the poisoned water, recovered. This atrocious act created general indignation, and a reward of 500 gs. was immediately offered by the Jockey Club for the discovery of the guilty party.

On the 15th of August, Daniel Dawson, a low *touter*,* was apprehended at Brighton, and committed by Mr. Conant, the magistrate, of Marlborough Street, to Cambridge Gaol; a true bill having been found against him by the Grand Jury for poisoning horses at the Newmarket Spring Meeting, in 1809.

A true bill was afterwards found against Dawson for poisoning the Eagle colt, the property of Sir F. Standish, at Newmarket, in the spring of 1811. His accomplice, one Cecil Bishop, was admitted Crown evidence, and deposed to the nefarious practices which they had carried on since the year 1808. The case was tried at the Cambridge Assizes, 1812, Mr. Serjeant Sellon being the counsel for the prosecution.

* *Touter*, one who looks about to see the "coast is clear."—*Slang Dictionary.* Men of low cunning, and with some little knowledge of the power of race horses, have always been employed by dishonest betters, to skulk about Newmarket Heath, and other race-courses, at the risk of retributive justice in the shape of a stout broomstick or a horse-pond, to discover and report such information about race-horses as to enable their employers to bet with advantage. They are called "touters."

The learned serjeant dwelt much on the enormity of the offence with which the prisoner stood charged. He said this was not an offence recognised at common law, but was founded on the statute of the 9th Geo. I. c. 22, which was enacted for the purpose of punishing persons maliciously wounding, maiming, and killing of cattle. The learned counsel was well aware that the mere killing would not support this indictment without an object attached to it. The statute upon which this indictment is founded did not specify further than unlawfully and maliciously killing animals, but the motives by which the killing and maiming were to be considered. If it be proved that the horse, the subject of this indictment, was killed by poison, then it would be necessary also to prove pre-existing malice, "and," said the learned serjeant, "let us see what the law terms 'malice' in this case. If a man kill or maim an animal in the moment of anger the offence would not be recognised by this statute, as revenge or malice to the animal alone would not be sufficient without an object. The malice must be against the owner, and it was not sufficient to apply direct malice against the owner even, but, as in this case, the law implied malice when the animal was killed for an object of gain or reward, though the offender had never seen the owner." The case for the prosecution rested on the evidence of Cecil Bishop, who had been apprehended with Dawson, and was now admitted evidence for the crown.

This man, who had been brought up to the trade of a chemist and druggist, deposed that at the instigation of Dawson he had prepared a strong solution of arsenic, which he had injected by means of a crooked syringe into the watering-troughs on Newmarket heath, especially those of Mr. Prince, by which means the horses mentioned in the present indictment were poisoned; he deposed, moreover, that he had been tempted into this crime in the expectation of receiving a share of the gains which were to be realized by a confederate of the name of Trist, who was to bet heavily against the horses thus made safe. Upon the conclusion of the evidence for the prosecution, Mr. King, the counsel for the prisoner, took an objection to the indictment, which charged the prisoner with being a "principal" in the alleged act of poisoning, when, in point of fact, he was an "accessory before the fact." On these grounds the judge immediately directed his acquittal, but refused to accept bail for the prisoner, which was tendered immediately on the conclusion of the trial.

Dawson was accordingly sent back to Cambridge gaol, to take his trial at the Autumn Assizes on another indictment, charging him with poisoning two brood mares, the property of Mr. Northey; and a hack, belonging to Mr. Adams, of Royston, at Newmarket, in 1809. His trial on this indictment took place at the assizes in July, 1812, before Mr. Justice Heath.

The prisoner was indicted under the Act 9th George I. c. 22, for feloniously, wilfully, and maliciously infusing white arsenic into a watering trough at Newmarket, on the 10th of July, 1809, and thereby poisoning certain horses and brood mares, &c.

The charges laid in the indictment having been proved as

clearly as circumstantial evidence will permit, Mr. King, for the prisoner, contended that no offence, in point of law, had been committed sufficient to constitute a felony. No malice had been proved against the owner, inasmuch as Bishop's evidence (this accomplice having been again heard as evidence for the crown) did not state there was any wish to go to the extent of killing the animal. The learned judge, however, thought to the contrary, and over-ruled the objection.

Dawson behaved with coarse levity during the trial, frequently making use of oaths and horrid imprecations whilst the witnesses were giving their evidence. His defence was a simple denial of his guilt, and he called no witnesses in his behalf.

Lord Foley, Lord George Cavendish, and others exerted themselves to obtain the extension of the royal clemency to his case, but without effect, and the unhappy criminal suffered the extreme penalty of the law on Saturday, the 8th of August, on the drop of Cambridge Castle. Nearly 10,000 persons were present on the occasion.

The sanguinary code of the period, and the prevalent practice of taking human life for a multitude of offences against property, seems to have hardened the hearts of public officials. Such an extreme punishment, though now it would revolt public feeling, appears to have been viewed with complacency.

This criminal was prosecuted at the expense of the Jockey Club, at a cost of £1,500.

The trial established the fact that, by the statute of the 9th George I. c. 22, the offence of poisoning or maiming race-horses, so as to gain money by incapacitating them from running a race, is made a capital felony, and punishable accordingly.

On the 29th of September, 1814, the following race between Captain Hanson's grey gelding, and a bay horse, the charger of an officer of the 14th Dragoons, excited much attention in the sporting world. The conditions were to gallop twelve miles over Blackwater course, Bagshot; and the match was won by the bay horse, which performed the distance as follows, viz:—

	M.	S.
1st mile	2	10
2nd „	2	8
3rd „	2	4
4th „	2	4
5th „	2	6
6th „	2	2
7th „	2	4
8th „	2	4
9th „	2	4
10th „	2	6
11th „	2	9
12th „	2	10
	25	11

On the first day of the Craven Meeting, 1816, a memorable match was run between Mr. Neville's ch. c. Sir Joshua by Rubens, 8st. 2lb., and Mr. Houldsworth's b. c. Filho da Puta by Haphazard, winner of the Doncaster St. Leger Stakes in 1815, 8st. 9lb.; R. M., 1000 gs. h. ft. Sir Joshua took the lead, which he maintained throughout, winning by a neck, after a spirited struggle. W. Arnold rode the winner, and T. Goodison Filho, in excellent style. Large sums depended on this event; the betting at starting being 11 to 8, and 6 to 4, on Sir Joshua.

After Sir Joshua had been beaten at the First Spring Meeting at Newmarket, by Castrella by Castrel, for the Handicap sweepstakes of 100 gs. each, A. F., Mr. Houldsworth challenged Sir Joshua to run the same match over again for 2000 gs., which offer was declined by Mr. Neville, who had the misfortune to lose this famous horse from an accident at Newmarket, on the 14th of December.

As this case is one of rare occurrence, we give the report of Mr. Bowles of Cambridge, who was called in to make a *post mortem* examination:—"With respect to the appearance of Sir Joshua, on opening his abdomen, I found at least four pails full of coagulated and fluid blood. His near pelvis was fractured, just where the head of the thigh is recurved into the socket, and a portion of the fractured bone had forced its way into the abdomen, and, by tearing the blood vessels, made an immense wound, which caused the fatal hæmorrhage. I think the accident must have occurred from the horse getting up hastily, having seen several similar fractures, but no instance in which the bone had forced itself into the cavity of the belly. Sir Joshua's lungs, and every other part which I saw, appeared perfectly sound."

On the 22nd of April, 1816, Mr. Bruen's b. f. Wire by Waxy, which he had purchased of the Duke of Grafton six months previously for 3000 gs., won a Gold cup and stakes to the amount of 3000 gs. over the Curragh, Ireland. This race excited considerable interest in England, as well as in Ireland, and Mr. Bruen is said to have won £20,000 on the event. It was stated in the public prints that no less than £300,000 was paid and received at Tattersall's in the settlement of the Derby of this year.

The reader will not have failed to observe that the fashion of heavy and long distance matches between first-class horses, and also cruel matches against time, had gradually fallen into desuetude. The latter had gone to trotting cobs and other animals of the "hack" breeds. Mr. Osbaldeston's 200 mile match we have already detailed. (See pages 411, 412, *ante*.)

In the year 1835 Mr. Bowes's ch. h. Mundig, by Catton, won the Derby, being the first time that race had fallen to a north country horse. The north country speculators won immensely on this race, backing Mundig against Ibrahim, the Newmarket favourite. The betting at starting was 7 to 4 and 2 to 1 against Ibrahim; 4 to 1 against Ascot, the second horse; and 6 to 1 against Mundig.

By far the best horse of this year was the Hon. E. L. Mostyn's Queen of Trumps, bred in 1832. She was a dark brown mare, and got by Velocipede out of Princess Royal, by Castrel out of Queen of Diamonds, her dam by Sir Peter out of Lucy, by Florizel, Frenzy by Eclipse; her dam by Engineer, Lass of the Mill by Traveller, Miss Makeless, &c. Her first appear-

ance was at Holywell Hunt Meeting, in 1834, when she won the Champagne stakes. In 1835 she won the Oaks in a canter, the Knowsley Dinner stakes at Liverpool, the St. Leger at Doncaster; thus winning both the Oaks and the St. Leger, which had never been done before. At the same meeting she was defeated by half a head,* by Ainderby, for the Scarborough stakes; and on the same day walked over for the Three Year Old stakes. In the following year (1836) she won the Stand cup, and walked over for the Marquis of Westminster's plate at Chester, the Borough cup at Newton, and a Post sweepstakes of 100 sovs. each at the Holywell Hunt Meeting.

Bay Middleton and Elis, winner of the Derby and Leger in 1836, are horses whose names have since become "familiar as household words:" a few lines shall, therefore, be devoted to their pedigrees and performances.

Bay Middleton, foaled in 1833, was got by Sultan out of Cobweb (winner of the Oaks in 1824) by Phantom, Filigree by Soothsayer, Web by Waxy, Trumpator, Prunella by Highflyer, Promise by Swap, Julia by Blank, Spectator's dam by Partner, Bonnylass by Bay Bolton, Darley's Arabian, Byerley Turk, Tafilat Barb, Place's White Turk, Natural Barb mare.

A reference to his performances for 1836 shows the following summary, viz:—The Riddlesworth, £2,600; the Bruton Street stakes, £150; the Two Thousand Guinea stakes, £1,600; the Derby, £3,475; the Buckhurst stakes at Ascot, £550; the Grand Duke Michael stakes, £650; total, £9,025.

In the races for the 2,000 gs. stakes, and Grand Duke Michael stakes, he met and defeated Elis. He was never beaten.

Bay Middleton did not, at the outset, confirm the great expectations entertained of him. The Flying Dutchman (see *post* pp. 427, 428) being the first great horse of his get, from the best mares of the country. Among his progeny are Aristides, Gaper, All-Round-my-Hat, Cowl, Marquise, Princess Alice, Ennui, Planet, Tiresome, Honeycomb, Andover, (winner of the Derby, 1854). The Stud Book, vol. viii, enumerates a dozen "Bay Middleton" mares with their colts and fillies. In 1854—5 he is advertised as the sire of 120 winners. Bay Middleton was bought of Lord Jersey by Lord George Bentinck, for 4,000 guineas. At his death he passed out of the Mostyn Stud, and became the property of Mr. Sidney Herbert.

Elis, foaled in 1833, was got by Langar out of Olympia, by Sir Oliver (son of Sir Peter); grandam, Scotilla by Anvil; great grandam, Scota by Eclipse; great great grandam, Harmony by Herod, Rutilia by Blank, Regulus, Sorcheels, Makeless out of the Darcy Royal Mare.

In 1835 this famous horse, as a two year old, won no less than £3,465 of public money. In 1836 he ran second to Bay Middleton for the 2,000 gs. stakes, being beaten only by a neck, after a most severe race, which excited the greatest interest. At Goodwood he won the Drawing-room stakes and the Racing stakes, and ran second to Hornsea for the Goodwood cup. After winning the Lewes stakes, beating a large field, Elis completed his greatest victory, the Great St. Leger stakes at Doncaster, winning easily by a length and a half.

On the 17th October, 1836, a Mr. Daniel rode a half-bred horse, in a match, for £50 a side, from the Peacock Inn, Islington, to the Angel Inn, Northampton, a distance of sixty-six miles, against the Telegraph, four-horse coach. They started from the Peacock, at a quarter before six, and arrived at Northampton at a quarter before twelve, Mr. Daniel winning, with a minute and a half to spare, and neither horse nor rider being seriously fatigued.

In 1838, the ring suffered heavily by the defeat of Grey Momus, first favourite for the Derby, won by Sir Gilbert Heathcote's Amato, 33 to 1; Don John, the best 3-year old of the year, winning the Leger.

Don John, a bay horse, fifteen hands three inches high, was bred by Mr. Garforth, in 1835, and sold when a foal to Mr. Ridsdale, at the sale of whose stud he was purchased by Lord Chesterfield for 140 gs. He was got by Tramp or Waverley out of a Comus mare, her dam Marciana by Stamford out of Marcia by Coriander, Faith, by Pacolet, Atalanta by Matchem, Lass of the Mill by Oronooko, Old Traveller, Miss Makeless, by Young Greyhound, Old Partner, Woodcock, Croft's Bay Barb, Makeless, Brimmer, Dicky Pierson, Burton Barb Mare. His performances as a two-year old had, even after Epsom races, placed him next to Ion in the betting for the Leger, and previous to the race he became first favourite. The field for this year's St. Leger consisted of but seven horses, the smallest that for upwards of twenty years had started for this great stake. Nothing could exceed the ease with which this splendid colt won the St. Leger, cantering in before the field six or seven lengths in advance, which distance he could evidently have increased. The fastest run up to Don John's time was 3 ms. 15 secs., by Reveller (carrying 8st., 2lbs.) in 1818; but in the interim the course by an alteration in the starting-ground had been reduced in length by 60 yards. Don John's time, 3 ms., 17 secs., (carrying 8st., 6lbs.) is the shortest over the New Course to the present time; Sir Tatton's Sykes's, (1846) 3 ms., 16 secs., (carrying 8st., 7lbs.) the next; then Blue Bonnet's (1842), and Newminster's, 3 ms., 19 secs., in 1857. The others are all 3 ms., 20 secs., up to 3 ms., 28 secs., (in Faugh-a-Ballagh's year.*) Lord Chesterfield's success in winning both the Oaks (with Industry) and St. Leger (with Don John) was hailed by the public with general satisfaction, from the deserved popularity of that nobleman as a sincere and generous patron of British field-sports.

Don John's next race was for the Doncaster Gold Cup, and here he again showed his superiority, by beating, with 3lb. extra, as winner of the St. Leger, Beeswing, the best mare

* Her defeat was caused by a dog running almost under her legs, when within the distance, which threw her out of her stride.

* In 1848 an official time-keeper was first appointed at Doncaster, Mr. Joshua Farrer, watchmaker of French Gate, Doncaster; from this period, we believe, absolute accuracy may be dated.

on the northern turf. Don John won this race cleverly by two lengths.

Don John started ten times and won nine; he was the sire of sixty winners, among these Iago, Arkwright, Distaffina, Athelstane, Maid of Masham, the Ban, Mrs. Taft, Barcelona, (1st and 2nd for the Cesarewitch, 1851), Lady Evelyn, winner of the Oaks 1849, and Spanish Jack, advertised (1860) as standing at Clay Hill.

At the Liverpool July Meeting, 1838, Harkaway, termed the Irish Eclipse, made his appearance on the English turf. Harkaway, a coarse horse, chestnut, with a white blaze, would appear to have had many of the characteristics of O'Kelly's phenomenon. In the previous year, 1837, Mr. Ferguson had offered to run his horse against Caravan for 1000gs., but Lord Suffield's flyer was fortunately engaged and could not accept the challenge. His performances at three years old on the Curragh were ten races out of eleven won. He was foaled, 1834; got by Economist out of a Naboclish mare, and came from the best blood on both sides. The Naboclish mare was bred by Lord Cremorne, in 1823, her dam, Miss Tooley, by Teddy the Grinder, out of Lady Jane, by Sir Peter. Economist (1825) was by Whisker out of Floranthe, bred in Yorkshire in 1818, by Octavian, her dam Caprice, by Anvil out of Madcap, by Eclipse, Blank, Blaze, &c. Harkaway started four times at the Curragh, in 1836, winning but once; in 1837, he ran eleven, winning ten. In 1838, he started eight times, and lost twice, all at the Curragh. In his first race at the Liverpool July Meeting, he ran second to Lord Eglinton's St. Bennet for the Tradesmen's Cup. At the same meeting, on the following day, he won the first heat for her Majesty's Plate of 100 gs., ran second for the next, and "although (qy.: because) the betting was four to one on him for the third, was drawn." At Goodwood, the same year, he carried off "the Cup," in a canter; and, in the following August, won the Cleveland Cup at Wolverhampton, giving Mr. Bowes's Epirus 3lb. At Doncaster, he beat Cardinal Puff, and three others, for her Majesty's plate of 100 gs., but fell in running for the Heaton Park stakes in the same month, the betting being even, Harkaway against the field.

In 1839, Harkaway won the Stand Cup, with 90 sovs. at Chester; the Gold Cup with 290 sovs. at Cheltenham; and the Gold Cup (value 300 sovs.), with 600 sovs. added, at Goodwood; on this occasion, beating Hyllus, Deception, the Doctor, Epirus, Beggarman, Bosphorus, Alemdar, and Richard Roe, all nine placed by the judge, so great was the "tailing." This was one of the fastest Cup races on record, the time being 4 mins. 58 secs (2 miles and a half). Harkaway had it all his own from the start, and won with ease by two lengths; Hyllus beating Deception (Oaks winner) by a length for second place; as for the rest they came home like "Brown's cows," in single file. Harkaway thus repeated the exploit of Priam in 1831-2. It may be remarked that the Cup has since fallen in two successive years to Charles XII. in 1841-2; and to that excellent mare Canezou in 1849-50. In 1840, Harkaway started but once, and was beaten (carrying 8st. 11lbs) for the Steward's Cup, at the Liverpool Autumn Meeting, by Gallipot (3 yrs. 7st.), and Champagne, (3yrs. 7st.)

The prostitution of this admirable racer's powers to the disreputable purpose of "making the market," and thereby plundering his backers or his opponents, as might suit "the book," renders any sure estimate of his real powers impossible. Such, however, was the general opinion of the sporting world of the conduct of those who had the control of this splendid animal, that Harkaway was excluded from the Goodwood Stakes, and from several other handicaps for which he was entered, or proposed to be nominated. Harkaway scarcely realized as a stud horse the fame he had acquired. In 1845 we find him at Mr. Joseph Burge's, Newmarket. Two of his sons were in force that year for the Derby, Connaught Ranger and Clear-the-way. In 1852 he was sold, in Ireland, for 500 gs. In 1854 he is returned as being the sire of 70 winners, standing at Duddinghill Park, Willesden. In 1859, five of his stock are advertised:—1, Wild Huntsman, winner of the Great Yorkshire, at Edinburgh; 2, Hercules, winner of Newmarket Handicap, at Banbury; 3, Horn of Chase, at Tynagh, Galway; 4, Idleboy, at Rawcliffe, York; and, 5, King Tom, at Mentmore.

The Derby of 1839, as we have already noticed (*ante*, p. 390) fell to Bloomsbury, after protest. This race was remarkable for being won in a snowstorm. The elemental commotion being matched by that in the "ring," when Cæsar (brother to Bay Middleton), Euclid, Sleight-of-Hand, Deception, Epidaurus, Dey of Algiers, and Ishmael, favourites at short odds of "all the talents," were bowled over by an outsider at 1,000 to 15. There were but two horses placed on this occasion—the winner first by a length; Deception, whose owner lodged a protest, second.

The Leger of the same year was won by a remarkable horse, Charles XII., after a dead heat with Euclid, which will be found described in pages 390, 391. Charles XII. was a brown horse by Voltaire, out of Wagtail (Laurel's dam) by Prime Minister; her dam by Bridle, out of Miss Grimsthorpe by Weasel, her dam Ancaster—Sampson—Oronooko, &c., his height 16 hands. Euclid was by Emilius out of Maria, dam by Whisker; her dam by Hermes out of Velocipede by Piscator, Beatrice by Sir Peter, &c. This year, the first after the change in the time of nomination, and the additional allowance to fillies,* there were 107 subscribers, the largest number up to that time, though but fourteen horses came to the post.

* These modifications were resolved upon in 1837, when, on the Thursday after the Leger, a meeting of the noblemen and gentlemen connected with the turf was held at the Club House, to take into consideration the propriety of making some alterations with regard to the conditions of the race. C. Greville, Esq., on the termination of the discussion, announced that it had been thought necessary to make an alteration in the weights, by granting an additional allowance to fillies. It appeared that, since the year 1800, only five fillies had won the race: viz., Paulina, in 1807; Altisidora, in 1813; The Duchess, in 1816; Matilda, in 1827; and Queen of Trumps, in 1835. This sufficiently showed, either that very few were entered, or that, being entered, they ran under some disadvantages. It was finally agreed that in future the weights for colts should be 8st. 7lbs., and for fillies

Charles supplemented his Leger victory by winning the Doncaster Cup in 1839, and thus offers us a fair line of demarcation in turf annals, which we shall avail ourselves of to mark a period in our historical sketch of the race-horse; carrying forward to the tenth chapter the doings and descents of the leading racers of the twenty years from 1840 to 1860.

In 1840, Charles XII., at the Liverpool July Meeting, on Tuesday (4 yrs., 8st. 13lbs.), ran third to Sleight-of-Hand, (4 yrs., 7st. 11lbs.), and Sampson, (4 yrs., 7st. 8lbs.) Orelia, St. Bennett, Cruiskeen, The Doctor, Retriever, Deception, Modesty, Bolus, George, Mickleton Maid, Grey Milton, Broadwath, Wirrestrew, not placed. On the Thursday at the same meeting, (carrying 8st. 10lbs.) he met and defeated Lord Westminster's Maroon, (3 yrs., 7st. 4lbs.), for the Grosvenor Stakes. He was not placed at Goodwood for the Cup, won by the Duke of Orleans' Beggarman, (bred in France), and at Doncaster he failed to repeat the victory of the previous year, the renowned Beeswing being first, and the Provost second, Charles third, Maroon, Sampson, and Vermilion 4, 5 and 6. For the Steward's Cup, at Liverpool Autumn, won by Gallipot, 3 yrs., 7st., Charles was fourth, Champagne and Harkaway, second and third. Charles went north in October, to Dumfries, to illustrate the races there, under the patronage of Mr. J. J. Hope Johnstone, M.P. for the county, but that stout 5 year old horse, Lanercost, going with him for the Gold Cup, defeated him in a close run race. Thus closing a chequered year's running.

In 1841, Charles XII. was early in the field, opening the campaign at Catterick Bridge, on the 15th of April, by winning the Gold Cup, beating Oak Branch, and Kaiser (who broke his leg). On June 21st, he once more met Beeswing on her own ground, at Newcastle, where "t'auld mare" was thought to be invincible (she won the Cup in four successive years, 1836 to 1839, and repeated the exploit in 1841, '42), and defeated her for the Craven Stakes, Hull Bank and Assagai being third and fourth. 5 to 4 on Beeswing, 7 to 4 against Charles XII. The excitement and astonishment of the "canny Newcastle" men, to Job Marson thus bowling over their crack, was something wonderful to see. They deserted her in the betting on the Wednesday following for the Gold Cup, and backed Lanercost at 5 and 6 to 4, as "t'auld mare was amiss,"—and paid for it: she won triumphantly. At Liverpool July, Charles (9st. 3lb.) ran for the Tradesman's Cup, won by Orelia, 7st. 6lbs. In July, at Goodwood, he carried off the Goodwood Cup and subscription of 20 sovs. (51 subs.), beating Hyllus, the Recorder, the Potentate, Bulwark, Maroon, Colwick, Pocahontas, Nautilus, Oakstick (the two last bred in France). At Wolverhampton, he won the Cleveland Cup, beating Isaac, Melodrama, and Cainby. He next walked over for the Whip, at Stirling October Races, with a sweepstakes added; on the same day having beaten Zoroaster for 50 sovs. given by the Caledonian Hunt, and a sweepstakes of 100 sovs. ea. The next day (Friday) Charles walked over for her Majesty's Plate; his prowess, like his renowned namesake of Sweden, deterring the whole North. At Edinburgh, on the 12th of the same October, he walked over for her Majesty's 100 Guineas, and completed a Scotch tour by another promenade at Dumfries on the 19th, for the Roxburgh Gold Cup (150 gs., with a sweepstakes of 10 added, 7 subs.) Little Known, brother to Little Wonder, 5 yrs. 7st. 10lbs., and c. by Master Syntax, 3 yrs., 6st. 12lbs., tried the mile and a half against Charles (9st. 10lbs.), and were beaten: thus ended a most remarkable year.

In June, 1842, Charles XII. was again at Newcastle, and there met Beeswing for the Subscription Gold Cup; the mare beat him by four lengths: betting even. And now came his great match with Mr. Lichtwald's Hyllus, over the Goodwood Cup Course, on Tuesday, July 26th, for 1000 sovs., h. ft. Charles, 8st. 7lbs., Hyllus, 8st. 2lbs., which was a splendid race, won by Charles by a neck. On the Thursday following, Charles won the rich Goodwood Cup, (6st. 9lbs.) beating Policy, 6st. 10lbs., Fireaway, 6st. 11lbs., Thistlewhipper, 8st. 5lbs., Sleight-of-Hand, 8st. 11lbs., The Squire, 8st. 5lbs., Belcœur, 6st. 5lbs., Yorkshire Lady, 6st. 6lbs., b. h. Priam, by Priam, 7st. 12lbs., in the order here placed. At Doncaster he ran, but not placed (9st. 12lbs.) for the Great Yorkshire Stakes, won by Galanthus (5st. 12lbs.), Disclosure, 7st., 2nd. On the Thursday, at the same meeting, Beeswing once more beat him for the Cup, Attila and Shadow third and fourth. At Kelso, in September, Charles, with 10st. up, ran second to Cabrera (7st. 9lbs.), Little Wonder, third, 9st. 10lbs. He also, next day, was second (9st. 12lbs.) to Whistle Bintre (3 yrs., 7st.) for a sweepstakes with 100 added. At Perth, in October, he won the

8st. 2lbs.; that the subscription for the St. Leger for 1839, and all future St. Legers, should close on the 1st of January. By this alteration, the nomination for 1839 was appointed to take place on the ensuing 1st of January; and in future the horses, when nominated, should be two-year-olds, instead of three, as heretofore—an alteration which had the effect of increasing the number of subscribers considerably. The immediate proof of this was apparent in the fact that the nominations for 1839 amounted to one hundred and seven, whilst the number of the preceding year was only sixty-six. Although, however, this change worked well, a conviction lingered in the minds of many persons well acquainted with the subject that, in order to ensure success, the original subscription of 25 sovs., p p, and not 50, half-forfeit, must, in the course of time, be re-adopted, in order to regain the popularity which was evidently on the decline in the estimation of the racing community. This alteration was effected in 1851, when the stake was reduced again to 25 sovs., pp., the second horse to receive 100 sovs. In 1845 the Leger day was altered to Wednesday from Tuesday. Of the weights we may observe; that at its institution they were, colts 8st., fillies 7st. 12lbs. In 1790 they were altered to colts 8st. 2lbs., fillies 8st.; in 1826 they were further increased to colts 8st. 6lbs., fillies 8st. 3lb.; in 1839 again changed to 8st. 7lbs. colts, 8st. 2lbs. fillies. A yet greater alteration has been effected in 1860 at a general meeting of the Jockey Club, held at the New Rooms, Newmarket. On Wednesday, July 4th, present—Duke of Beaufort, Hon. Admiral Rous, Lord Portsmouth, stewards; Mr. Alexander, Mr. Batson, Count Batthyany, Lord Clifden, Mr. W. S. Crawfurd, Sir H. Des Vœux, Mr. Etwall, Lord Exeter, Lord Glasgow, Mr. Greville, Sir J. Hawley, Mr. Lowther, Mr. Nevill, Mr. Payne, Lord W. Powlett, Lord Stamford, Mr. Savile, Lord Strathmore, Lord Wilton, Sir W. W. Wynn, the following, among other resolutions, was agreed to:—

"Resolved—That the weights for the Derby, the Doncaster St. Leger, the Two Thousand Guineas, and Newmarket Stakes shall be, colts 8 st. 10 lbs., and fillies 8st. 5lbs., and that in the Oaks and One Thousand Guineas Stakes the fillies shall carry 8st. 10lbs. each.

Challenge Whip and Sweepstakes of 15 sovs. each, beating Foxberry. At Dumfries, in the same month, he again met and defeated the same horse for the Gold Cup. Thus ending 1842.

The aged Charles commenced 1843 by running, 9st. 13lbs., not placed, for the Gold Vase at Ascot, won by Gorhambury (7st. 7lbs.), Sirikol, 6st. 13lbs., second, St. Francis (9st. 9lbs.), Hyllus, 9st. 9lbs., among the defeated old ones. At Newcastle, in June, he defeated br. c. by Agreeable, 4 yrs. for the Craven Stakes, but was not placed for the Gold Cup at the same meeting, won by the Queen of Tyne, Priscilla Tomboy second, 5 to 4 on Charles XII., 3 to 1 against the winner, 5 to 1 against Priscilla. For the Goodwood Cup, won by Hyllus, he was not placed, Sirikol second. The judge not having placed a third, the £50 which the third horse was to receive, was decided by the Jockey Club, to whom the case was referred, to belong to the winner. At Doncaster, Sept. 16th, Charles XII. made his last appearance, running second to that stout and splendid racer, Alice Hawthorn, Arundo third, and seven others not placed. Charles now went to stud.

Thirteen brood mares of his progeny are in the Book for 1857, and incidental notices of such as have bred winners may be found hereafter.

CHAPTER V.

THE RACE-HORSE CONTINUED.—THE RACE-HORSES OF THE TWENTY YEARS, 1840—1860, WITH INCIDENTAL NOTICES OF THEIR SIRES AND PROGENY.

The Derby of 1840 was snatched by an inferior horse, Little Wonder, defeating Launcelot, who won the Leger in the autumn.

The Oaks, however, brought forward the best mare of her period, Lord George Bentinck's Crucifix.

Crucifix was by Priam, a sire who had already given us two winners of the Ladies' Race; Miss Letty (1837), and Industry (1838). Crucifix's dam was Octaviana, by Octavian; her dam by Shuttle, out of Zara, by Delpini—Flora by King Fergus, Atalanta by Matchem. Her two year old performances comprised the Jockey Stakes, in a canter by two lengths, beating Currency and five others; at the same meeting, with 9lbs. extra, won the Chesterfield Stakes, by two lengths, beating Iris. (There were several false starts, and two heats, for this race, the first being won by Iris by half a length; Crucifix, who lost start, second; Merle went to the post, was the cause of the false heat, and did not start.) At Goodwood, carrying 5lb. extra, won the Lavant Stakes, in a canter, beating Fire-fly and Exit by two lengths. Same meeting, with 7lb. extra, won the Motcombe Stakes, in a canter, beating Defendant and Iris (5lb. extra) by a length. At Newmarket First October Meeting, carrying 9lb. extra, won the Hopeful Stakes by a length, beating Jeffey (3lb. extra,) Capote, and seven others: there were seventeen false starts! Same meeting, walked over for a Sweepstakes, T. Y. C. In the Second October Meeting, with 7lb. extra, won the Clearwell Stakes by a length, easy, beating Gibraltar, Capote, Amurath, Perseus, and Spangle; all placed. Same meeting, won the Prendergast Stakes by a length, easy, beating Capote and Nicholas, who made a dead heat for second. In the Houghton Meeting, carrying 9lb. extra, ran a dead heat for and divided the Criterion Stakes with Gibraltar, beating Pocahontas, Amurath, Grey Malton, Olive Branch, Margaret colt, c. by Augustus out of Constantia, and Capote. At three-years old, in the First Spring Meeting, 1840, won the 2,000 Guineas Stakes in a canter, beating Confederate, Angelica colt, Black Beck, Scutari, and Capote, by a length; three placed. Same meeting, won the 1,000 Guineas Stakes in a canter, beating Rosabianca, Spangle, and Silistria, by a length; and at Epsom, the Oaks Stakes, beating Welfare, Teleta, and twelve others not placed.

The Leger, as before noted, fell to the lot of the Marquis of Westminster's Launcelot. The good fortune which smiled upon the Marquis of Westminster, in 1834, with his famous horse Touchstone, afterwards the sire of three St. Leger winners (Blue Bonnet, 1842; Surplice, 1848; and Newminster, 1851), again honoured the noble Marquis with triumph in 1840, with Launcelot. Both victors were by Camel, out of Banter; though the name of Westminster might not follow in close succession in the table of winners—like that of Petre in 1827, '28, '29, with Matilda, The Colonel, and Rowton—Eaton Hall, like Stapleton Park, was destined for a repetition of victories. If the noble Marquis was not sufficiently fortunate to win the races three years in succession, John Scott had the honour of training the four winners: of 1838, Don John; 1839, Charles XII.; 1840, Launcelot; and 1841, Satirist.

In the last named year, Mr. Rawlinson's Coronation, by Sir Hercules, carried off the Derby; and so high did he stand in public esteem, that he was the favourite for the Northern blue riband, at 2 to 1 on him. The amount of money laid out on Coronation was immense, and the double event of a Derby and Leger was regarded as a *fait accompli*. Eleven started, Coronation, Van Amburgh, The Squire, Pagan, Ermengardis, Eringo, Jack

Sheppard, Quilt Arnold, Galaor, and Satirist. The close of the run is thus described by a contemporary.

"The pace along the flat from the Red House was extremely fast, and the best qualities of the horses were put to the severest test. John Day roused Coronation—he held nobly onwards; and on reaching the bend of the white rails was first, a circumstance which was hailed by vociferous cheering from his many friends. Coronation was placed next to the rails; on his right hand was Satirist, and immediately beyond was The Squire. The struggle now became desperate: and amid the roar from the Stand, the words 'Satirist!' 'Coronation!' were alternately heard. Satirist was gaining upon, and closing with, the favourite. Coronation made a desperate rush, but the effort was not sustained; a second attempt was made, with a similar result. It was next head-to-head between Coronation and Satirist, while the chance of The Squire seemed hopeless. Up went the whip of John Day, and Coronation was severely flogged; Scott was also ready for the final effort. The favourite did not answer the whip as might have been expected; but although his speed did not appear to be (nor in truth was it) slackened, it was forcibly apparent that Satirist was going a-head of his formidable competitor. He received two or three severe strokes of the whip, and answered instantly. The final struggle was, if possible, more desperate. Coronation rushed, and rushed again; but on each occasion did not, as before, maintain the effort, and Satirist won the race by half a neck. A tremendous cheer burst from the assembled mass of spectators; and the telegraph placed near the Steward's Stand (the first time it was used, both for announcing those which had weighed as well as won) immediately announced Satirist as the winner—No. 14, as on the cards of the day. The Squire ran a good horse throughout, and was more than once disappointed. He came in third, Pagan was fourth, Van Amburgh fifth, Ermengardis sixth, and Jack Sheppard seventh. The race was run in three minutes twenty seconds; clear value of the stakes, £3,540." The race from beginning to end was of the most splendid character.

It would extend this chapter to an unconscionable length, did we regularly go through each year in chronological order, noting the principal winners of the three great races; and would further involve much repetition and waste of space, in a general work, to insert the pedigrees. We shall, therefore, merely glance at the doings of the crack animals of the twenty years, 1840–60, especially those who, by the performances of their progeny, still keep alive our interest in their names, or by their eminent feats have marked an epoch in our racing records.

Attila, the Derby winner, and first favourite in 1842, defeated by Blue Bonnet (the Earl of Eglinton's), and Cotherstone—that fine animal, although beaten by Nutwith in 1843—carry us on to the memorable Running Rein year, 1844. We must pause, however, to say a few words of Cotherstone, a bay horse, foaled in 1840, by Touchstone out of Emma (by Whisker). Emma was the dam of Mundig, winner of the Derby, 1835. The earlier performances of Cotherstone did not show him precocious, but few three-year olds improved more than Cotherstone did in 1843. He won the Riddlesworth and Column Stakes in the Newmarket Craven Meeting; the 2000 gs. in the First Spring; the Derby at Epsom; the rich Gratwicke Stakes; the Royal Stakes at Goodwood; and 2000 sovs. at Doncaster. His last race for the Leger was a fine turn for the fielders. Cotherstone broke down at 4 years old, when running for the great 300 sovs. each sweepstakes at Goodwood, and was immediately put out of training. He started in all 11 times, and won 7½ races. It is as a sire, however, he is distinguished. On Cotherstone's retirement, after his brief, but brilliant career, he was bought by the late Lord Spencer, and sent to Althorp, where he afterwards remained. His first season was 1845; his first two-year old stock therefore appeared in 1848. They opened well with Farthingale, who won the Chesterfield, the Granby, and the Prince of Wales's Stakes, at York. Glauca, too, carried off the Woodcote at Epsom; the Lavant at Goodwood; the Gimcrack at York; the Hopeful at Newmarket; and Nina the Rutland and Criterion. Borneo was a good horse in the next season, Bordeaux in 1850, and Glauca won the same year. Cotherstone, after eighteen years at Althorp, is stated as the sire of Henry of Exeter, Humphrey, Stepping-stone, the Wren, Brington, Copia, Hirsuta, Cheddar, Speed the Plough, Stilton, Hothorp, Woodcote, Pumicestone, Saraband, Polydore, Palmerston, Coleshill, Glenmasson, Ancient Briton, Eddystone, Northampton, Pandora, and forty other winners. We must also place to his credit Spencer, who, although no race-winner, took the prize in 1851, at the Chester Meeting of the Royal Agricultural Society of England, as the best thorough-bred stallion for getting hunters.

The year 1843 marks the retirement from the turf of the celebrated Beeswing, a mare whose renown will long live in the memories and traditions of the north. Her great triumphs for eight successive years—beginning with 1835, in the Doncaster Champagne; of four successive Newcastle Cups, in 1836, 1837, 1838, 1839, and then, with the interval of 1840 (Lanercost's win), twice again in 1841-2; and in the same year two Doncaster Cups, and the Ascot—may vie with all the stories of stoutness dwelt upon in past records of racing. Beeswing's numerous triumphs, and those of her successor, Alice Hawthorn, will find a proper place in the Appendix, after the separate notices of the great racers of the last century, especially as her history belongs more to the Racing Calendar than the Stud Book. These, with other stout platers, Catherina, the Hero, Rataplan, Chanticleer, will be sketched more or less fully, and by their postponement enable us to get more rapidly over the ground, as well as shorten the course.

The year 1844 brought its trials to the turf, and these trials did much to purify it, so far as racehorse-owning "legs" were concerned. This year brought out Orlando, another capital specimen of the Touchstone blood, and whose progeny now figure, and doubtless will long shine in many descendants. Indeed, since Blue Bonnet (by Touchstone) won the Leger in 1842, Cotherstone the Derby in 1843, Orlando the Derby in 1846, Mendicant the Oaks in 1845, Surplice the Derby and Leger

in 1851 (the last the sire of Musjid, Derby winner of 1859), the name of Touchstone has become a "household word" in equine genealogy. To return to Orlando. His dam was Vulture by Langar, her dam Kite by Bustard (son of Castrel) out of Olympia by Sir Oliver, Scotilla, by Anvil. Vulture was bred in 1833, and won every race she started for in 1837, as Col. Peel's ch. f. by Langar, except the Leger (won by Mango). The Colonel matched her against the renowned Grey Momus for a thousand; it was a heavy betting race, won by the mare.

Orlando's first two-year old performance was at Ascot, where, with Flatman up, he ran second to filly by Sultan junior for a produce stake. In the same year he won the July Stakes, beating a field of six youngsters. In the same (July) meeting, he beat by a length Lord Kelburne's filly by Retainer out of Purity, in a match for £200, giving her 3 lbs. At Goodwood he won the Ham Stakes, beating Mr. Wreford's f. by Sultan junior, (a former antagonist) f. by Elis out of Cestus, Muff, All-round-my-hat, Zenobia, Strathspey, and Ninety-one. At the same meeting on the Thursday he won a sweepstakes of 25 sovs., 6 subs., beating by a length the notorious Leander (Mr. Lichtwald's), and the Duke of Richmond's Strathspey. In 1844 Newmarket Craven, Orlando won the Tuesday's Riddlesworth, of 200 sovs. each, h. ft. (13 subs.), beating Baveno and Cloak. On the Thursday, in the same meeting, he won a sweepstakes of 100 sovs. each, h. ft. (6 subs.), beating filly by Beiram, out of Manto, by a length. The same day, he walked over for a sweepstakes of 200 sovs. each, h. ft. (6 subs.) At Epsom, ridden by Flatman, won the Derby Stakes of 40 sovs. each, h. ft. (153 subs.), beating Ionian, Bay Momus, and six-and-twenty others; 20 to 1 against Orlando, who won by two lengths. The race is noticed in the historical chapter, *ante* pp. 391, 392. At Ascot, he walked over for the Dinner Produce Stakes (18 subs.) His performances in these two years may be thus summarized :—

In 1843 he started five times, and won four: the July Stakes, value clear, £580; Match at Newmarket, £250; the Ham Stakes, £2,600; a Sweepstakes at Goodwood, £125; total £3,555. In 1844 he started five times, and won five: the Tuesday's Riddlesworth, £1,400; Stake at Newmarket, £300; Stake at Newmarket, £250; the Derby, £4,250; the Dinner Produce, £850; grand total, £10,555. Orlando's two best-known produce are Teddington, winner of the Derby, 1857, and Imperieuse, winner of the Sellinger, 1857.

Merry Monarch, by Slane; Pyrrhus the First, by Epirus; Cossack, by Hetman Platoff; winners of the Derby in '45, '46, '47—the Oaks winners in the same years, Refraction, by Glaucus, Mendicant, by Touchstone, and Miami, by Venison—with the Leger horses, The Baron, by Irish Birdcatcher, and Sir Tatton Sykes, by Melbourne, we pass, to come to Lord Eglinton's Van Tromp,—and the great trio, Surplice, the Flying Dutchman, and Voltigeur.

Lord Eglinton's Van Tromp was a dark brown horse, bred in 1846, got by Lanercost out of Barbelle (dam of the Flying Dutchman), by Sandbeck, her dam Darioletta, by Amadis out of Selima, by Selim—Pot-8-o's—Editha, by Herod.

Lanercost, bred by Mr. Parkin in 1835, was by Liverpool, out of Otis, by Bustard. In 1848, there were five-and-twenty winners out by him, including Van Tromp, War Eagle, Mr. Martin, The Swallow, Luminous, Crozier, and Ellerdale, the best mare of her year.

Barbelle, bred by Mr. Vansittart in 1836, had only one produce previous to throwing Van Tromp, a filly-foal by Muley Moloch, in 1842.

In 1846, Van Tromp, then two years old, won by a length the Mersey Stakes, at Liverpool, beating Wanota and eight others. At Goodwood, he won the Lavant Stakes, beating Clementina and eight others. At Doncaster, he won the Champagne Stakes, beating Planet and six others. At Newmarket Houghton Meeting, at 8st. 7lb., he received 50 ft. in a match against the Duke of Bedford's Eothen, 7st. 7lb. In 1847, Van Tromp ran third for the Derby at Epsom, (won by Mr. Pedley's Cossack) Mr. Bouverie's War Eagle second, and twenty-nine others not placed. At Newcastle-upon-Tyne, he won the North Derby, beating Helias, George Hudson, and Christopher. At the same meeting, he won the Gateshead, or Lottery Stakes, beating Tim Whiffler easily by four lengths. At Liverpool, he won the St. Leger, beating The Swallow and Executor easily. At Goodwood, he ran second to Planet for the Racing Stakes, being amiss at the time. At Doncaster, he won the St. Leger, beating Mr. Pedley's Cossack, (winner of the Derby) Lord Eglinton's Eryx, Philosopher, Jovial, Swallow, and Foreclosure. Won by two lengths. At the same meeting he walked over for the Gascoigne Stakes of 100 sovs. each, 30 ft.

In two years, (1846-7) he started ten times and won eight, his winnings being as follow :—In 1846—The Mersey Stakes, at Liverpool, value clear, £425; the Lavant Stakes, at Goodwood, £858; the Champagne Stakes, at Doncaster, £1,075; he also received a Match forfeit of £50. In 1857 — the North Derby Stakes, at Newcastle-upon-Tyne, £470; the Gateshead or Lottery Stakes, at Newcastle-upon-Tyno, £350; the St. Leger Stakes at Liverpool, £1,000; the St. Leger Stakes, at Doncaster, £3,275; the Gascoigne Stakes, at Doncaster, £150; total of 2 years, £7,645.

His other races were in 1848, started three times, won twice. At Goodwood on Tuesday for the Great Sweepstakes of 300 sovs. each, h. ft., 26 subs., two only came to the post; Van beat the Derby winner, Cossack, in a canter: value of stakes, £3,600. On the following Thursday he won the Goodwood Cup, beating Armin, Miss Sarah, and the following not placed :—Cossack, Chanticleer, Footstool, Gardenia, Fitz-Emilius, and Maid of Masham, value 300 sovs. and 270 added—£570. Van Tromp, 4 yrs., carrying 9st., 3lbs., was beaten for the Doncaster Cup, by Chanticleer, 5 yrs., 8st. 12lbs., and Ellerdale 8st., 2lbs. In 1849 Van Tromp, (9st.) started once, for the Emperor's Plate at Ascot, which he won, reversing the Doncaster verdict, beating Chanticleer (9st. 3lbs.) Cossack, (9st.) Collingwood (9st. 3lbs.) Van Tromp's total

winnings to his retirement amounted to £13,160, besides two cups. In 1849 Van Tromp was sold to Mr. Kirby of York and Murton. Here he was at stud till 1851-2, when he was sold to go to Russia.

It had become an established principle in turf logic with many more racing men than would have confessed it on the morrow of the Leger of 1848, that the Leger *must* be lost *because* the Derby had been won; indeed, the exceptions were so few—*one* only theretofore appearing on the books—as rather to serve to "prove the rule." Year after year's experience had shown that no matter how good the Derby winner, the sun of Doncaster set, at the close of that eventful day, with all the "shine" taken out of the southern visitor. If there was nothing within a stone or two of him, the "certainty" was nullified by drugging him, as in *re* Plenipotentiary (1834); or else the people who managed him got mixed up with another party, and played with their chance till they lost it, as in the Cotherstone case (1843); or, lest somebody should somewhere, somehow, "get at" the horse, they kept him at home and made him fat, and would not trust him with a gallop till his jockey was in silk, as they did with Coronation (1841); and as a last leaf in the "chapter of accidents"—in which we include many things done on purpose—the horse at the post, "fit to run for a man's life," somehow couldn't get away from it—at least not in time—as happened in 1827, with Mameluke. The year '48, however, was destined to break the charm of forty-eight anniversaries. The performance of Champion, in the last year of the 18th century, was to be repeated for the first time in the 19th; and the problem which had defied the skill, experience, and tact of the cleverest breeders, trainers, and jockeys, was accomplished by Surplice, the son of Touchstone. The victory was enhanced by that excellent mare Canezou being among the defeated.

Surplice, a dark bay horse, bred by Lord George Bentinck in 1845, was by Touchstone, out of Crucifix, by Priam, her dam Octaviana by Octavian—Shuttle—Zara, by Delpini—Flora, by King Fergus.

Touchstone, bred by the Marquis of Westminster in 1831, by Camel, out of Banter, by Master Henry, has been already dwelt on.

Crucifix, noticed in the opening of the present chapter, bred by Lord Chesterfield, 1837, was equal to her illustrious consort for her performances while in work. She also evinced excellence in the stud, producing, in 1842, as her first foal, that superior race-horse at two and three years old, Cowl, by Bay Middleton; in 1845, Crozier, by Lanercost; missed to Sheet Anchor in 1843, and hit this happy cross to Touchstone in 1845.

There is one feature in the pedigree of Surplice that we may point out merely on "the odd coincidence" principle. He was got by Touchstone, and he won the Leger; out of Crucifix, and she won the Oaks; Crucifix, by Priam, and he won the Derby. Thus numbering the winners of the three great races in his three nearest of kin.

In 1847, Surplice, then two years old, first appeared on the home circuit at Goodwood, where carrying 3lbs. more than anything in the race, he won the Ham Produce Stakes, beating Liston, Anglia, Distaffina, Contessa and Astrea. Won very easily by two lengths. At the same meeting, he won another Produce Stakes, of 300 sovs. each (8 subs.), over last three quarters of a mile of the Maidstone Course, beating Hope, Clerk of the Council, and Loadstone. Won in a canter by three lengths. At Doncaster, he won the Municipal Stakes, beating Miss Orbell in a canter by two lengths. At Newmarket First October, he received forfeit in the Buckenham Stakes. In 1848, Surplice, ridden by Templeman, won the Derby, (215 subs.), beating Springy Jack, Shylock, Glendower, and thirteen others. At Goodwood, carrying 8st. 10lb., he ran second to Distaffina, 8st. 2lb., for the Gratwicke Produce Stakes; Hornpipe, 8st. 5 lb., and Wiasma also started. At the same meeting, carrying 9st. 2lb., he ran third and last for the Racing Stakes of 50 sovs. each. Won by Glendower, 8st. 13lb.; Corsican, 8st. 7lb., second. Surplice was beaten off. At Doncaster, ridden by Flatman, he won the St. Leger, (132 subs.), beating Canezou, Flatcatcher, and the following not placed:—Justice to Ireland, Assault, Sponge, Escape, Besborough, and Cannibal. Won by a neck. At the same meeting he walked over for the North of England Produce Stakes, (19 subs.) At Newmarket First October, he won the Grand Duke Michael Stakes, (23 subs.), beating Flatcatcher by half a length. At Newmarket Second October, carrying 8st. 5lb., he was not placed for the Cæsarewitch. Thirty-one horses started for this race.

Summary.—In 1847, Surplice started three times, won three times, and received forfeit once:—The Ham Stakes, at Goodwood, value clear £2,150; Produce Stakes, at Goodwood, value clear £2,100; the Municipal Stakes, at Doncaster, £1,000; the Buckenham Stakes (forfeit), at Newmarket, £250. In 1848, he started seven times and won four times:—the Derby Stakes, at Epsom, £5,500; the St. Leger Stakes, at Doncaster, £2,975; the North of England Stakes, at Doncaster, £750; the Grand Duke Michael Stakes, at Newmarket, £1,100; total, £15,825.

In consequence of the lamented death of Lord George Bentinck, Surplice was disqualified for the Royal Stakes at the Second October Meeting, 1848, and the Great Four-Year old Stakes at Goodwood, which looked like his own, albeit the infirmity which soon after attacked his "understandings," was known and feared by those about him.

A more proper place than the present for a brief sketch of Canezou may not present itself.

Canezou, a brown mare, bred by Mr. Allen, in 1845, was by Melbourne out of Madame Pelerine, by Velocipede; her dam Baleine by Whalebone, out of Vale Royal by Souvenir. Melbourne, her sire, was by Humphrey Clinker out of a Cervantes mare. Melbourne was also sire of Cymba, winner of the Oaks 1848; of Sir Tatton Sykes, winner of the 2000 gs. and of the Leger 1846; of West Australian, winner of 2000 gs., and the Derby and Leger, 1853; of Marchioness, winner of the Oaks; 1855, of Blink Bonny, winner of the Derby and Oaks. 1857,

a very handsome beadroll of "first honours," to say nothing of upwards of four-score winners already on the list of his immediate descendants, and from among those of the second generation. Madame Pelerine, bred by Mr. Watt in 1832, made no figure on the turf, from which she retired at the close of her second season. The Stud Book has nothing to her name to compare with the Melbourne filly Canezou.

In 1848, Newmarket First Spring, Canezou won the Thousand Guineas Stakes, (32 subs.) beating Vexation, Prairie Bird, and the following: Miss Orbell, Tippet, Lola Montez, Attraction, Alphcia, f. by the Nob out of Rosalind. At Liverpool, walked over for the Knowsley Stakes. At Goodwood (6lbs. extra), won the Nassau Stakes, beating Helter Skelter, Tisiphone, and Tamarind. At York, won the Ebor St. Leger (61 subs.), beating Flatcatcher, Distaffina, and the following: Miss Harrison, The Lamb, Besborough, and Snowball, won by a length, easy. At Doncaster, ran second to Surplice for the Leger, lost by a neck. At the same meeting won the Park Hill Stakes (41 subs.) beating Queen of the May and Attraction, easily, by several lengths. At the same meeting walked over for a Sweepstakes of 200 sovs.

At Newmarket Second October Meeting she received 75 sovs. from Lord Exeter's Gardenia in a Match for 200, h. ft.; 8st. 7lb. each; T. M. M.

Summary.—In 1848 she started seven times and won six times; she also received in a match the Thousand Guineas Stakes, at Newmarket, value clear, £1,950; the Knowsley Dinner Stakes, at Liverpool, £100; the Nassau Stakes, at Goodwood, £500; the Ebor St. Leger Stakes, at York, £1,430; the Park Hill Stakes, at Doncaster, £930; a Sweepstakes, at Lancaster, £500; a Match forfeit, at Newmarket, £75; total, £5,485.

In 1849 Canezou started nine times. In the Newmarket Craven (4 yrs. 8st. 7lbs.), she won the Newmarket Handicap, beating Cockermouth (4 yrs. 6st. 10lbs.), Mrs. Taft, (4 yrs. 6st. 10lbs.), Sagacity, Hornpipe, Mirmilla, Valentinia, Tisiphone, Slug, Good Boy, Keraun, and Vasa, all at less weights. On the Wednesday, same meeting, received £100 forfeit in a match with Lord Glasgow's Big Jerry (8st. 4lbs.), Canezou at 8st. 7lbs. Was third (8st. 13lbs.) for the Gold Vase at Ascot, won by Glenalvon (7st. 3lbs.), Cossack (5 yrs. 9st. 7lbs.) second. Won the Goodwood Cup, (8st. 11lbs.), beating Chanticleer (6 yrs. 10st.), Black Eagle, Landgrave, Glenalvon, The Hero, Chicaneur and Juggler. Won the Queen's Plate at York August Meeting, beating Glenalvon by Swiss Boy, sister to Amorina, and f. by the Saddler. Next day, at same meeting, won the County Cup, beating Wensleydale, Confederacy, Crocodile and Sobersides. 4 to 1 on Canezou, won easily. At Doncaster September, she walked over for the 100 sovs. sweepstakes (5 subs.), and on the Friday in the same meeting (8st. 4lbs.) carried off the Doncaster Cup, beating Westow (7st.) in a canter, by two lengths. Any odds on Canezou. She finished the season by receiving forfeit from Sir J. Hawley's Fernhill (7st. 7lbs.), in a match for 500 sovs. 100 ft., at the Newmarket Second October. Her winnings in 1849 were—Newmarket Handicap, £725; a forfeit, same meeting, £100; the Goodwood Cup and £300; Queen's Plate and £270, at York; £400 and the Cup at Doncaster, and £100 forfeit at Newmarket Second October, nearly £2,000 and three Plates.

In 1850, Canezou, was third to the Flying Dutchman, Jericho second, for the Emperor's Plate at Ascot. Won the Gold Cup Stakes at Newcastle, beating Achyrantes: 5 to 1 on Canezou. She next carried off the Goodwood Cup, by two lengths, beating Cariboo, Cossack, Stultz, Knight of Gwynne, Maria Monk, and Probity. She finished 1850, by beating Lord Exeter's Gardenia (7 st. 6 lbs.), in a match for 500 sovs., over the T. M. M., in Newmarket Second October, Canezou carrying 10 stone. This closed her racing career. In 1852, she threw a br. c. (Paletot) to Touchstone; in 1853, a b. c. (Fazzoletto) to Orlando; was barren in 1854; in 1855 had ch. c. (Streamer to Longbow; in 1856, a gr. f. to Chanticleer, who was shot after breaking her leg; in 1857, a colt to the Flying Dutchman. The descendants of Canezou will doubtless long adorn the lineage of our racers.

Two names, inseparably connected, now rise on the turf horizon—the Flying Dutchman and Voltigeur.

The first-named, the noble subject of our frontispiece, was bred by Mr. Vansittart in 1846, his sire Bay Middleton, by Sultan—Selim—Buzzard—Woodpecker—Herod—Tartar—Partner—Jig—Byerley Turk, imported in 1689,—his dam Barbelle, by Sandbeck out of Darioletta, by Amadis out of Selima by Selim, her dam by Buzzard, grandam by Pot-8-os—Eclipse—Marske—Squirt—Bartlett's Childers—Darley Arabian.

An old friend, J. J. Harrison, Esq. (Vates), thus describes this model of an English race-horse, from long and intimate acquaintance; our portraiture by Harry Hall is justified by the pen of this experienced turf writer:—

"In colour he was dark brown, and in temper most gentle, as was indicated by an eye replete with intelligence, yet full of fire, betokening what he possessed—unflinching courage. His height was a shade over 15 hands 3 inches, nor was there a dash of white about him; the head rather lean, with touch of the Roman nose, carrying the ears a bit back, disposed to be large, with powerful neck, somewhat bowed; the shoulders deep and oblique, with splendid brisket; round in the barrel, with undeniable back, rising behind the saddle; superb arms, good gaskins, plenty of length to the hock, elastic pasterns, and sound feet.

"Standing over abundance of ground, united with fine level, and great bone, is that airy elegance which at once inspires confidence in speed as well as in endurance; the former of which he evidenced in the terrific pace from the Kilns to the last turn in the Emperor' Plate at Ascot, absolutely killing his field, as he did the latter, when he came in so fresh for the 300 sov. Sweepstakes over the Queen's Plate Course at Goodwood, that Marlow could only pull him up after scaling some yards of the all-but perpendicular terminus."

The style in which as a two-year old the Dutchman carried

off the July Stakes at Newmarket, a Sweepstakes at the same meeting, another at the Liverpool July, the Champagne at Doncaster, and the Two-year old at the same meeting, wound up his first year's performances with a fair promise, fully redeemed in the sequel, of greater triumphs to come. Hence he stood at the short odds of 2 to 1 against him at starting with a field of twenty-six horses; in this respect being bracketed with Col. Peel's Tadmor, by Ion, who managed to get third honours, Hotspur being second, while another colt by Bay Middleton (Honeycomb) was placed fourth.

In the interim of the great southern and great northern races for the "blue riband of the turf," the Dutchman went to Liverpool in July, walked over for the Bickerstaffe Stakes, of 100 h. ft., 5 subs., Old Dan Tucker declining a run for the money. The same day he walked over for the Post Sweepstakes of 200 sovs. each, h. ft., 9 subs., Chantrey withdrawing his stake, and this brings us to the Great St. Leger.

The charm once broken by Surplice, the enthusiastic declared the Derby horses had got the "groove," and that a similar achievement would become of common recurrence. The Leger of '49 renewed to many the memory of Lord George Bentinck, who remarked shortly before his death that the time was not far distant when his favourite horse Bay Middleton would prove the sire of a Leger winner, and probably the winner of the double events. The Derby of 1849, however, having taken three minutes to run, while that of Surplice's year was covered in 2 min. 48 secs., was adduced by some to show that the Dutchman was no such "flyer." The friends of the Dutchman, however, held firm by the conviction that if he were put to the severest possible test over the Doncaster ground, the blood of Bay Middleton and of Sultan would prove triumphant, and thus verify the opinion entertained by Lord George, while Lord Eglinton would receive a repetition of his triumph with Blue Bonnet in 1842, and with Van Tromp in 1847. A condensed description of this repetition of a Derby win we must find space for.

Only ten competitors made their appearance out of one hundred and forty nominations. The first that came within the enclosure was Honeycomb (Robinson), followed by Saucy Dick (Flatman); then Scott's two—Nunnykirk (A. Day), and Thringarth (F. Butler); the former, the pet of the stable, was led by Hayhoe, who expressed his confidence that this scion of Touchstone and Beeswing would do more than was generally anticipated. Next were Vatican (J. Marson), and Herbert (S. Rogers), and Weston (C. Wintringham). Many inquiries were made for the favourite Derby victor, and the Flying Dutchman (C. Marlow), with Elthiron (J. Cartwright), and Old Dan Tucker (S. Templeman), were observed approaching from Carr House Lane. Honeycomb looked well, Vatican was in high spirits, and Saucy Dick in excellent condition. The same remarks applied to Nunnykirk, and his fine action engrossed general attention; but the superiority of the Dutchman, with his magnificent condition, as Marlow cantered him along, made his opponents tremble. The betting was 2 to 1 on the Dutchman, 15 to 1 against Nunnykirk, 15 to 1 against Vatican, 16 to 1 against Old Dan Tucker, 20 to 1 against Thringarth, 35 to 1 against Herbert, 40 to 1 against Saucy Dick, and 50 to 1 against Honeycomb.

At this moment the rain descended very heavily, and the customary attractions of the stand were obscured. The generality of the spectators were, indeed, more busily employed in providing for their own security from the pelting of the rain than watching the start. In advancing up to the post, Honeycomb, whom Robinson had intentionally kept in the rear, rushed through the horses to the front, and occasioned a short delay; reforming, however, and becoming steady, Mr. Hibburd dropped his flag, and the whole lot got off at once; but there was no cessation in the rain. It was expected that, in consequence of the drenching wet, the pace would be unusually slow; but Saucy Dick, rushing off with the lead, made it very fast as far as the hill; Vatican and Herbert were well up with him. It was, however, impossible, even as they ascended, to discern the colours of the jockeys through the dense rain and mist; but as nearly as could be ascertained, the Dutchman and Nunnykirk were, at this point, about seventh and eighth, and Honeycomb the last. Down the hill, past the milepost, to the Red House, the pace was slower; but it was sufficiently fast for Saucy Dick, for, on reaching the latter point, he had had enough of it. Marson instantly took up the running with Vatican. In making the bend, the whole of the horses were well up. The Dutchman, with Nunnykirk close at hand, was ready for the severest struggle; he was going with apparent ease, and his immense stride was marked by his competitors; while the memorable expression of Lord George Bentinck—"Whoever beats the Dutchman must be the devil"—was brought to the remembrance of many parties, and their confidence was increased. On they came through the drenching rain, and there was a loud roar from the Stand "The Dutchman wins!" as Marlow, steadying his horse, went to the front in the most admirable style. His splendid action, rendered more potent by his indomitable resolution and courage, became more and more apparent, and, let loose, he rushed past the post by two lengths, amid the roar of the multitude. Vatican was caught by Nunnykirk opposite the Stand, and defeated him for the second place; Honeycomb, not placed, was fourth; Elthiron fifth, Thringarth sixth, Old Dan Tucker seventh, Saucy Dick eighth, Herbert ninth, and Weston last. When the Dutchman pulled up, he did not evince the slightest symptoms of distress, and as he returned into the inclosure, he was greeted with the most enthusiastic cheers. Fobert shared in a similar ovation; and the unsullied reputation of years, acquired not only by skill and experience, but by a line of proceeding which never swerved from the course of propriety — each purpose, "within the eye of honour," held steadily in view—received, by this achievement, additional lustre. As, however, the respective competitors returned to scale, the appearance of the jockeys was pitiable; they were completely drenched in rain. In some instances, it was almost impossible to tell what the jackets denoted; they were spotted with mud, and the colours had run into each other and com-

pletely obscured their character, while the caps had assumed all possible shapes, and looked perfectly ridiculous. The race was run in three minutes twenty seconds. The superior style in which the Dutchman accomplished this second triumph was the subject of almost incessant remark, and whatever superior qualities he might possess from his high descent, the admirable condition in which he was brought to the post was the subject of general observation.

Thus was "the topmost round of fortune's ladder" attained by the son of Bay Middleton and Barbelle.

The next day (Thursday) the Dutchman walked over for the Foal Stakes, (9 subs.), none daring to meet him with his 5lbs. penalty. He next received 500 ft. from Lord Clifden's Honeycomb, in a match for 1000, to be run on the Tuesday in the Second October Meeting: the Dutchman 8st. 7lbs., Honeycomb 8st. 4lbs. He finished the year 1849, by winning in a canter, by eight lengths, the Belvoir Stakes, of 200 sovs. each, 6 subs., at the Houghton Meeting, beating Sir J. Hawley's Vatican, 8st. 7lbs., against his own 9st.

In 1850, on the Thursday at Ascot, he won the Emperor of Russia's Plate of 500, added to a sweepstakes, beating Jericho, Canezou, Little Jack, and Peep o' Day Boy. The race was won in a canter by eight lengths. On the Tuesday at Goodwood, he again met Vatican, in the Great Sweepstakes of 300 sovs. h. ft., 12 subs., for four-year olds, Queen's Plate Course, beating his opponent by ten lengths.

A little anecdote is told of the running for the Emperor's Plate. Lord Stanley (late Earl of Derby) and Lord Eglinton stood up side by side, on a bench, during the racing of the previous day: the former anxiously peering through his spectacles, the other all smiles and confidence. After Paymaster had cantered away from Prestige, for the Fernhill Stakes, Lord Stanley had some talk with Butler. Lord Eglinton remarked to his friends (alluding to Paymaster and Prestige), "You'll just see the Dutchman do the same by Canezou to-morrow."

And now came the "Flyer's" first and last reverse. On Friday, Sept. 20th, 1850, Lord Zetland's Voltigeur, at 7st. 7lbs. (Flatman), defeated the Flying Dutchman, 8st. 12lbs. (Marlow), for the Doncaster Cup, by half a length It was asserted, and the subsequent trial went to show it, that the Cup race was run in a way to suit the younger horse. Marlow's orders, it is said, were to make the pace just as slow as Voltigeur might please, until a mile from home (the Cup course is two miles five furlongs), and then come right away, and endeavour to cut the young horse down—a performance of which Fobert believed his horse to be perfectly capable, as he candidly confessed after the race that he was as good as he could make him. However, Marlow, good and steady jockey as he had often proved himself, was for once so elated at the idea of making an example of the young horse, that he went splitting away nearly from end to end, and found his horse so beaten when Voltigeur did challenge, that he dared not even move on him. The partisans of Voltigeur asserted that this mode of running the race would have suited their horse still better, as his *forte* was speed; and this diversity of opinion led to the great match which shall be presently narrated. Meantime, as a spirited lyric is lying before us, in which this great victory of the "spots" over the "tartan" is fully set forth, we propose to vary the prosaic accounts of this brief history with a poetic, but truthful, description of the race for "t'Coop."

VOLTIGEUR v. THE FLYING DUTCHMAN.

The Turf's Own Regulars all seem uncommon blithe and gay;
The Yorkshiremen are flocking into Doncaster to-day.
On the tongues by all, from cardmen to the son of royal Guelph (1),
Is heard—"*Who beats The Dutchman* (2) *must be Beelzebub himself.*"

So thought the hosts at Ascot, as past the chair he flew,
Some ten lengths first, and well nigh burst the heart of Canezou;
Still Lord Zetland and Job Marson thus the maxim dared to doubt—
"A colt at Aske his power can task, and send his pride to rout."

"Ho!" quoth the Earl of Eglinton; "ye Richmond sceptics, know
The Flying Dutchman ne'er shall strike the tartan to a foe:
For some three racing reasons not one steed his power has dared to stem,
And your Voltigeur he'll vanquish o'er Newmarket's T.M.M."

Then thus outspake Earl Zetland—"Old Time and Fate I trow,
Are weaving Leger garlands for my Derby winner's brow.
That o'er, fling down the gauntlet, and I'll boldly take it up:
'Tis Old England against Scotland: the prize shall be the cup."

Three months have fled, and Russborough has proved himself no serf.
The "champions" twain are saddling, in their boxes at the Turf(3).
The slashing cripple Surplice a parting blessing neighs,
Then anxious waits and ruminates on speed of other days.

The second bell is ringing; nigh the rails the crowd are crushing;
Up Grand Stand stairs the bulls and bears of Turf Exchange are rushing:
"Five to one upon The Dutchman!" is heard among the hum
Of scores of voices that proclaim the welcome sound "They come!"

First, Fobert leads his favourite, while close upon his rear
Stalks Lanky Jack, while James the Black acts as a pioneer;
Mid air the dusky digits of that sporting exile float;
A cutaway enfolds his form, a tartan tie his throat.

"Make way, my friend! The Dutchman! the Dutchman, gentlemen!
Volti.'s no use; he'll cook his goose, 'tis a hundred to a hen.
He'll get licked Jemmy!" "You be hanged! he'll just win in a trot;
For the Derby all the winter on him I put my pot."

On Bobby Hill and Voltigeur, as guard of honour, waits
The stalwart Richmond Vulcan, who fitted on his plates.
To tempt him, though the Nobbler-Kings of Europe should combine,
He wouldn't "quick" his favourite for a Californian mine.

Nat puts him in a canter—why, e'en a child could know him—
For see how workman-like he tucks his hinder-legs below him.
A cracker from the distance The Flying Dutchman shoots,
And gives the crowd a specimen of Ascot seven-league boots.

Still a trio 'mong the gazers his winning chance deride:
Says Billy Oats—"I can't tell why, I don't just like his stride."
"This time of year, fresh young-'uns here in Cup-luck know no bounds,"
John Day declares; while Topham swears, "He can't give nineteen pounds."

Now Marlow finds, to his dismay, his temper's not too sweet—
As if there coursed throughout his veins a prescience of defeat.
Like Kirby's "Lazy Lancecost," the young-'un coolly lags,
And never cares to budge an inch till "Down go both the flags."

(1) Lord Adolphus Fitzclarence.
(2) Lord George Bentinck's expression when he first saw The Dutchman run.
(3) The Turf Tavern, the intended scene of Surplice's harem. Oddly enough these three horses stood there on that day.

"Hats off! hats off!" The Dutchman leads. My conscience! he's just flying;
While Voltigeur pulls double, and some six lengths off is lying.
Why, all the way from 'Mericay 'tis well nigh worth a trip,
Without a penny on the race—by Jove! there goes Nat's whip! (4)

Their prime "quick movement" o'er the flat does many a keen eye follow.
The crack leads still, and skims the hill as blithely as a swallow,
"Ten to one upon The Dutchman!" He need never hope to catch him:
He'll distance him to certainty. What horse on earth can match him?

They're whizzing o'er the T.Y.C., and either scorns to flinch;
They've passed the Champagne Starting Post, and neither gains an inch.
"The Dutchman in a canter! Nat can't get up. No—wait;
He's bringing out the young-'un." They're past the Intack Gate!

"He's catching him!—the young-'un wins!" now strikes on Marlow's ear;
The Blacklock stride he dared deride is thundering in his rear—
He's at his girths—he's reached his head—he wins! The Dutchman's done!
They've passed the chair. For young Voltaire up goes a welcome "1."

The Ring stands pale. Forth speeds the tale, which many a doubt inspires;
From east to west, from north to south, it glances o'er the wires:
From Richmond unto Middleham this message quickly passed—
"Your conqueror of conquerors has bowed his head at last."

Ye backers of young Voltigeur, boast not too much his strength.
Though Flying Dutchman "burst himself," 'twas barely half a length.
Doubt as ye will, his heart is still as game as Spanish steel;
And o'er Knavesmire 'gainst that verdict he will enter an appeal.

THE DRUID.

The boasting of Voltigeur's friends at the Houghton Meeting, induced Lord Eglinton to forward a challenge to run the Dutchman at 8st. 8½lbs, against Voltigeur, 8st., for 1000 sovs. h. ft., at the York Spring Meeting, 1851, over two miles of the Old Course. The great match of Hambletonian and Diamond did not create more excitement than this encounter of the two greatest horses of the day. There cannot be a question that the Flying Dutchman and Voltigeur were about the best specimens of the thoroughbred that the modern turf has seen. The weighing had been adjusted to a grain—and thus the match was entered in the calendar:—Match for £1,000, h. ft., two miles, over the old course. Lord Eglinton's The Flying Dutchman, by Bay Middleton, out of Barbelle, 5 yrs., 8st. 8½lbs., Lord Zetland's Voltigeur, by Voltaire, out of Martha Lynn. The pair were at even betting, almost from the period when the race was publicly announced, up to the day on which it was run—as they went to the post there was not a shade of odds on one side or the other. When the flag fell, Voltigeur went off with the running at the top of his pace, taking a lead of at least three lengths, and making very severe play, the heavy state of the ground being had in account. In this way they rounded the last turn, when Marlow called upon the Dutchman, with a request very *pointedly* urged. As they passed the Stand it was stride for stride, and a struggle of desperate effort. It was too much for the young one—he tired the soonest—and the Flying Dutchman passed the winning chair by a short length. Both horses showed marks of the *keenness* of the contest. The day following Lord Eglinton declared that his horse was withdrawn from the turf—for ever.

(4) I believe Nat lost his whip as he passed the Stand in the first round.

We may thus summarise the Flying Dutchman's races and their profits.

In 1848:—July Stakes at Newmarket, £1,110; Sweepstakes, same meeting, £400; Liverpool, July Meeting Sweepstakes, £1,200; Doncaster Champagne £825; same meeting, 2 yrs. Old Stakes, £560; total £4,095.

In 1849:—The Derby at Epsom, £6,425; the Bickerstaffe Liverpool, £150; same meeting, Post Sweepstakes, £700; the Doncaster St. Leger, £3,300; same meeting, the Foal Stakes, £400; Newmarket Second October, received forfeit of £500; at Houghton Meeting, Belvoir Stakes, £600; total £12,075.

In 1850:—At Ascot, Emperor of Russia's Plate, £760; at Goodwood, Great 300 sovs. Sweepstakes, £1,500. Total £2,260. In 1851, the Flying Dutchman took his farewell of the turf in his contest with Voltigeur already recorded, for £1000. The total of winnings, £19,430. From 1851, the Dutchman stood at the Rawcliffe-stud Paddocks, near York; his best colt yet is Ellington, winner of the Derby 1856.

In 1858. the Flying Dutchman was sold, and went to Germany.

The completion of the triad of Derby and Leger winners was found in 1850 in Voltigeur.

Voltigeur, a brown horse, with a little white on off hind foot, bred by Mr. R. Stephenson, of Hart, in 1847, was got by Voltaire,* out of Martha Lynn, by Mulatto, her dam Leda, by Filho da Pieta—Treasure by Camillus, by Hambletonian—Faith.

Martha Lynn, bred by Mr. Sharpe in 1837, ran at two and three year olds in minor races, with fair success. She was put to the stud in 1842, missed that year to Voltaire; in 1843, threw Eulogy to Euclid; in 1844-45, Barnton and Volley to Voltaire; in 1846, Maid of Hart to the Provost; and in 1847, *Voltigeur* to Voltaire; in 1848, the royal stud mare, Vivandiere; in 1849, br. c. Vortex to the same sire. She has since produced colts and fillies in 1850 to 1857, yearly, to Irish Birdcatcher, Ratan, Launcelot, Birdcatcher, Iago, Orlando, and Loup-garou, in the order named.

After a brief summary of Voltigeur's performances, we propose to give his pedigree drawn out table-wise, as a specimen of the purest blood of the modern race-horse.

In 1849, Voltigeur, (Mr. Williamson's,) made his first essay at 2 yrs. old, at Richmond, where, carrying 8st. 7lbs., he won

* Voltaire, the sire of Voltigeur, also bred by Stephenson, in 1826, was by Blacklock, by Whitelock, by Hambletonian out of Rosalind, Hambletonian by King Fergus out of a Highflyer mare. Voltaire won five out of the six runs for which he started, including the Doncaster Cup (1829). He is yet better known as a stud horse, being the sire of more than seventy winners up to 1848. His stock have been fine specimens of the English thorough-bred; among others of his get may be named, Henriade, Picaroon, Slashing Harry, Harkaway, Cowboy, Lady Mary, the Dean, Semiseria, Yorkshire Lady, Prussic Acid, Executor, Black Eagle; the renowned Charles XII. winner of the Leger (1839), Doncaster Cup (1839), Liverpool Cup (1839), Goodwood Cup (1841 and 1842), &c. &c., with Voltigeur, the subject of our notice, are the most celebrated. The last volume of the Stud Book (1857) shows 21 living brood mares and 6 dead daughters of Voltaire, with colts and fillies by the most renowned sires of the day.

the Wright Stakes, beating Mark Tapley, 8st. 8lbs., Steppingstone, 8st. 7lbs., and Cadger, 8st. 9lbs. After this race, Lord Zetland bought him for 1000 guineas, with the customary proviso of 500 more, should he win the Derby. He wintered well under the care of Hill, his lordship's trainer, at Richmond, and did not show again until—

1850, when, ridden by Job Marson, he won the Derby (204 subs.), beating Pitsford, Clincher, The Nigger, and the following not placed:—Penang, Bolingbroke, Mildew, Royal Hart, Deicoon, St. Fabian, Cariboo, Charley, The Italian, Nutshell, Knight of Gwynne, Valentine, Ghillie Callum, Brennus, Mavors, The Swede, Captain Grant, Alonzo, Augean, and c. by Sir Hercules out of Dark Susan. 16 to 1 against Voltigeur. Won easily by a length.

An "Epsom Epic," thus spiritedly pictures the race for the memorable Derby of '50.

Now, Frank,[1] lay on to CLINCHER; just glance to your right hand;
PITSFORD is at your saddle girths—they're three lengths from the stand.
There goes Job's finger off his rein, he clears them at each stride,
He wins, he wins, does VOLTIGEUR—there's "7"[2] up the slide.

'Tis done! mixed pain and pleasure sets each mad brain in a whirl,
And loud claps of vocal thunder greet the "red spots" of the Earl;
While the delighted multitude, by no means lack the will
To carry to the weighing-house Job, VOLTIGEUR, and Hill.[3]

Speed, jolly *tumbler*[4] pigeons! bear your namesake's fame to France!
'Long some thousand miles of wires let the pleasant tidings glance;
Record Masonic Wardens in the archives of each Lodge,
The triumph of your Master[5] who ne'er stooped to cross or dodge.

Ho, Herring, Hall, and Barraud, get your brushes and start fair,
To paint in generous rivalry this game son of Voltaire;
To disregard all likeness with silk mercers seems a beauty,
Since for him on some handkerchiefs old Vivian does duty.[6]

When the summer days are ended, and the year begins to wane,
On the honoured turf of Doncaster the eight will meet again,
Though the *rise* from Langley Bottom made the speediest of them flinch,
The battle o'er the Yorkshire *flat* they'll fight out inch by inch.

And nobly did Voltigeur carry the "spots" of his noble master by the chair, in the September struggle over "the Yorkshire Flat;" although he was not destined to achieve it before a dead heat compelled a second and final race for the victory.

The attractions of the preceding year had been centred in Middleham and the Flying Dutchman; they were now transferred to Richmond and Voltigeur. Whether from the popularity of Lord Zetland in the North, or the high estimation in which his lordship was held everywhere for strict integrity of purpose, or from a combination of circumstances producing an extraordinary degree of enthusiasm—a deeper interest was manifested that Voltigeur would prove the victor, than had been recently, if ever before, experienced, especially in the north of Yorkshire. Hence, as was forcibly said at the time, Voltigeur was the horse of the million; they came to see him and nothing else, entertaining no notion that Russborough would fairly couple their great favourite, and make a dead heat of it.

The attendance on the ground was immense; and when the bell rang, more difficulty was experienced in clearing the course than had been known on any former occasion, and to preserve it so when it was clear. The confidence of the friends of Voltigeur was increased by the fact that Cyprus and Mulgrave were scratched at a quarter to nine o'clock in the morning, and thus the Scott stable was, to the mortification of its supporters, left without a representative, and Frank Butler, relieved from his previous engagement, was placed upon Windischgratz. Within the lawn, as elsewhere, intense expectation was aroused to see the great favourite. The first horse that made his appearance was Pitsford, the picture of health and spirits; Alfred Day was instantly in the saddle, and walked his horse round the enclosure, to the admiration of his supporters, whose confidence, strengthened by his splendid appearance, seemed to be much increased, but others deemed him too small. In the mean while, the attentive eye observed Voltigeur approaching from beyond the Horse-shoe Pond, with Job Marson on his back. When he entered the enclosure, all eyes were, of course, fixed upon him; some judges deemed him too big, and that he looked dull and heavy; others, however, who knew the horse well, entertained a different opinion, and deemed him most admirably fit for his coming struggle. He merely passed through the crowd and entered the course, and when Job sent him along, his splendid action was enough to make his enemies tremble. The friends of Russborough, whose hopes appeared to be continually brightening, were not sparing in their praises; he was deemed the finest horse in the race; and Robinson, when he had sprung upon his back, appeared to have no hesitation in declaring that, if he could not defeat the crack, he would stick so close to him as to frighten the whole host of his admirers. When Marlow had mounted Mildew, he found him so lame that he was withdrawn, and thus the number was reduced to eight. The betting then stood at 6 to 4 on Voltigeur, 3 to 1 against Pitsford, 10 to 1 against Beehunter, 12 to 1 against Windischgratz, 25 to 1 against Russborough, the same against Chatterbox, 30 to 1 against Bolingbroke, and 50 to 1 against The Italian.

Although much disappointment was felt by the immense mass of spectators, who reached from the first cross-road to nearly the Red House, at the small number of starters, those parties, who knew the qualities of the several competitors, were aware that a contest was about to ensue, which, while it would put the Derby victor to his utmost stretch, would excite such a commotion as had rarely been witnessed; nor were they mistaken. The horses slowly advanced to the post, the reins were carefully handled, the flags were dropped, and they got off at

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1 Frank Butler.
2 Voltigeur's number on "Dorling's c'rect card."
3 Hill, his trainer, a pupil of Robert Johnson of Beeswing celebrity.
4 Voltigeur, French "a tumbler."
5 The Earl of Zetland, Grand Master of the Freemasons.
6 "I stopped to look at a handkerchief Derby-portrait the other day; portraits of Scott on Attila, *and actually Captain Beecher on Vivian*, were unblushingly stamped on them as *true and correct likenesses* of Job and Voltigeur."—"The Druid" in *Sporting Review* for July, 1850.

once in a compact body, amid a low and indescribable hum from the vast multitude. "Where's the crack?" was eagerly asked by some who had not a good view of the horses. "Last but one," was replied. "He'll cut them all down," observed one; and another rejoined, "He'll have his work to do, and no mistake." Beehunter went away with the lead; Chatterbox, Pitsford, and Russborough well up; Voltigeur was, as just mentioned, going rather sluggishly. The pace to the hill, however, was not so fast as is generally the case; Nat held on his course over and down the hill at an improved speed. In this position they rattled along to the Red House. Marson, observing the attitude of his opponents, took fast hold of Voltigeur, and gave him a judicious reminder with the whip, and he rushed forward. At the last bend of the rails he was fifth. On his left hand were Beehunter, Pitsford, and Chatterbox; on his right, Bolingbroke; and at his quarters, Russborough and The Italian, with Butler, the last, on Windischgratz. The pace was now severe, and began to tell, and at this moment Bolingbroke hung towards the rails. This roused the energies of Job, who, seeing himself exposed to the liability of being shut out, made a desperate rush between him and the three just mentioned, who, by the way, had had enough of it, and, at the distance, Voltigeur was first, to the delight of his backers. Russborough, however, assumed a threatening position on the off-side, and many an anxious eye was fixed upon him Unfortunately, at this exciting moment, Bolingbroke came in collision with the Italian, who was running remarkably well, and Templeman lost, at the least, a full length, to his sad disappointment. The four rushed on at a rattling pace, and opposite the stand Voltigeur seemed, for a moment, to be in difficulties, but Marson handled him steadily for a final effort. The energies of Robinson were now aroused, and with admirable skill he got Russborough fairly up, amid a loud crash of excitement, and they passed the post nose to nose. It was generally thought, at first, that Russborough had won, but when a "dead heat" was announced the delight of some exceeded all bounds, while the large mass of spectators were perfectly astonished. As the two antagonists returned to the enclosure, a remarkable fact was presented; they were received in silence; but the pause was soon broken by the friends of Russborough and the fielders, who thronged around Robinson with a burst of excitement. But neither of the horses seemed much distressed, and the backers of Voltigeur soon recovered their confidence, and were still firm in their allegiance to their great favourite. The race was run in three minutes twenty-one seconds.

Matters, however, soon assumed a new attitude; strong suspicions were entertained by the Voltigeur party that Russborough was four years old. Under prevailing circumstances, Lord Zetland demanded an examination of his mouth. This was instantly complied with by the Russborough friends, and Mr. Holmes, of Thirsk, and Mr. J. Shaw, of the Third Dragoon Guards, reported, by certificate, that he was no more than three years old, and both parties were satisfied.

The other racing over. at a little after five o'clock, the two champions of the day entered the enclosure in their sheets. Robinson, with a joyously-animated countenance, jumped into the saddle, and the friends of Voltigeur were somewhat alarmed as the whisper prevailed around that it was his determination to fairly run down Lord Zetland's horse. Marson, on the contrary, looked very pale; but, although remarkably calm, his confidence had not forsaken him, however heavy the responsibility under which he was evidently labouring, and, leaving the enclosure, he quietly mounted Voltigeur on the course. The excitement of the crowd began to set in, as the two competitors, after taking a short canter, moved slowly to the post. The betting was in favour of Voltigeur, but less business was transacted than might, perhaps, have been expected. Both horses were soon before Mr. Hibburd at the post, the signal was given, and away they went. From the mode adopted by Robinson in his cutting-down system, it proved that the previous whispers were strictly accurate; but as Marson wished it to be a matter of speed, his confidence increased. The famous Newmarket jockey went from the post like an arrow from a bow, and Marson instantly laid Voltigeur two lengths off his antagonist. The pace at first was fair, but in ascending the hill Robinson made it tremendous. They rushed down the hill, and swept past the mile-post; nor was the position of the two horses changed at the Red House. Making the bend here, the friends of Russborough vociferated that the Richmond horse could not get up, and that he was defeated. After passing the cross-road, the appearance in front was alarming. The spectators made a narrow lane from this point nearly as far as the distance, and it seemed impossible to get through them, as they were continually crowding forwards. Robinson, who had a strong lead, laboured under a disadvantage here, as it was evident that Russborough did not like it, for he had, as it were, to clear the way for his opponent; it is not every horse that would face such a crowd. In making the last bend, Robinson glanced over his shoulder at his opponent, who sat with his hands down, as if waiting for the required moment to apply all his powers. As the immense crowd closed in after them, the deafening roar of "Voltigeur's beat!" resounded far and wide, answered by "Not so; Marson will soon rouse him!" The moment was painfully exciting to all parties. Reaching half-way within the distance, Job loosened the reins, and up went the whip; he answered instantly, and in the next three strides he was at Russborough's girths. Opposite the Stand he was first; and notwithstanding all the efforts of Robinson, he passed the post the winner by a length. A more deafening shout of "Voltigeur wins!" was never uttered; it rung around again and again, and was, in fact, heard on the then nearest railway platform at Swinton, nine miles off. The dead heat was run in three minutes twenty-five seconds. When the two combatants returned to the scale, the huzzas were deafening; peal succeeded peal with, if possible, increased animation; hats were flung on high, and handkerchiefs waved in every direction; and when the Countess of Zetland, accompanied by the noble Earl, descended from the Steward's Stand and patted the conqueror's

neck, they were greeted by such an ovation as was never witnessed elsewhere. It was not merely that Russborough had been defeated, but that a nobleman, possessing every good quality, had achieved the victory; this was universal, and the expressions of delight were not more enthusiastic than they were hearty.

As this is the last great race we shall describe in the present *resumé* of the more remarkable race-horses of the first sixty years of the present century, we have been tempted to trespass a little on space, and return at once to our summary.

On the Friday following the Leger, Voltigeur beat the Flying Dutchman, winning the Doncaster Cup, as already stated.

Voltigeur's winnings in his great year, 1850, were the Derby at Epsom, £5,575; the St. Leger at Doncaster, £2,125; and the Cup and Scarborough Stakes at the same meeting, £330: total, £8,030.

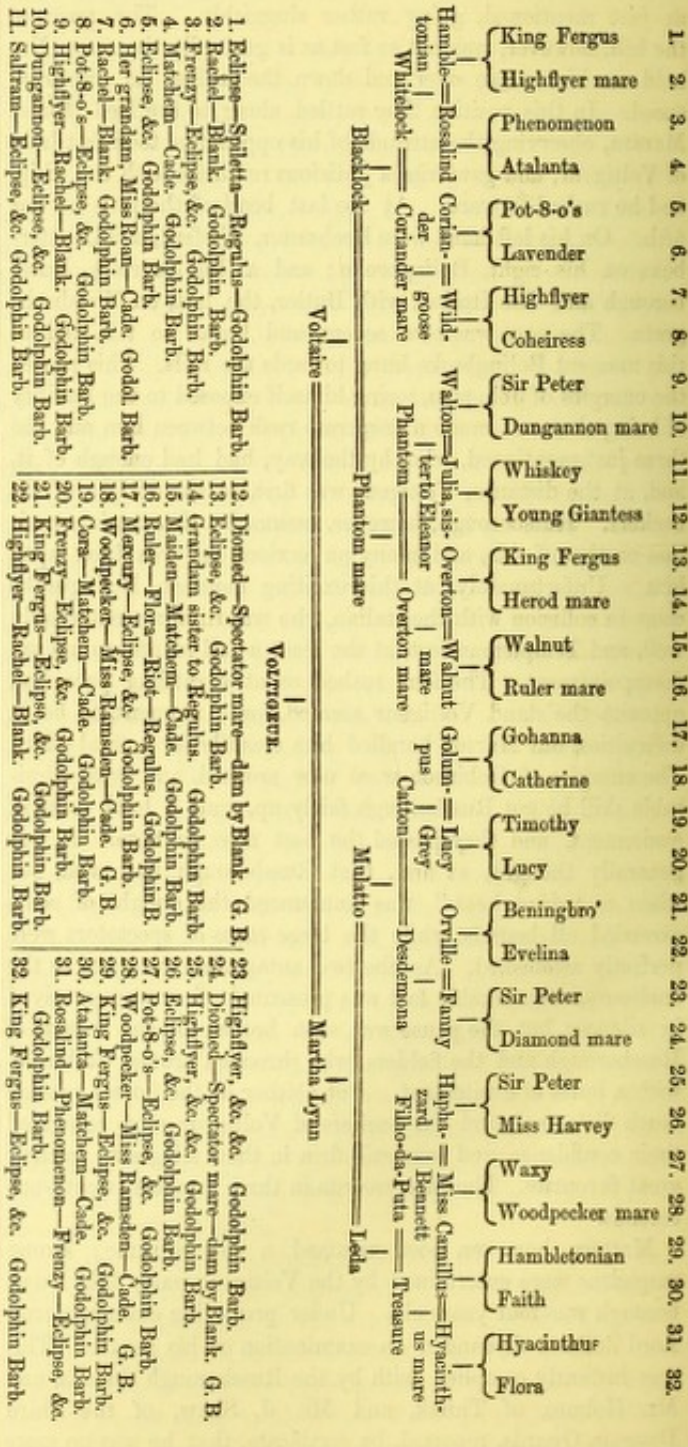
In 1851, at the York Spring, on Tuesday, May 13th, the Dutchman turned the tables in their great match, given under the winner: and on the next day (Wednesday) for the York and Ainsty Cup, Mr. Lister's Nancy, 3 yrs., 6st. 5lbs. cut down the renowned Voltigeur, (9st.) by a length, with 6 to 4 laid on him. The match on the Tuesday had doubtless much to do with this. Voltigeur went amiss, and did not appear again in the year 1851.

The year 1852 showed no improvement in Voltigeur's running. It was stated that he "would not feed and could not be trained;" and indeed the results countenanced the assertion. He won the Flying Dutchman's Handicap at the York Spring Meeting at 8st. 13lbs., beating a field of ten, but came in fifth for the Emperor of Russia's Plate at Ascot, won by Joe Miller, the Black Doctor second, Hobbie Noble third, and Little Harry fourth. On Thursday, in the York August Meeting, he was not placed or quoted in the betting for the Great Ebor, won by Adine; and for the County Plate at the same meeting (how are the mighty fallen!) he was fifth and last, with 9st. 6lbs., The Cure, 2 yrs., 6st. 12lbs. winning, the Prime Minister, 4 yrs., 9st. 4lbs., second, Vaultress, 2 yrs., 6st. 9lbs., third, and Forester, 6 yrs., 9st. 3lbs., fourth. Voltigeur now bid farewell to the course, and retired to Middlethorpe Stud Paddocks.

In the year 1859, Voltigeur is marked as the sire of twelve winners, Vedette as his best produce. In the annals of the Turf, his name will figure as a sire in the honoured pedigrees of race-horses of "the future," whose success may be equal to that of this famous racer.

The present seems a fair opportunity for the introduction of an example of how vast is the indebtedness of our best modern race-horses to the blood of the Barb and of the "Turk" or "Arabian," as most of the earlier Eastern importations were called. A careful and ingenious writer in the *Sporting Magazine* has traced the descent of Voltigeur from the pages of the *Stud Book*, to no less than thirty-two sires and dams all deduced from the Godolphin Barb; he adds, "the direct line of sires may be traced to its termination in the Darley Arabian,* and the line of dams to "a Barb mare." The genealogical table is so curious that we willingly give it. Eclipse, see page 456, will be the only other pedigree illustrative of the origin of the English race-horse.

PEDIGREE OF VOLTIGEUR, SHOWING THE DESCENT OF AN ENGLISH THOROUGH-BRED.



* Brought from Aleppo, Asia Minor.

Voltigeur exalted his fame as a sire by producing the winner of the Great Yorkshire Stakes and Doncaster Cup, 1860, in Sabreur, of the Cesarewitch in Dulcibella, Roesia, Lanchester, and other winners. His price was then raised to 50 gs., and limited to thirty mares, besides five of his owner.

As it would be impossible, except in a work exclusively devoted to race-horses, their performances, pedigrees, and the innumerable incidents of the turf, to do more than give a *resume* of the more prominent animals and incidents of former years, we must restrict ourselves, in order to allot a fair proportion of our pages to the numerous miscellaneous branches of sport and their accessories which we purpose to include.

In the most condensed form, dry almost as an index, the doings of the turf now lie before us in the shape of eighty-eight solidly printed calf-bound volumes, flanked by eight yet larger volumes of the *General Stud Book*. To these, persons determined to dive more deeply into the doings of individual horses must, *ex necessitate*, resort. Mechanicians tell us how, by the powers of the hydraulic press, cotton can be made to occupy a hundredth part of the space it previously filled, yet every fibre be preserved. No such process of compression can be applied to this mass of facts, and leave the material undestroyed. A rapid glance, then, over the years 1851—60 must content us.

The Derby of 1851 fell to Sir Joseph Hawley's Teddington, by Orlando, (see pp. 106-7), out of Miss Twickenham, by St. Giles, a good little chesnut, whose exploits may be briefly summed up. At 2 yrs. he was not placed in his first essay for a 10 sov. Sweepstakes, at Newmarket, won by Coticula. He was third at Epsom in the Woodcote, won by Marlborough Buck. His first win was the Chesterfield Stakes, in the Newmarket July, beating Ariosto, Turtle, Theorem, The Rejected, Phlegra, Prestige, f. by Pantaloon out of Virago, and Miserrima. He run third in the Eglinton Stakes at Goodwood, won by Phlegra, Buckhound second. Teddington next day won the Molecomb Stakes, beating Hippolytus and Hurry Scurry, who threw her rider.

In 1851, Teddington started and won four times. 1st, a Sweepstakes of 200 sovs. each, at Newmarket Craven; 2nd, the Derby; 3rd, walked over for the Don Stakes, at Doncaster; finishing a triumphant year by beating Mr. Osbaldeston's Mountain Deer (Robinson), 8st. 7lbs. each, in a match A. F. for 1000 sovs., by half a length.

In 1852 (then Mr. J. M. Stanley's) he started six times. Was not placed for the Northamptonshire Stakes, won by Poodle. Ran third, 9st., for the Newmarket Handicap, won by Father Thames, 3 yrs., 5st. 9lbs. Was third again, 9st. 3lbs., for the Goodwood Cup, won by Kingston, 3 yrs., 7st. 6lbs., and walked over next day for a 100 sov. Sweepstakes, 5 subs., Cup Course. On Wednesday, in the Warwick September, he won the Cup, beating Little Harry, the Black Doctor, and Goldfinder, closing the year by winning, at 8st. 12lbs., the Doncaster Cup, beating Kingston, 7st. 7lbs., Hungerford, 8st., 5lbs., Caracara 7st., Newminster, 8st. 12lbs., Truth. 8st. 2lbs., Nancy, 8st. 9lbs., and Alonzo, 8st. 12lbs.

At 5 yrs. old, Teddington ran thrice. At Ascot he won the Emperor of Russia's Plate, beating Stockwell, Ninnyhammer, Defiance, Kingston, Lady Evelyn, and Indian Warrior. A fine run home with Stockwell, won by a head. In the Cesarewitch, 1853, won by Haco, 3 yrs., 5st. 12lbs. Teddington was not placed at 9st. 7lbs.

The Whip being challenged for, Teddington ran second to Mr. Morris's Kingston, Weathergage (who broke down) third. Stockwell paid forfeit.

Teddington started eighteen times and won ten. He went to stud in 1854 at Mr. Theobald's, Enfield, and in 1859 has eleven winners credited to him. That excellent mare Mayonnaise, (out of Pic-nic) of the number.

The Goodwood and Chester Cups for 1851 fell to the three-year-old Nancy, whose performances will be found in the Appendix.

The great northern event fell to Newminster, a horse bred in 1848, by the younger Mr. Orde, (who succeeded to the estate of Nunnykirk, and with it to t' auld mare,) Newminster was by the renowned Touchstone out of the yet more renowned Beeswing, for whose pedigree see Beeswing, in Appendix.

Touchstone, bred by the late Lord Westminster, in 1831, and got by Camel, out of Banter, by Master Henry, was one of the best race-horses ever saddled, while as a stallion he stands in the very first rank. It would be impossible here to name a tithe of the good runners out by him; but Newminster is his third Leger winner—his son Surplice winning this race in 1848, and his daughter Blue Bonnet in 1842. Surplice, it will be remembered, also won the Derby, as did Cotherstone, in 1843, and Orlando, in 1844. Touchstone's only Oaks winner was Mendicant, in 1846; in fact, the Touchstone fillies have been the weaker half of his stock.

Newminster was a bright bay horse, standing fifteen hands an inch and a-half high. His temper excellent; and to borrow a bit of saddle-room phrase, he was said to be "as long as a ship, and as quiet as a sheep."

Performances.—At Epsom, 1851, Newminster was not placed for the Derby—won by Teddington. At York, ridden by F. Butler, 8st. 7lb., he finished a bad third to The Calculator, 8st. 7lb., for the Ebor St. Leger—two miles; Cnæus, 8st. 7lb., second, The Confessor, 8st. 10lb., fourth, and Crookshanks, 8st. 7lb., fifth. 6 to 4 on Newminster, who, it was said, had been a little too much rattled in a trial just before the race.

At Doncaster, ridden by Sim Templeman, he won the St. Leger, beating Aphrodite (2), Hook'em Snivey (3), Sir Rowland Trenchard (4), and the following not placed:—Lough Bawn, Cnæus, Phlegras, Exeter, Deceitful, The Ban, The Calculator, Lamartine, c. by Charles XII., Miserrima, Jack Robinson, Ephesus, Goliah, and Hernandez; 12 to 1 against Newminster, who won in a canter by two lengths. In October, Newminster, 8st., was not placed for the Cambridgeshire, won by Truth, 5st. 13lbs.

Newminster opened 1852 by winning the rich Goodwood,

Stakes of 300 sovs., beating Harpsichord, Phlegethon, and Midas, by two lengths. He was not placed, at 9st. 3lbs., for the Cup at the same meeting, won by Kingston, 7st. 4lbs. Neither did he achieve a place for the Doncaster cup, won by Teddington.

In 1853, at the Chester Spring, he was not placed, at 8st. 8lbs., for the Cup, won by Goldfinder, 7st. 8lbs., (the notorious Palmer's horse), and in his only other start, for the Great Ebor, at 8st. 9lbs., won by Pantomime, 5st. 8lbs., was not placed. His last race was at 6 years, 8st. 2lbs., for the Chester Cup in 1854, won by Epaminondas, 4st. 10lbs., after which Newminster went to stud at Tickhill farm, near Rotherham. His progeny are promising. Musjid, (out of Peggy), winner of the Derby 1859, Ariadne, out of Hospodar's dam, Minster, and Dr. Nichol have bravely vindicated his fame. Newminster was then at 50 gs.

In 1852 the Derby and Oaks were won by a colt and filly by Irish Birdcatcher.* The one, Daniel O'Rourke; the other, Songstress. Daniel O'Rourke, a chestnut horse, out of Forget-me-not, by Hetman Platoff, became the favourite stud-horse of the late Sir Tatton Sykes, and now stands at Sledmere. Perhaps the best of his stock is Gaspard, out of sister to Leaconfield (Odd Trick's dam). The Leger fell to Stockwell, a chestnut horse, by the Baron (by Birdcatcher), out of Pocahontas (dam of Ayacanora, Dolly Varden, King Tom, Rataplan, Indiana, Knight of Kars, &c.), by Glencoe. Stockwell started 21 times, and won 12, and is now a promising stud-horse at Kirkby, Tadcaster; he is sire of St. Albans, winner of the Leger 1860, and other good winners out.

1853 again saw the two great events fall to the same horse —Mr. Bowes's West Australian, by Melbourne, out of Mowerina, by Touchstone. As the best horse of his year and time, we shall rather give space to him than clog it with a number of mediocrities.

West Australian, bred in 1850, by Mr. Bowes, made his first appearance, as a 2-year old, at the Newmarket Houghton, 1852, where he ran second, in the Criterion, to Mr. Payne's Speed the Plough; Lord Exeter's Filbert, 3rd; each 8st. 7lb. Sittingbourne, 8st. 13lb., Ionic, 8st. 7lb., Amazon, 8st. 5lb., and North Pole, 8st. 7lb., not placed. On the Thursday in the same week he won the Glasgow Stakes, beating Filbert, Speed the Plough, and ch. c., by Don John, out of Potentia. Won by two lengths.

In 1853 West Australian started and won five times, winning the 2,000 guineas in the Newmarket First Spring. The Duke of Bedford's Sittingbourne (2), Lord Glasgow's Barbatus (3), Mr. J. M. Stanley's Orinoco (4): Mr. E. R. Clarke's Mr. Sykes, Lord Exeter's Filbert, and Mr. Howard's Lascelles not placed. Won by half a length; three lengths between second and third. Next came the Derby, in which Frank Butler, who rode West Australian in all his wins, beat a field of twenty-seven, consisting of Sittingbourne (S. Rogers), 2; Cineas (Bumby), 3; Rataplan (Wells), 4; and the following, not placed:—Orestes, the Mayor of Hull, Stone Plover, Mr. Sykes, Pharold, Filbert, Ionic, Umbriel, Pharos, Ninny-hammer, Cheddar, Prince Leopold, Brocket, Talfourd, Orinoco, Lascelles, Ethelbert, Honeywood, Finn-ma-Coul, Rattle, Coomburlond Stathesmon, Barbatus, Vanderdecken, and Peggy. 6 to 4 against West Australian. Won by a neck.

At Doncaster, on the 14th of September, the great double event was decided, West Australian (F. Butler) winning the St. Leger splendidly by three lengths, four lengths between second and third, and two lengths between third and fourth. Time, 3 min. 20 sec. Lord J. Scott's Reiver (Marlow), 2, Mr. Thellusson's Rataplan (Wells), 3, Mr. W. I'Anson's Balrownie (Templeman), 4. Not placed: Mr. Sykes, Cobnut, Sittingbourne, Faversham, Catspaw, and Cineas. 6 to 4 against West Australian. On the Friday in the same meeting West Australian walked over for a sweepstakes of 200 sovs. ea. h. ft., St. Leger Course, 13 subs., Lord Exeter's Filbert receiving 200 sovs., and saving his stake. He wound up 1853 with another walk for the Grand Duke Michael Stakes, in the First October. Lord Exeter's Cobnut receiving 300 sovs. out of the stakes.

In 1854, he started four times, winning thrice. At Newmarket First Spring he received 250 ft., in a match, for 500 sovs., A.F., with Barbatus (7st. 13lbs.), West Australian, 8st. 7lbs. At Ascot, rode by Alfred Day, he carried off the Fourth Triennial Stakes, beating Vanderdecken and Filbert. The next day he won the Gold Cup, 8st. 5lbs., beating Kingston, 9st. (2), Rataplan, 8st. 3lbs. (3), Talfourd, 8st. 5lbs., Cobnut, 8st 5lbs., Nabob, 9st., Orestes, 8st. 3lbs, not placed. 6 to 4 on West Australian. Won by a head, a length between second and third. At Goodwood he won a sweepstakes for four-year olds, Queen's Plate Course, beating Cobnut and Hazlenut, by twenty lengths. 7 min. 15 sec. He started eleven times, and was but once beaten—his first race, when he ran second.

Summary:—In 1852: Glasgow stakes at Newmarket, £800. 1853: the £2,000 gs. at Newmarket, £1,950; the Epsom Derby, £5,400; the Doncaster St. Leger, £2,175; sweepstakes at Doncaster, £900; Grand Duke Michael Stakes, £550—total of year, £10,975. 1854: at Newmarket, £250 forfeit; Ascot Triennial Stakes, £470; Ascot Gold Cup, £540—total, £1,260. Grand total, £12,235.

West Australian now retired from the Turf, and was advertised at Kirkby Farm. He was sold to the Count de Morny in 1860, and died at Mezidon in France, on the 2nd of May, 1870, having never attained rank as a stallion.

In March, 1854, died the celebrated mare Beeswing—in foal to Flying Dutchman—from an accident, at Eaton Hall, Cheshire. Also, Plenipo, by Emilius, out of Harriet, by Pericles, aged 23, at Denham, Feb. 24.

The Great Metropolitan and Doncaster Cup fell to Virago,

* Birdcatcher, or Irish Birdcatcher, a chestnut horse, by Sir Hercules, out of Guiccioli, by Bob Booty, out of Flight, by Escape, &c. He was one of our most successful stallions. Own brother to Faugh-a-Ballagh (winner of the Leger 1844), sire of nearly 200 winners, in England and Ireland. Among them are—The Baron, (Leger 1845), Chanticleer, Caurouch, Daniel O'Rourke, (Derby 1852), Songstress (Oaks 1852), Knight of St. George (Leger 1854), Warlock (Leger 1856), &c., &c. At 26 years he was advertised in Ireland, at Lark Lodge, in the Curragh.

who, with Rataplan, will be found elsewhere, with incidental notices of contemporaries.

Fandango, a stout horse, of a stamp that croakers would persuade us is extinct, ran his first race this year (1854). He was bred by Lord Zetland, in 1852, by Barnton out of Castanette, by Don John (*see ante* p. 425.)

Barnton, an own brother to Voltigeur, bred by Mr. R. Stephenson in 1844, was by Voltaire out of Martha Lynn, by Mulatto. His first winner appeared in 1852, a half-bred one out of a Sir Hercules mare; since then the following go to his credit:—Clansman, Bolton, Preston, Queensberry, Fandango, and many others.

Castanette was bred by Lord Zetland in 1846. She was in work for three or four seasons, and ran very well once or twice as a three-year old, getting within a head of Ellerdale for a Royal plate. Fandango was her first foal. Fandango is a bright bay horse, about fifteen hands two inches high. In 1854 Fandango, then two years old, made his first appearance at Ripon, where, carrying 8st. 7lb., he ran second to Lord Alfred, 8st. 12lb., for a two-year-old stakes. At the same meeting, 6st. 12lb., he won the Grand Stand Stakes, T.Y.C., beating filly by Pyrrhus the First, (2), Cherry Brandy (3), and the following not placed:—Medina, Qui Vive, and Launcelot, filly — won by a head. At York, 8st. 5lb., he was not placed for the Convivial Stakes—won by Rifleman, 8st. 8lb. At Pontefract, 8st., he won the Park Hill Stakes, beating Amy, 7st. 12lb. (2), Rylstone, 7st. 9lb. (3), Knight of the Village, 7st. 5lb. (4), and the following not placed:—Saucebox, 8st. 5lb.; Little Brownie, 7st. 7lb.; Wheatear, 7st. 7lb.; Katie, 7st. 3lb.; and Cigarette, 7st. 3lb. —won by half a length. At Richmond, 6st. 10lb., he won the Easby Stakes, beating Lord Alfred, 6st. 12lb. (2), Amy, 6st. 8lb. (3), and Dame Judith, 6st. 5lb., and Jack Sheppard, 6st. 12lb., by six lengths. At the same meeting, 8st. 10lb., ran second to Dame Judith, 8st. 10lb., for the Wright Stakes. At Newmarket Houghton, carrying the top weight of 8st. 10lb., was not placed for the Nursery Stakes, won by Lady Tatton, 7st. 6lb.

In 1855 Fandango, 6st. 2lb., won the Great Metropolitan Stakes at Epsom Spring, beating Corœbus (2), Dr. O'Toole, (3), and twelve others not placed:—won by half a length. At York Spring he ran second to Neville, for the Great Northern Handicap. Fifteen others also ran. At the same meeting, he was not placed for the Flying Dutchman's Handicap, won by Neville. At Ascot he won the Gold Cup, beating Rataplan, (2), Virago (3), The Wild Huntsman (4), The Chicken (5), and Hungerford, aged. At York, he ran second to Mr. Osbaldeston's Rifleman for the Great Yorkshire Stakes, beaten by a neck. At Doncaster he walked over for the Scarborough Stakes. At the same meeting, he ran second to Mr. Osbaldeston's Rifleman for the Don Stakes. At Richmond, 7st. 7lb., he won the Richmond Handicap, beating Fanny Fern (2), Caliph (3), and the following not placed:—Angelo, Polka, Saraband, Johnny Taft, Confederate, Ingomar, won by a length. At Newmarket Houghton, 8st., he won a Handicap Sweepstakes of 100 sovs. for three year olds, A. F.

In 1856, at Newmarket Craven, he won the Port Stakes, beating Saraband by two lengths. At York Spring, 8st. 5lb., he ran second to Mr. Parker's One Act, for the Great Northern Handicap. At Newmarket First Spring walked over for a sweepstakes of 50 sovs. for four year olds, last three miles of the B. C.; and at the same meeting, for the Jockey Club Plate of 50 sovs. (receiving half). At York, walked over for the Burgundy Stakes, for four year olds, two miles; Saraband saving his stake. At the same meeting, won Her Majesty's Plate, beating Pretty Boy (2), Typee (3), Stork (4), and Fisherman—won by a length. At Doncaster, carrying 8st. 12lb., he won the Cup, beating Melissa (2), Artillery (3), Rogerthorpe 4), and the following not placed:—Scotchman, Early Bird, Warlock, and Lord Alfred, won by a head. At Newmarket First October, he beat, easily, Homily for 200 sovs. and the Cup, four years old, and 8st. 7lb. each, B. C. At the same meeting, ridden by J. Marson, he won a fifty pound plate, D. I., beating Winkfield (2), and Tame Deer, 3 yrs., at weight for age—won by twelve lengths. At Richmond, carrying 8st. 13lb., he walked over for the Cup.

Summary.—In 1854 he started seven times, and won three: —The Grand Stand Stakes, at Ripon, value clear £45; the Park Hill Stakes, at Pontefract £110; the Easby Stakes, at Richmond, £85.

In 1855 he started nine times, and won five:—The Great Metropolitan Stakes, at Epsom, £1,260; the Gold Cup, at Ascot, £420; the Scarborough Stakes, at Doncaster, £30: the Richmond Handicap, at Richmond £226; a Sweepstakes, at Newmarket Houghton, £350.

In 1856 he started ten times, and won nine:—The Port Stakes, at Newmarket Craven, £200; a Sweepstakes, at Newmarket First Spring, £250; a Plate, at ditto, £25; the Burgundy Stakes, at York, £150; the Queen's Plate, at York, £100; the Cup, at Doncaster, £300; £200 sovs., with the Cup, at Newmarket, £305; a Plate, at ditto, £50; the Cup at Richmond, £25:—Grand total £3,931.

Fandango started twenty-six times, won seventeen, and ran second six times.

The double win of a Derby and Oaks, in 1857, calls for a niche in equine history, and Blink Bonny cannot be denied that honour. Bred by Mr. W. I'Anson, at Spring Cottage, Malton, in 1854, by Melbourne, out of Queen Mary, by Gladiator, her dam, by Plenipotentiary, out of Myrrha, by Whalebone.

Melbourne, bred by the late Mr. H. Robinson, in 1834, by Humphrey Clinker, out of a Cervantes mare. He was a good honest race-horse; and, though but roughly prepared, won many heavy stakes against superior fields of horses. As a stallion he ranks as the best in this country for many a long day. The first year his stock came out, in 1846, Sir Tatton Sykes won the St. Leger; in 1848, Cymba the Oaks; in 1853, West Australian, the 2,000 gs. stakes, Derby and St. Leger, an unparalleled performance; in 1855, Marchioness

again placed the Oaks to his credit; and, in 1857, Blink Bonny crowned his career with another almost unprecedented feat in winning both Derby and Oaks. In addition to these Melbourne is the sire of over a hundred registered winners; including, amongst many more good ones, such stock as Canezou, winner of the 1,000 gs. stakes, and the Goodwood Cup, twice; Mentmore Lass, winner of the 1000 gs. stakes; Alas!, Assayer, Brocket, Meteora, Prime Minister, Slashing Alice, Umbriel, Weston, Lady Palmerston, Jetty Treffz, Oulston, Rambling Katie, Seducer, Blooming Heather, Cossey, Polmoodie, Cannobie, Comedy, Gay, Kidnapper, Newton-le-Willows, Oakball, Tasmania, and Victoria. He was withdrawn from the stud in 1857, full of years and honours, in his 24th season.

Queen Mary, bred by Mr. Dennis, in 1843, was put to the stud at three years old. Her first foal was a goodish filly called Haricot; in 1848 she had a dead foal to Mango; in 1849, Braxey, by Moss Trooper; in 1850, Balrownie, by Annandale; in 1851, a half-bred colt; in 1852, Blooming Heather, by Melbourne; in 1853, Bonny Scotland, by Iago; in 1854, Blink Bonny; in 1855 missed to Touchstone; in 1856, Balnamon, by Annandale. Originally given by Mr. Ramsay to I'Anson, Queen Mary was sold to the late Mr. Carnegie, of Balnamon; but subsequently repurchased with Braxey and Balrownie at her side for £110. Queen Mary never ran but once, when she was not placed for a two-year-old stake at Chester.

Blink Bonny was a bay mare, 15 hands 2½ inches high, with a blaze of white in the face—giving her quite a family likeness to her famous half-brother West Australian—and a white fore coronet.

In 1856, Blink Bonny, then two years old, made her first appearance at York Spring Meeting, where, carrying 8st. 3lb., and ridden by I'Anson, jun., she ran third in the Zetland Stakes, of 5 sovs. each, &c., a half mile: Magnifier, 8st. 5lb., and Nougat, 8st. 1lb., running a dead heat for first. Madame Clicquot, 8st. 5lb. (4); Saunterer, 8st. 9lb. (5); and five others not placed also ran. 7 to 1 against Blink Bonny, who was beaten a head from the two, with a head only between her and Madame Clicquot, and Saunterer only beaten a head for fourth place! At Chester, 8st. 3lb., she ran third for the Mostyn Stakes; three-quarters of a mile. Lambourn, 8st. 7lb., (1); Sprig of Shillalagh, 8st. 7lb., (2); Saunterer, 8st. 12lb., and six others also ran, not placed. 3 to 1 against Blink Bonny, who was beaten a head for second, Sprig of Shillalagh a head from the winner. At Manchester, 8st. 4lb., she won the Sapling Stakes; beating Double Glo'ster, 8st. 4lb. (2); Saunterer, 8st. 10lb. (3); Church Langton, 8st. (4); Lady Jersey Colt, 8st. 7lb. (5); and The Clown, 8st. 7lb. 5 to 4 on Blink Bonny, who won easily by a length. At Beverley, 8st. 10lb., she won the Bishop's Burton Stakes, beating Pontifical, 8st. 7lb. (2); Huntington, 8st. 4lb. (3); and ten others of no great repute. 5 to 4 on Blink Bonny, who won by ten lengths. At Newcastle-upon-Tyne, 8st. 6lb., she won the Tyro Stakes, beating Vanity, 8st. 4lb. (2); Norton, 8st. 7lb. (3); Rickledon, 8st. 7lb. (4); and three others not placed. 5 to 2 on Blink Bonny, who won easily by a length. At Liverpool, ridden by I'Anson, and carrying 8st. 4lb., she won the Great Lancashire Produce Stakes, beating Cara Fatima, 8st. 4lb. (2); Glede Hawk, 8st. 4lb. (3); and Miss Nightingale, 7st. 12lb. 5 to 2 on Blink Bonny, who won by three lengths. At Goodwood, she won the Bentinck Memorial Stakes, colts 8st. 7lbs., fillies 8st. 4lb., T. Y. C.; beating Chevalier d'Industrie (2), Ayacanora (3), and South-Western. 6 to 4 on Blink Bonny, who won by three-quarters of a length.

At York, 8st. 4lb., she ran third for the Convivial Stakes, Lady Hawthorn, 7st. 13lb. (1), and Augury, 8st. 2lb.; (2); Wardermarske, 8st. 3lb., and three others also ran. 2 to 4 on Blink Bonny, who was beaten a length from the second, and a neck more from the winner. At the same meeting, 8st. 2lb., she won the Gimcrack Stakes, beating Skirmisher, 8st. 7lb. (2); Norton, 8st. 7lb. (3); Augury, 8st. 5lb. (4); M. D. 8st. 7lb. (5); Saladin, 8st. 7lb. (6); and Charles O'Malley, 8st. 7lb. 6 to 5 on Blink Bonny, who won by two lengths. At Doncaster, she won the Filly Stakes, 8st. 7lb. each, beating Beatrice (2) and Equity. 8 to 1 on Blink Bonny, who won by eight lengths. At the same meeting, 8st. 11lb., she won a sweepstakes of 10 sovs. each, &c., T. Y. C.; beating Adamas, 8st. 7lb. (2); Skirmisher, 8st. 7lb. (3); Gemma di Vergy, 8st. 11lb. (4); Loyola, 8st. 7lb. (5); and Schneider, 8st. 7lb. Even on Blink Bonny, who won by three-quarters of a length.

In 1857, at Newmarket Spring Meeting, Blink Bonny was not placed for the 1,000 gs. Stakes, won by Imperieuse. Six others also ran. 5 to 4 on Blink Bonny, who was beaten off. It has since been explained that she was suffering, as she had been nearly all the winter, from dentition fever. Her teeth were subsequently rasped twice, and with so good an effect, that at Epsom, ridden by Charlton, Blink Bonny won the Derby, beating Black Tommy (2), Adamas (3), Strathnaver (4), Skirmisher, Lady Hawthorn, Oakball, Wardermarske, Zuyder Zee, Anton, Saunterer, Tournament, Sydney, Turbit, Laertes, by Surplice out of Beeswax, Loyola, Newton-le-Willows, Commotion, Lambourn, Special Licence, Ackworth, Sprig of Shillelah, Glee-singer, Arsenal, Chevalier d'Industrie, Bird-in-the-Hand, Gaberlunzie, and Dusty Miller. 20 to 1 against Blink Bonny, who won by a neck. Run in 2 minutes and 45 seconds. One of the fastest Derbys timed. At the same meeting, ridden by Charlton, she won the Oaks Stakes of 50 sovs. each, for fillies, 8st. 7lb. each, a mile and a half, beating Sneeze (2), Mœstissima (3), Imperieuse (4), sister to Jesuit (5), The Vigil (6), Aspasia (7), Oriana (8), Cantrip (9), Hegira (10), f. by Birdcatcher out of Miss Whip (11), Augury (12), and Tricolor. 5 to 4 on Blink Bonny, who won in a canter by eight lengths. Run in 2 minutes and 50 seconds—also one of the fastest races for the Oaks on record. At Ascot, ridden by Charlton, she walked over for a Sweepstakes of 50 sovs. each, Swinley Course. At Liverpool, at 9st. (inc. 7lb. extra), she won the Lancashire Oaks, beating Augury, 8st. 10lb., Lady Albert, 8st. 7lb., All's Well, 9st. 4lb. 5 to 1 on Blink Bonny, who won, hard held, by two lengths. At

Goodwood she carried off (at 9st. 3lb.) the Sixth Bentinck Memorial Stakes, beating Chevalier d'Industrie (8st. 7lb.) by twenty lengths. For the Great St. Leger, being first favourite, at 5 to 4, she was fourth (won by Imperieuse). She finished the year a victrix over the St Leger Course, on the following Friday, by winning the Park Hill Stakes, for 3-yr-old fillies, carrying 8st. 12lb., and beating Mœstissima and Orianda (each 8st. 7lb.), in a canter, by six lengths.

In 1858 Blink Bonny started but once; for the Bentinck Memorial Stakes, at Goodwood, won by Zuyder Zee (by Orlando), 8st. 7lbs., South Western, 8st. 10lb. (2); won by 200 yds. Blink Bonny pulled up a mile from home.

Summary.—In 1856 she started eleven times, and won eight:—The Sapling Stakes, at Manchester, £255; the Bishop Burton Stakes, at Beverley, £240; the Tyro Stakes, at Newcastle, £250; the Lancashire Produce Stakes, at Liverpool, £285; the Bentinck Memorial Stakes, at Goodwood, £296; the Gimcrack Stakes, at York, £315; the Filly Stakes, at Doncaster, £260; another Two-year-old Stakes, at Doncaster £300:—total £2,201.

In 1857 she started eight times and won six:—The Derby, at Epsom, £5,650; the Oaks, at Epsom, 3,565; Sweepstakes, at Ascot, £125; Lancashire Oaks, at Liverpool, £170; Bentinck Memorial, at Goodwood, £297; Park Hill, at Doncaster, £500:—total £10,307. Grand total £12,508.

The arrival in England of Mr. Ten Broeck, of New York, in the summer of 1857, lent interest to the racing at Goodwood, and promised some solution of a question, grown up of late years, as to the degeneracy of the English racer, and the stoutness of his transatlantic descendants. The Pryor and Prioress (the two Americans) ran for the Cup, won by the French-bred horse, Monarque (by the Baron, or Sting), but were not placed. The Pryor (as well as Lecomte, another American) died in November. Prioress, 4 yrs., 7st. 8lb., ran fourth at Lewes for the Sussex County Cup, won by Tournament, 3 yrs., 7st. 7lbs.: Polestar, 5 yrs., 9st. 1lb. (2), Chevalier d'Industrie, 3 yrs., 7st. 7lb. (3). At Chester Autumn, Prioress, 6st. 11lb., was 7th and last for the Shorts Handicap, won by Skycutter, 3 yrs., 6st. 4lb. Her first win was the Cesarewitch, at 6st. 9lb., after a dead heat, of three, with El Hakim, 3 yrs., 6st. 9lb., and Queen Bess, 3 yrs., 4st. 10lb. Deciding heat won by a length and a half, in 4 min. 15 sec. The race run in 4 min. 9 sec.: 34 started. Prioress, at 7st., could not break the spell for the Cambridgeshire, won by Odd Trick, 3 yrs., 7st. 4lb., Mœstissima (2), Saunterer (3).

In 1858, Prioress, who was amiss in the early part of the season, started six times, winning thrice. At Warwick September she paid 25 sovs. forfeit to Poodle, in a match at 10st. 9lb., 1 mile. At Doncaster she won the Great Yorkshire Handicap, 7st. 3lb., beating Queenstown, bro. to Bird-on-the Wing, Prince of Denmark, and eight others, not placed. In the Newmarket Second October she received 200 sovs. forfeit from Beadsman (winner of Derby), in a match for 500, 4 miles, 8st. 7lb. Next day she ran, at 7st. 9lb., a dead heat with The Brewer, 5 yrs., 7st., for second place in the Cesarewitch, won by Chatham, 3 yrs., 6st. 4lb. She was not placed (7st. 6lb.) in the Cambridgeshire, won by Eurydice, 3 yrs., 5st. 7lb.; but closed the year, on the Saturday in the Houghton, by beating Poodle in a match for £200, T. M. M., 11st. each—Mr. Ten Broeck riding the winner, and Capt. Little the aged horse.

In 1859 Prioress started twelve times, winning five races. First a match with Olympus, 6 yrs., 8st. 7lbs., D. M. Prioress carrying 7st. 9lbs. won by ten lengths. She was fourth for the Chester Cup, won by Leamington, and fourth for the Stewards' Cup, won by Tunstall Maid, at the same meeting. At Newmarket First Spring she won the Queen's Plate, (10st.), beating Polestar, aged, 10st., and Target, 4 yrs., 8st. 9lbs., by twenty lengths. At Epsom, Prioress, 9st. 5lbs., won the Queen's Plate, for mares, 2 miles 2 furlongs, in 4 min. 20 sec., beating Archduchess, 7st., Julie, 7st., Ruth, 9st. 2lbs., Hægira, 8st. 9lbs., and f. by Newminster, 7st. She ran third, 8st. 6lb., for the Goodwood Cup, won by The Promised Land, 3 yrs., 7st. 7lbs. She also ran third, 9st. 4lbs., on the Friday for the Bentinck Memorial Plate, won by Starke, 4 yrs., 8st. On this day Mr. Ten Broeck's ch. c. Umpire, by Le Conte out of Alice Carneal, by imported Sarpedon out of Rowena, won the Nursery Handicap, and was objected to as more than two years old: an examination gave the American colt the Stakes. Prioress, 7st. 3lbs., beat Toxophilite, 8st. 12lbs., in a match for 500 sovs., R. M., at the Newmarket Houghton, but was not placed next day for the Cambridgeshire, won by Red Eagle. This excellent mare closed the year by beating, at 9st., f. by Teddington out of Maid of Masham, 4 yrs., 8st., in a canter, A. F. for 300 sovs.

For various reasons we deem it unadvisable, in this place, to give any further performances of horses. Indeed, we could not hope to do so, without extending this branch of the subject to a length much beyond the space at our disposal; but in another chapter we record the doings of the giants of the race course up to the present day.

CHAPTER VI.

THE HISTORY OF RACING AND THE RACE-HORSE—CONTINUED.

I. TURKISH, PERSIAN, BARBARY, AND ARABIAN HORSES IMPORTED INTO GREAT BRITAIN, AND WHICH APPEAR IN THE PEDIGREES OF OUR MODERN RACERS. II. EARLY TURF CELEBRITIES: MATCHEM, KING HEROD, MARSK, ECLIPSE, POT-8-OS, HIGHFLYER. III. MODERN CELEBRITIES: BEESWING, ALICE HAWTHORN, THE HERO, RATAPLAN, FISHERMAN, &C.

RACING. I. LAWS OF RACING AS AMENDED FOR 1874. II. ADJUDGED CASES. III. RULES AND REGULATIONS OF THE JOCKEY CLUB. IV. LENGTHS OF COURSES. V. WINNERS OF THE GREAT RACES FROM THEIR INSTITUTION. MISCELLANEA.

I. TURKISH, BARBARY, AND ARABIAN HORSES IMPORTED INTO GREAT BRITAIN, AND WHICH APPEAR IN THE PEDIGREES OF OUR MODERN RACERS.

Horses of eastern and southern origin were, without doubt, brought into Europe many centuries previous to the reign of James I.; the Crusaders, and previously the Greeks, Romans, Moors, and Spaniards, crossing their native horses with the Barb, the Toorkman, and the Persian. The first reliable record of an "Arabian,"—as the Asiatic or African horse was popularly termed—imported for the avowed purpose of crossing our English breed, is when James I. purchased of Mr. Markham, a "Turkey merchant," a stallion, for the large sum of £500. This animal, being beaten by our English racers, brought the Arab blood into disrepute for a long period. This disparaging opinion was kept up and confirmed by the writings and precepts of William Cavendish, Duke of Newcastle, the great authority on horse-breeding in the following reigns. The Duke, it may be observed, did not look towards the turf as we understand it, but admired and lauded, as the desideratum of horse-flesh, an animal better adapted for military and state purposes than for speed.

As we have mentioned the Duke of Newcastle, an extract from his work will give the best idea of the horses then most in esteem. It was originally written in French, and entitled, "Méthode et Invention Nouvelle de Dresser les Chevaux," and contains a frontispiece and forty-two well-executed plates. William Cavendish, Duke of Newcastle, was instructor in riding to Charles II., when Prince of Wales, and mentions that such was the precocity of his royal pupil, that when between nine and ten years of age the young prince had attained the most firm and beautiful seat ever beheld, and managed a horse, "through all his airs and paces," with the greatest address and judgment. This work, although containing much repetition, besides many of the precepts of previous writers, is still worthy of notice.

The Duke's opinion of the relative merits of the horses of different countries is thus expressed:—

"We will now enquire into the difference existing between the breed of horses of these countries. I have not seen many Turkish horses, but there are various breeds among them, as may be imagined from the vast extent and diversity of the Grand Signior's dominions. The Turkish horse stands high, though of unequal shape, being remarkably beautiful, active, with plenty of power, and excellent wind, but rarely possesses a good mouth. Much praise is given to the grandeur of carriage of the Neapolitan horse; and in truth they are fine horses, those I have seen being both large, strong, and full of spirit. I have not only seen many Spanish horses, but several have been in my possession. They are extremely beautiful, and the most eligible of any, either to form subjects for the artist, or to carry a monarch, when, surrounded by the pomp and dignity of majesty, he would show himself to his people; for they are neither so intemperate as the Barbs, nor so large as the Neapolitans, but the perfection of both. The Barb possesses a superb and high action; it is an excellent trotter and galloper, and very active when in motion. Although generally not so strong as other breeds, when well chosen I do not know a more noble horse; and I have read strange accounts of their courage—for example, when so badly wounded that their entrails have protruded, they have carried their riders safe and sound out of danger, with the same spirit with which they entered it, and then dropped dead."

He gives the preference to Barbs, though, as he observes, he may be prejudiced in their favour by having had and seen more of them than of any other sorts of horses. The best sorts, he observes, come from Courdoue, (Cordova) in Andalusia, where the King of Spain has a stud. Endeavouring to establish

the superiority of his favourite sort of horse, he mentions that an old nobleman, who served under Henry IV., told him in France, that he had often seen Barbs upset the heavy Flemish horses in a tilt; "and I have taken," he continues, "the bone of the leg of a Barb, and found it to be almost solid, having a hollow scarcely large enough for a straw; while, on the other hand, in the same bone of a Flanders horse you may almost insert your finger." He further recommends Barb stallions to be put to English mares, with fine skins and good shapes, for breeding.

To return to the imported horses. Among the earliest of the list figures the White Turk, the property of Mr. Place, stud groom to Cromwell. PLACE'S WHITE TURK was sire of the Old Thornton Mare, Mr. Croft's Commoner, Wormwood, &c., and got the great grandams of Old Scar,* Wyndham's Crutches, Old Cartouch, and other less renowned sires.

Old Cartouch's dam was a "Royal mare" bred at Hampton Court, got by the Cripple Barb, his grandam was sister to Brown Farewell (presented by Mr. Crofts to Queen Anne), by Makeless, son to the Oglethorpe Arabian. Miss Neesham, Matchem, Bay Bolton, King Herod, and other celebrities of the reign of Anne and George I. and II. partake of the blood of Place's White Turk, and of the Byerley Turk, hereafter mentioned.

The BARB MARE imported about 1676, (the great grandam of Miss Layton) was one of the "Royal Mares" who figure in our best pedigrees. She was a present from the Emperor of Morocco to Lord Arlington, Secretary of State to Charles II., who sold her to Mr. Wilkinson. The "Merry Monarch" whose love of horse-racing we have noted elsewhere, sent abroad his "Master of the Horse," (some authorities say Sir Christopher Wyvill, others Sir John Fenwick, it seems probable both,) to procure foreign high-blooded horses and mares for breeding purposes. The mares procured by these emissaries, and probably some others, were called "Royal Mares." One of these was the sire of Hautboy, noticed under White d'Arcy Turk.

The WHITE D'ARCY TURK, also called the Sedbury Turk, was brought to England about 1675; he was the sire of Hautboy, by a Royal Mare, (Hautboy was sire of Grey Hautboy, sire of the renowned Bay Bolton,† and of Lamprie.)‡ We have little other notice of the d'Arcy Turk.

The SHADLING or LISTER TURK, (sire of Snake,) was brought to England by the Marshal Duke of Berwick, (bastard son of James II. by Arabella Churchill, sister of the great Marlborough), in 1686, from the siege of Buda-Pesth. Brisk, Peeping Peg, Coneyskins, and others were of his get; also the grandam of the Duke of Rutland's Sweepstakes.

The MARSHALL, or SELLABY TURK (1698), (sire of the dam of Wyndham), was the property of the brother of Mr. Marshall, stud-groom to King William III., Queen Anne, and George I. This horse was sire of Curwen's Old Spot, who was sire of the dam of Mixbury, the grandam of Croft's Partner; and so contributed blood to our best bred racers.

The BYERLEY TURK (sire of Basto)* was a Toorkman horse, rode by Captain Byerley, as a charger, in King William's campaign in Ireland against James II. in 1689. He proved a most valuable stud horse. He was sire of the Duke of Kingston's Sprite; of Sir Roger Mostyn's Jigg (sire of Croft's Partner); of the Duke of Rutland's Archer and Black Hearty (sire of Bonny Black); of Lord Bristol's Grasshopper, Lord Godolphin's Byerley gelding, &c., all of the first class of racers. He got the dam of Lord Halifax's Farmer mare (dam of Miss Halifax), Sir W. W. Wynn's Looby, and Mr. Smales's Childers. He was sire of the great grandam of Lord Godolphin's Whitefoot, Wryfoot, and Morat, who was grandam of Grey Ramsden, and gt. gt. grandam of the Bolton Fearnought.

The OGLETHORPE ARABIAN (sire of Makeless), of Bald Frampton, and the famous Scotch galloway that beat (carrying a feather) the Duke of Devonshire's Dimple, 7st. 7lbs. Dimple then holding the Whip at Newmarket. This Eastern horse appears to have been imported at the latter part of King William's reign, circa 1698.

The HONEYWOOD ARABIAN (sire of the grandams of Squirrel,† &c.), was first the property of Sir John Williams, then of Mr. Turner, of Suffolk, and lastly of Mr. Honeywood. He was sire of the two True Blues, who were in the best form of racers of their time; the latter the best plate horse in England. The dam of the True Blues was the Byerley Turk mare.

The STRICKLAND TURK, sire of Bolt (and of Colonel Howard's chestnut mare, who won the King's Plate at Newmarket, 1728, beating eleven others), was imported about 1715 by Sir W. Strickland, Bart.

The CURWEN BAY BARB (sire of the dam of Croft's Partner, &c.) was a present to Louis XIV. of France, about 1714, from Muley Ishmael, Emperor of Morocco, and was brought into

* Old Scar, bred by William Crofts, Esq., of Barforth, Yorkshire, 1706, and sold to the Duke of Devonshire. Old Scar was got by Makeless, his dam by Lord d'Arcy's Councillor; grandam by Brimmer, a daughter of Place's White Turk, out of Layton's Violet barb mare.

Makeless was got by Sir Thomas Oglethorpe's Arabian, and greatly esteemed for running, as also for a stallion. He was sire of Sir Ralph Milbank's famous black mare, who was the dam of Mr. Hartley's noted Blind Stallion. He also got the dam of Bay Bolton and Lamprie, (*see post*), the dam of Mr. Egerton's Councillor, the dam of Mr. Croft's Bustard, and grandam of his Flintshire Lady; the grandam of Old Cartouch, &c.

† Bay Bolton, first called Brown Lusty, was a brown bay horse, foaled in 1705, bred by Sir Matthew Pierson, of Yorkshire, and sold to the Duke of Bolton. His dam was a black mare by Makeless, grandam by Brimmer, a daughter of Diamond by Old Merlin. He died in 1736 at Bolton Hall, Yorkshire, at 31 years old.

‡ Lamprie, a grey horse, foaled in 1715, bred by Sir Matthew Pierson, Bart., and sold to Thomas Panton, Esq., of Newmarket. Lamprie was own brother to Bay Bolton, and their dam was also dam of Sir Matthew Pierson's Lugg mare, daughter of the Darley Arabian, sire of Childers.

* Basto, a brown horse, foaled in 1703, bred by Sir William Ramsden, of Byrom, Yorkshire. He afterwards was sold to the Duke of Devonshire. His dam was Bay Peg, a daughter of Leedes's Arabian (sire of Leedes), and grandam of Childers. Basto's grandam was out of a daughter of Leedes's Bald Peg, and his great grandam, bred by General Lord Fairfax, out of a mare of the same name, got by the republican general's Morocco Barb.

† Squirrel, foaled in 1718, was sire of Lord Gower's Fair Helen, a famous racer and own brother to the sire of the grandam of Eclipse, Proserpine, and Garrick.

England by Mr. Curwen, of Workington, Cumberland, who being in France, the Count de Brohan and the Count de Toulouse (two natural sons of Louis XIV.)—the former Master of the Horse, and the latter Admiral—sold him two Barb horses, which he conveyed to England, both of which proved to be most excellent stallions. The Curwen Bay Barb was distinguished for several years by the bare style of the Bay Barb, and was as well known to sportsmen by that name as he would have been had there never been another Barb horse of his colour in the kingdom. He did not cover many mares except Mr. Curwen's.

The Toulouse Barb became the property of Sir John Parsons, of Reigate, Surrey, and was afterwards sold to the Earl of Burlington; he was sire of the famous mare called the Reigate Mare, who was the dam of Cinnamon, &c.: he also got Mr. Panton's Molly*; Sir William Blackett's Bagpiper, and Blacklegs; Mr. Thompson's Rosamond; and many others.

Compton's Barb, (sire of Coquette,) afterwards became the property of Sir Charles Sedley, Bart., and was then styled, "the Sedley Grey Arabian." He was also sire of Lord Bolingbroke's Bittern, Sir E. Sedley's Grayling, Spillikin and Rouleau; Mr. Strode's Rebus and Pudenda; Mr. Walker's Baby; Lord Clermont's Toledo; Mr. Pulteney's Prude, &c.

The Acaster Turk was sire of Chaunter's Terror and Mr. Thwaite's Dun Mare (dam of Mr. Beaver's Driver). He was imported about 1720. He got the dam of Mr. Williams's Squirrel; the dam of Mr. Overton's famous Roxana—dam of Lath (1732), and Cade (1734)—the dam of Mr. Coke's Silverlocks, who was the dam of Lord Portmore's Silvertail, Lord Godolphin's Buffcoat, and grandam of Mr. Croft's Brilliant. Mr. Scrope's Trusty's dam was own sister to Silverlocks; Mr. Panton's Cato was out of an own sister to Roxana; and Mr. Greville's Molly Longlegs's dam was out of an own sister to Cato.

The renowned Darley Arabian, (sire of Childers, foaled in 1715), was the property of Mr. Darley, of Buttercramb, near York. A brother of that gentleman being in a consular capacity in the Levant, procured this so-called "Arabian" at a moderate price, and sent him to England as a present to his brother. The Darley Arabian was also the sire of Almanzor, a first-rate racer, and of Whitelegs, own brother to Almanzor, who was lost by an accident while training; Cupid, Brisk, Dædalus, Skipjack, Monica, Aleppo, Bullyrook, Dart, and other good horses of their day, own him as sire.

The Belgrade Turk (sire of Young Belgrade), was taken at the siege of Belgrade in Servia, from the Pacha of that place, by General Mercé, by whom he was sent to the Prince de Craon, who presented him to the Prince of Lorraine, whose Minister in London sold him to Sir Marmaduke Wyvill, Bart. in whose possession he died about the year 1740.

The Lonsdale Bay Arabian, imported 1725, (sire of Monkey and Spider), was also sire of Lord Lonsdale's Jigg, Juba, Cyrus, Kouli Kan, Ugly, Nathan, Sultan, and several others; he got the dam of Miss Ramsden, who bred Eumenes, Woodpecker, Quicksand, Wormwood and Whipcord; the grandam of Mr. Ellis's Diana; the grandam of Sir Joseph Pennington's Creeping Kate; the great grandam of Mr. Shafto's Goldfinder, &c. It may be remarked that several of our best race horses are traced to the Lonsdale Arabian.

The renowned Godolphin Barb now appears, (in 1730), of whom an account will be found *ante*, page 28, under the head of the Barb. Between 1732, his first colt Lath, by Roxana, and 1754, when Mr. Panton's Spinster threw a bay colt, Posthumus, to him. The Godolphin was the sire of forty horses, and twenty-five mares more or less celebrated on the turf.

The Cullen Arabian, (sire of Camillus), was brought into England by a Mr. Mosco, from Constantinople, says one account, and it adds that he was bred in the Sultan's stud, and highly esteemed for his pedigree. Another states that he was presented to the British Consul at Tangier, by the Emperor of Morocco, and therefore an undoubted Barb. He is stated as the sire of Mr. Williams's Mosco, and also as the sire of Mr. Warren's Whimsey, and of Basto. This is an anachronism. Basto was foaled in 1703, thirty-five years before the Cullen Arabian saw England, nay, before he was foaled. The Cullen Arabian died at Rushton, Northamptonshire, in 1761.

The Cullen Arabian mare (by the Cullen Arabian out of an Arabian mare) dam of Principessa, was bred by the Duke of Cumberland. She was a prolific brood mare in Sir Charles Sedley's stud, and was the dam of Æolus, by Regulus, Nottingham Bess, by Changeling; of Lovely, Worlaby, Betty, Torrent, Potosi, Mary-Ann, Aranjuez, Harper, Stride, and Bandy's grandam, by Babram; Presto, by Mr. Newcomb's Arabian; Regulator, by Careless, and others.

The Leedes Arabian, a brown horse, (sire of Ariadne), was at first called the Northumberland Arabian, having been imported by the Earl of Northumberland, and sold to Mr. Leedes of North Melford, Yorkshire. He was foaled in 1755, according to his pedigree, and was reported by the agent who sent him over, Mr. Phillips, to have been procured from the Imaum of Sennaar, at a heavy cost. Mr. Pick, ir

* Molly was a remarkable mare: her dam was reported to have been bought in a fair for a trifling sum, but some authorities say she was thoroughbred, and own sister to Quiet. She was of moderate size and of immense lasting powers. In 1720, at Newmarket, she beat Mr. Frampton's Potatoe for 200 gs.; Lord Drogheda's Picklcherring for 150 gs.; Lord Milsintowne's mare in two matches of 100 gs. each; and received forfeit of 50 gs. from a mare of Mr. Cumberland's. In 1721 she beat Stripling (Lord Milsintowne's) for 200 gs.; and received forfeit 100 gs. from Chimney-sweeper (Mr. Proby's), 180 gs. from Dun (Mr. Frampton's); and three forfeits of 100 gs. each on three matches with Lord Drogheda's Ticklepitcher, which were made to be run in one day! In 1722 she beat Bean (Sir W. Morgan's) for 300 gs.; Miss Worksop (Mr. Frampton's) for 150 gs. In 1723 she beat Lord Drogheda's Snip for 300 gs.; and received 100 gs. forfeit from Sophonisba (Lord Tankerville's). She was matched against the Duke of Bolton's Terror, and was to have run two hours afterwards against the same noblemen's horse Badger! In the first race, however, Molly escaped her persecutors by falling from a sudden cholic, (?) and died between the Stand and Rubbing House on Newmarket Heath. The sums she won and received in forfeits are said not to have been equalled at this period.

his *Historical Calendar*, tells us, apropos of this Leedes Arabian: "Mr. Phillips was sent into Arabia by the Earl of Northumberland, purposely to select and purchase for his Lordship such Arabian horses and mares as might appear best calculated to improve the breed of horses in this country." This laudable endeavour appears to have been diligently carried out, though Mr Phillips seems to have been somewhat credulous, for a horse-buyer, in the matter of oriental pedigrees, which were sold him with the animals.* The Leedes Arabian was sire of Nonsuch, Actæon, Grisilda, Mittimus, Ultramarine, Philippo, and other winners.

The Damascus Arabian (?) sire of Signal, was a black brown horse, imported 1760, at 4 to 5 years old. This horse was of great bone and substance, we are told, standing fourteen hands and a half, and had a flourishing pedigree, as being bred by the Sheik of Acre, presented to the Pacha of Damascus, and given by him to a "rich Turkey merchant at Aleppo," with whom the "Bashaw had great dealings in money affairs;" then purchased, at two years old, by an English gentleman, who possessed him until his arrival in England. All this was certified on stamped paper; for by this time these certificates were found by Jews, Greeks, and Syrian Arabs, to enhance the price of horses for the Western markets. The Damascus Arabian was sire of Flash, Mungo, and Trump, Atom, Little Joe, Mufti and Pigmy, Magpie, &c.; of the dam of Mr. Wentworth's Merry Wakefield, (afterwards Menelaus), which mare was also the dam of the Ancaster Mare, and from her descended Allegro, Dapple, Miss Grimstone, &c.

Bell's Grey Arabian, sire of Mistake, imported in 1764, was obtained "at great cost" by one Philip John, an Armenian, from a certain "Ben-y-sukr's" own stud, "with an undoubted assurance and testimonial, signed by all the principal officers and chief men of the country, of this horse being of the right Fezh (this may be Fez, in Barbary, or a blunder for Nedj) blood," &c. &c. Bell's Arabian was sire of the Duke of Northumberland's Voltaire, Ticklepitcher, Babble, &c.; of Sir Charles Bunbury's Orlando and Lazarus; of Cobscar, Close, Bellissima, Belinda, Harlequin, Atalanta, Shropshire Lass and other racers.

The Combe Arabian, imported 1768-9, also called Pigott's Grey Arabian, and lastly, Lord Bolingbroke's Grey Arabian, was sire of Methodist, Delia, Jansenist, Europa, Minerva, Philippo, Pastime, Mussulman, &c., of the dams of Thetford, Crop, Kiss-my-lady, Grace, Elder, &c. &c.

The other Eastern horses, where of sufficient importance from the merit of their offspring, will be incidentally mentioned under their names and performances. We flatter ourselves to have got together the most chronologically sequent list of the principal noteworthy oriental sires of the last two centuries, although at the best it is very imperfect.

As a pendant to this attempt to trace the pedigrees of the leading imported celebrities of the 17th and 18th centuries, we may observe, with Admiral Rous, "Nothing can be more unsatisfactory than the pedigrees of English race-horses up to 1750. Although Charles II. and Queen Anne kept magnificent studs, and agents were employed by the Masters of the Horse of several successive sovereigns to purchase valuable eastern blood, no records were kept, and we are in ignorance respecting the breed of the Royal Mares. It was not until 1791 that Mr. Weatherby, the keeper of the Match-book, obtained a list of pedigrees, collected by a private gentleman. A register was then kept, and the *Stud Book* was published in 1808. Since that time a regular account has been kept of the produce of thorough-bred stock; but many proprietors of brood mares will not take the trouble to register their foals."

Some other remarks by the same writer, pertinent to the matter under consideration, will be found in a foot-note at page 29 of this history.

"The original intention of the compiler of the *Stud Book* was to register all the winners in the official *Racing Calendar*; but a cloud hangs over the book, threatening a formidable class of rivals to dispute the value of the orthodoxy of the pure breed."

"Although it is an axiom in breeding animals, from man downwards, that a fresh cross of good blood is most desirable, we have failed to make any improvement in our race-horses by importations of any Eastern blood during the present century, simply owing to the extraordinary superiority which our horses have obtained in point of strength, size, and speed over the original stock.

"The Wellesley Arabian and Lord Lonsdale's Barb mare have been most successful. The Wellesley Arabian got Fair Ellen out of the best bred mare in England, Maria, by Highflyer out of Nutcracker, by Matchem. Her produce was Easyone, Dandizette, Lilias (winner of the Oaks), Translation, and The Exquisite; but not one of their descendants now figure in the list of favourites for great stakes. The above horses had good speed, but were deficient in staying a distance.

* Mr. Phillips says "they deserve great credit for the care with which they preserve the pedigree of their horses for several ages back. They know their alliances and all their genealogy; they distinguish the races by different names, and divide them into three classes. The first is that of the nobles, the ancient breed, and unadulterated on either side; the second is that of the horses of the ancient race, but adulterated; and the third is that of the common and inferior kinds. The last they sell at a low price; but those of the first class, and even of the second, amongst which are found horses of equal value to the former, are sold extremely dear. They know, by long experience, the race of a horse by his appearance; they can tell the name, the surname, and the colour, and the marks belonging to each. When they are not themselves possessed of stallions of the noble race for their mares, they borrow from their neighbours, paying a proper price, as with us, and receive a written attestation of the whole. In this attestation is contained the name of the horse and the mare, and their respective genealogies. When the mare has produced her foal, new witnesses are called, and a new attestation signed, in which are described the marks of the foal, and the day noted when it was brought forth. These attestations increase the value of the horse; and they are given to the person who buys him." This oriental original of our modern Stud Book, is denied by more recent and observant travellers.

* *The Race Horse*, chapter II, in Baily's *Magazine of Sports and Pastimes*, May, 1860.

"The Lowther Barb mare bred Barbara, the dam of Abdallah, Khadidjah, and Magenta, respectable third-rate horses; this may turn out a valuable cross. In all similar speculations of late years with Arabian blood, the average speed has been rarely obtained of the English racer, but not one single instance of the powers of endurance. In tracing the pedigrees of the stoutest running horses of late years, you go back to a royal mare or to a natural Barb mare; probably the same blood."

II.—EARLY TURF CELEBRITIES:—MATCHEM: KING HEROD: MARSK: ECLIPSE: POT-8-OS: HIGHFLYER.

MATCHEM.

This celebrated sire was a bay horse, foaled in 1748, bred by John Holme, Esq., of Carlisle, and sold to William Fenwick, Esq., of Bywell, Northumberland. Matchem, own brother to Changeling, was got by Cade; his dam by Partner; grandam (Mr. Vane's Little Partner's grandam) by Makeless; great grandam by Brimmer; great great grandam (Trumpeter's dam, and great grandam of Cartouch) by Mr. Place's White Turk, a daughter of Dodsworth, out of Mr. Layton's Violet Barb mare.

In 1753, Matchem won the subscription purse of £160. 5s. for five year olds, 10st., four miles, at York; beating Mr. Shafto's Barforth Billy, by Forester, and Mr. Watson's Bold, by Cade; 2 to 1 on Matchem, who was rode by Christopher Jackson, Barforth Billy by Thomas Jackson, and Bold by John Singleton. He also won £50 for five year olds at Norfolk, beating Mr. Shafto's Blameless, by Forester. In 1754, Matchem received £20 premium, and won the Ladies' Plate of 126 gs. for five year olds, 9st., and six year olds, 10st., four mile heats at York. He also won the Ladies' Plate £80 at Lincoln, and walked over for £50 at Norwich. At Newmarket, in April, 1755, Matchem won the £50 B.C., (4 mile, heats, for £50), beating Mr. Bowles's Trajan and two others. He won this race exceedingly easy; though it was said that Trajan ran faster than Matchem up to Choke Jade, but could not maintain the pace. They ran the heat in 7 mins. 20 secs., carrying 8st. 7lb. each; the odds were 5 and 6 to 4 on Matchem, and large sums were lost. The friends of Trajan were not satisfied that Matchem was the best horse, from the very indifferent condition of Trajan, who was only taken from grass the December before, had had but one sweat during the whole winter, and, when he came to Newmarket, was hurried with the strongest exercise to prepare him for running.

Mr. Fenwick, subsequently, offered to run Matchem against any horse in England for the Whip, which was accepted by Mr. Bowles to run Trajan against him, at Newmarket following Spring Meeting. In August, Matchem received a £20 premium, no horse entering against him at York.

At Newmarket, in April, 1756, Matchem and Trajan met, according to articles, at 10st. each, for 200 gs., and the Whip over the B.C., when Matchem proved the winner. The odds at starting, 2 to 1 on Matchem; over the flat, 5 to 1 on Trajan; but at the Turn of the Lands, 100 to 1 on Matchem, who then made running; it was observed that John Singleton, who rode him, showed judgment in waiting on the fiery Trajan till he had told him out; for although Trajan had the lead upon the flat, he was whipped to maintain it.

In the Newmarket Second Spring, Matchem started for the Jockey Club Plate, and was beaten by Spectator and Brilliant; Matchem being third; Sweepstakes, Whistlejacket, and Crab also started. The odds at starting for the first heat, (which was run in 7 mins. 12½ secs.) were 2 to 1 against Matchem, 3 to 1 against Whistlejacket, and 4 to 1 against Brilliant. The odds for the second heat, which was run in 7 mins. 40 secs., 2 and 3 to 1 against Brilliant, 4 to 1 against Spectator, Matchem scarcely named. The odds for the third heat, which was run in 8 mins. 5 secs., were 2 to 1 on Spectator, and 6 to 1 against Whistlejacket, who made good running for the last heat. Matchem next won 60 gs. at Newcastle, beating Mr. Swinburn's Drawcansir, and Mr. Parker's Full Moon. Won easy.

At Newmarket Second Spring, 1758, Matchem again started for the Jockey Club Plate,* and ran second to Mr. Greville's Mirza; Sir James Lowther's Jason, third; Mr. Panton's Feather, fourth; and Mr. Vernon's Forester, fifth. At starting, even money against Feather, 6 to 4 against Jason, 6 to 1 against Mirza, and 10 to 1 against Matchem. Though Mirza got an advantage at starting, which he held for more than three miles, yet Matchem ran an honest horse, and was beaten with great difficulty; and, as large sums were depending between Matchem, Jason, and Feather, it was observed, by some rather slow and classical wit of the day, "that the friends of old Matchem not only combed the Golden Fleece, but dressed the Feathers very handsomely."

In September following, Matchem won £50, carrying 9st., at Scarborough, beating easy Mr. Jolliffe's Foxhunter, and Mr. Harvey's Sweetlips. At starting, 10 to 1, and after the heat, 20 to 1 on Matchem. This was the last time of his running. It will be observed that Matchem did not begin racing till five years old, and at ten went to the stud.

Matchem, on going to stud, became the leading stallion in the North, as his stock fully testify. His death happened in the thirty-third year of his age, at Bywell, in Northumberland, on Wednesday, the 21st of February, 1781. A few days previous to his death, he covered a mare, which in due time brought forth a foal.

It has been said, and there is little reason to doubt with truth, that Mr. Fenwick cleared by Matchem, as a stallion, upwards of £17,000.

The first of Matchem's get that started, was the Duke of Northumberland's Cæsario, who won the Jockey Club Plate for 4 year olds, at Newmarket, on the 15th of May, 1764. Mr. Tuting's Turf also ran in the year, and won a match of 140 gs., and a £50 plate.

* "On account of the disputes respecting the placing of the horses, for the Jockey Club Plate, in the preceding year, 1757, heats were abolished for this trophy, and it was agreed by the noblemen and gentlemen of the said Club, that the horses that ran for the same, in future, should only run one heat."

The winnings of Matchem's produce, are thus recorded :—

			£	s.
In 1764	2	Winners won	302	0
1765	3	„	2,650	5
1766	6	„	2,113	10
1767	8	„	1,979	0
1768	3	„	680	0
1769	8	„	3,025	0
1770	15	„	7,267	10
1771	20	„	9,185	0
1772	30	„	25,116	10
1773	40	„	16,397	10
1774	30	„	20,200	0
1775	26	„	16,907	10
1776	35	„	11,207	10
1777	29	„	8,992	15
1778	19	„	6,903	10
1779	15	„	3,463	15
1780	22	„	5,281	5
1781	18	„	4,807	10
1718	14	„	2,901	0
1783	5	„	1,060	0
1784	3	„	360	0
1785	2	„	194	4
1786	1	„	105	0
In	23 yrs.	354 Winners won	£151,097	4

Besides the above sums, there were several cups and subscriptions won by the get of Matchem of which the value and amount cannot be ascertained.

The Partner Mare (dam of Matchem and Changeling) was also the dam of Mr. Holmes's Young Starling, and of the Duke of Northumberland's ch. filly, Primrose, by Mr. Wilson's Arabian. The Partner Mare was own sister to the dam of Mr. Croft's Toy, Madam (Twig's dam), Drowsy, Young Cade, Mr. Martindale's Torismond, the Duke of Ancaster's Villager—grandam of Alcides, Annium, Herald, Miss Barforth, Thistle by Syphon, etc., and great grandam of Privateer and Fitzherod. She was also own sister to the dam of Lord Godolphin's Mulatto, Mr. Dutton's Rat, Lord Gower's Sweepstakes, and Clio. She was likewise own sister to the dam of Lord Godolphin's Dormouse, Mr. Meredith's Mercury, Merryman, and Bolton, Mr. Swinburn's Cadarmus, and grandam of Mr. Latham's Snap, &c. The four Partner mares were all bred by Mr. Crofts, of Barforth. The dam of Toy, &c., was foaled in 1730; the dam of Mulatto, &c., in 1731; the dam of Dormouse, &c., in 1732, and the dam of Matchem, &c., 1733.

KING HEROD.

King Herod was a bay horse, bred by William Duke of Cumberland, and sold to Sir John Moore, Bart. He was foaled in 1758. King Herod was by Tartar, out of Cyprian.

In October, 1763, King Herod beat the Duke of Ancaster's Roman by Blank, 8st. 7lb., B. C., 500 gs., at Newmarket. In April, 1764, he won a Sweepstakes of 300 gs. each, h. ft (9 subs.), 10st., B. C., beating Sir John Moore's (afterwards Mr. Wildman's) Tartar by Tartar, out of Miss Meredith: 2 to 1 on King Herod. At Ascot Heath, in June, King Herod, 8st. 13lb., beat Lord Rockingham's Tom Tinker by Sampson, 8st. 7lb., four miles, 1000 gs.: 4 to 1 on King Herod. At Newmarket, in October, Herod, 8st. 11lb., beat the Duke of Grafton's Antinous, 8st. 8lb., B. C., 500 gs.: 6 to 4 on Antinous. At Newmarket, in May, 1765, carrying 9st., again beat the Duke of Grafton's Antinous, 8st. 5lb., B. C., 1000 gs.: 7 to 5 on Antinous. In October, carrying 9st., he was beaten by Sir James Lowther's Ascham, 6 yrs., 8st., B. C., 1000 gs.: 3 to 1 on King Herod. At the decease of the Duke of Cumberland, King Herod was purchased by Sir John Moore; and in April, 1766, at 9st., he was beaten by Lord Bolingbroke's Turf, 5 yrs., 8st. 8lb., B. C., 1000 gs.: at starting, 7 to 4 on King Herod. At York, in August, he started for the subscription purse against Bay Malton, Jerkin, Royal, George Flyfax, and Beaufremont; but a blood-vessel bursting in King Herod's head when running the last mile, well forward, he came in last. At Newmarket, in April, 1767, he ran second to Bay Malton, beating Turf and Ascham; and in May, carrying 5st. 7lbs., he beat Mr. Shafto's Ascham, 6st., B. C. 1,000 gs: 6 to 4 on Ascham.

King Herod was a remarkably fine horse, with uncommon power. The *Stud Book* gives nearly 100 named colts, and 54 fillies, as his immediate progeny—most of them well-known racers. The winnings of these are thus stated :—

			£	s.
In 1771	1	Winner won	525	8
1772	4	Winners won	3,890	10
1773	17	„	6,680	10
1774	23	„	10,206	6
1775	17	„	7,744	0
1776	19	„	9,172	6
1777	35	„	15,773	14
1778	45	„	23,046	5
1779	50	„	21,396	2
1780	55	„	20,008	15
1781	53	„	21,087	10
1782	50	„	18,605	18
1783	47	„	15,629	1
1784	34	„	15,998	2
1785	27	„	9,224	5
1786	11	„	1,777	5
1787	6	„	514	0
1788	1	„	105	0
1789	2	„	12	10
In	19 yrs.	497 „	£201,505	9

Besides the above sums :—

In 1774, at Newmarket, 6 hogsheads of claret, by Telemachus.
1778, at Newmarket, 14 hogsheads of claret, by Bordeaux, and 2 by Laburnum, the second horse.
1779, at Newmarket, 6 hogsheads of claret, by Sting.
1780, at Newmarket, 9 hogsheads of claret, by Buccaneer.
1781, at Newmarket, the Clermont Cup, by Woodpecker.
1782, at Newmarket, the Whip, by Anvil.
1784, at Newmarket, 5 hogsheads of claret, by Gonzales, and 2 by Balance, the second horse.
1786, at Salisbury, the City Silver Bowl, by Challenger.

We may note, as a contrast to the high charges for some modern stud-horses of vastly inferior pretensions, that King Herod, during the seasons he was at Nether Hall, Bury,

Suffolk, was advertised at 10 gs. from 1768 up to 1774, when he advanced, in consequence of the fame of his offspring, to 25 gs., and continued at that figure until 1780, in which year he died, on the 12th of May, in the 22nd year of his age.

MARSK.

This horse, sire of the renowned Eclipse, was a brown bay, foaled in 1750, bred by John Hutton, Esq., of Marsk, near Richmond, Yorkshire; who sold him to the Duke of Cumberland.

Marsk was by Squirt, out of the Ruby mare; she was from a daughter of Bay Bolton and Mr. Hutton's Blacklegs, grandam by Foxcub; great grandam by Coneyskins; great great grandam, by Hutton's Grey Barb, a daughter of Mr. Hutton's royal colt, a daughter of the Byerley Turk, from a Bustler mare.

The following certified extracts from Mr. Hutton's Stud Book are printed by Weatherby, as taken in 1801:—

"In the year 1750, his Royal Highness the Duke of Cumberland gave me—John Hutton—a chestnut Arabian in exchange for a brown colt, got by Squirt, bred from the Ruby mare, and which his Royal Highness afterwards called Marsk.

"My Blacklegs was got by the Mulco Bay Turk; his dam by Coneyskins, his grandam was the Old Club-foot mare, got by Mr. Weekes's Huntboy."

"The above are true copies from Mr. Hutton's stud book.—Marsk, Oct. 1801." "E. Geldart."

Marsk's running may be briefly stated.

At Newmarket, in April, 1754, he received forfeit from Mr. Cornwall's gr. colt, by Cornwall's Arabian, On May 8th he won the Jockey Club Plate of 100 gs., for four year olds, 8st., one heat, over the Round Course, beating Mr. Panton's Rythos, Croft's Brilliant, Lord Gower's Ginger, and Mr. Vernon's Bear. In October following Marsk, at 9st., beat Lord Trentham's Ginger, by Shark, 8st., 9lbs., B.C. in a match for 300 gs.

Marsk started but three times besides the above, viz:—In April, 1755, when he was beaten by Brilliant and Syphon; in April, and May 1756, when he was beaten in two matches by Snap; and in October following, he paid forfeit to Spectator.

Marsk was a private stallion till the death of the Duke of Cumberland, which happened in the year 1765. He was sold at the Duke's sale at Tattersall's to a farmer, for a trifling sum, being considered an indifferent stallion, and in 1766, covered country mares and foresters in Dorsetshire, at half a guinea. He was afterwards purchased by Mr. Wildman for twenty guineas; the seller being pleased that he was quit, as he thought, of a bad bargain.

In 1767, he stood at Bistern, near Ringwood, Hants, at 3 gs. In 1769, at Gibbons' Grove, near Leatherhead, Surrey, at 5 gs. and in 1770 at 10 gs., after which he was advanced to 30 gs.

The unrivalled performances of the renowned Eclipse, quickly occasioned enquiry for the sire, and the fame of Marsk spread. The Earl of Abingdon bought him for 1000 gs., and sent him to Rycot, Oxfordshire, his lordship's stud farm, where he stood at a fee of 100 gs., and remained till his death, in the year 1779.

The first of Marsk's get that started was the Duke of Cumberland's chestnut filly, (out of Lord Pomfret's Saracen's dam) who beat Lord Bolingbroke's bay filly, by Lord Gower's horse, (out of Marotte's dam) 8st. 7lb. each, over the Duke's Course, for 300 gs. at Newmarket, in April 1765.

Marsk was sire of an immense number of excellent horses, dating from his son and namesake, Marsk, in 1762, to Gass's dam, 1780, (Mr. Churchill's), his best foal. Of these seventy-two are given, with their owners' names, in Weatherby, with an acknowledgment that the list is very imperfect. The winnings of his immediate progeny are thus enumerated:—

		£	s.
In 1765	1 Winner won	315	0
1766	1 „	50	0
1767	1 „	260	0
1768	2 Winners won	300	0
1769	3 „	945	1
1770	6 „	4,512	10
1771	2 „	310	0
1772	1 Winner won	995	0
1773	3 Winners won	312	10
1774	16 „	5,507	15
1775	24 „	18,500	15
1776	23 „	19,235	13
1777	15 „	6,101	3
1778	7 „	2,754	5
1779	14 „	4,637	4
1780	12 „	2,727	10
1781	8 „	1,856	0
1782	5 „	707	5
1783	4 „	252	10
1784	3 „	512	10
1785	2 „	268	0
1786	1 Winner won	50	0
In 22 yrs.	154	£71,205	10

Besides the above sums

In 1769, at Salisbury, the City Silver Bowl was won by Mr. Wildman's Eclipse.
1773, at Epsom, the Cup, by Lord S. Hamilton's Stripling.
1775, at Newmarket, thirteen hogsheads of claret, by Shark.
1776, at Newmarket, fifteen hogsheads of claret, by Pontac;
„ at Ipswich, the Gold Cup, by Hephestion.
1778, at Newmarket, the Whip, by Shark.

Marsk died in July, 1779, in his twenty-ninth year.

We may here note that Snap, by Snip, his dam by Fox, out of the Duke of Bolton's Gipsy, foaled in 1750, the same year as Marsk, was celebrated for his produce, which won in 21 years, (261 winners), no less than £92,537. Snap, who figures in many pedigrees, died at West Wratting, Northumberland, July 1777, aged 27 yrs. He was sire of Goldfinder, Omnium, Angelica, (Assassin's dam), &c. &c. We now come to the obscurer of lesser lights, the great

ECLIPSE.

This paragon of racers was a chestnut, and foaled during the great eclipse in 1764, the fourth year of the reign of our third George. He was bred by William, Duke of Cumberland, and

purchased after his decease, by Mr. William Wildman,* who sold him to Dennis O'Kelly, Esq. Eclipse was by Marsk out of Spiletta.

Spiletta, dam of Eclipse, was a bay mare, foaled in 1749, and bred by Sir Robert Eden, Bart. She was got by Regulus out of Mother Western. Spiletta, when in training, was the property of H.R.H. William, Duke of Cumberland, but started only once, which was at Newmarket, in April, 1754, for a £50 plate, for horses, &c., rising 5 yrs., 8st. 7lb. each, the Round Course, and was beat by Sir Charles Sedley's Royal, by Regulus; the Marquis of Harrington's Tantivy, by Sedbury; and Mr. Curson's Jason, by Standard. She was afterwards a brood mare in His Royal Highness's stud, and was the dam of the following:—

	Foaled
His Royal Highness's bay filly, Ariadne, by Crab	1759
Duke of Ancaster's bay filly, Proserpine, Bellerophon, Montesquieu, Hebe, Cælia, Luna, and Falcon's dam, by Marsk	1760 to 69
Lord Abingdon's ch. colt., Hyperion, afterwards Garrick, by Marsk	1772
Duke of Ancaster's ch. filly, Briseis, by Chrysolite	1774

Spiletta died in the year 1776, aged twenty-seven.

At Epsom, May 3rd, 1769, Eclipse (the first time of his starting) won £50, for horses that never won £30, matches excepted; 5 yrs., 8st., and 6 yrs., 9st. 3lb., four mile heats; beating Mr. Fortescue's Gower, by Sweepstakes, 5 yrs.; Mr. Castle's Cade, by Young Cade, 6 yrs.; Mr. Jenning's Trial, by Blank, 5 yrs., and Mr. Quick's Plume, by Feather, 5 yrs. At starting, 4 to 1 on Eclipse; the horses were all together at the three mile post, yet in the second heat, Eclipse, from the flourish of the whip, made running, and though pulled for the last mile with all the strength that his rider, John Oakley, was master of, he distanced all the four. Mr. O'Kelly sported much money on this race. Some time previous he had taken the odds to a very large amount, and on the day of running he betted even money, and five and six to four, that he placed all the horses, and when called on to declare, he said, "Eclipse first, and the rest nowhere."

At Ascot Heath, May 29th, Eclipse won £50 of 5 yr. olds, 9st. 3lb., two mile heats, beating Mr. Fettiplace's Crême de Barbade, by Snap; 8 to 1 on Eclipse. At Winchester, June 13th, he won the King's plate for 6 yr. olds, 12st., though only five years old, beating Mr. Turner's Slouch, by Blank, who had won, the same year, the King's Plate at Guilford; the Duke of Grafton's Chigger, by Slouch; Mr. Gott's Juba, by Regulus; and distanced, the first heat, Mr. O'Kelly's Caliban, by Brilliant, and Mr. Bailey's Glanville. 5 to 4 against Eclipse, 2 and 3 to 1 against Caliban, and 5 to 1 against Slouch; after the heat, 10 to 1 on Eclipse. On the 15th, same place, he walked over for £50, weight for age. At Salisbury, June 28th, he walked over for the King's plate, for 6 yr. olds, 12st. And on the next day, he won the City Silver Bowl, with 30 gs. added, free for any horse, 10st., beating Mr. Fettiplace's Sulphur, aged; and Mr. Taylor's Forrester, 6 yrs., who were distanced the first heat; 10 to 1 on Eclipse. At Canterbury, July 25th, he walked over for the King's Plate for 6 yr. olds, 12st. At Lewes, July 27th, he won the King's Plate for 6 yr. olds, 12st., beating Mr. Strode's Kingston, by Sampson, who won the £50, the day following; 10 to 1 on Eclipse. At Litchfield, September 19th, he won the King's Plate for 5 yr. olds, 8st. 7lb., three mile heats, beating Mr. Freeth's Tardy, by Matchless; 20 to 1 on Eclipse.

At Newmarket First Spring, Tuesday, April 17th, 1770, Eclipse beat Mr. Wentworth's Bucephalus, by Regulus, same age, 8st. 7lb. each, B. C. Mr. Wildman staked 600 gs. to 400 gs.; 6 to 4 on Eclipse. On Thursday, April 19th, Eclipse, then Mr. O'Kelly's, won the King's Plate, 12st., heats, R. C., beating Mr. Strode's Pensioner, by Matchless, who was third and distanced; Mr. Fenwick's, late Mr. Bland's, Diana was second, and the Duke of Grafton's Chigger fourth, and drawn. At starting, 10 to 1 on Eclipse; after the heat, large sums were betted, at 6 and 7 to 4, that he distanced Pensioner, which he did with great ease. At Guildford, June 5th, he walked over for the King's Plate, 12st.; and at the same meeting, August 23rd, he won the subscription purse of £319 10s. (Mr. O'Kelly paid 50 gs. entrance), for 6 year olds, 8st. 7lb., and aged, 9st., four miles, beating Mr. Wentworth's Tortoise, aged, and Sir C. Bunbury's Bellario, aged. At starting, 20 to 1 on Eclipse, and in running, 100 to 1 he won. Eclipse took the lead at starting, when he had run two miles was above a distance before his antagonists, and won with uncommon ease; 7 to 4 on Tortoise, against Bellario. At Lincoln, September 3rd, he walked over for the King's Plate, 12st. At Newmarket, October 3rd, he won the 150 gs. sweepstakes, paying 100 gs. entrance, for 6 year olds, 8st. 10lb., and aged, 9st. 2lb., B. C., beating Sir C. Bunbury's Corsica, by Swiss, 5 years old; 70 to 1 on Eclipse; and on the next day, he walked over the Round Course for the King's Plate, 12st. He was then put out of training.

Eclipse won eleven King's Plates, the weights for ten of which were 12st. each, one more than had been won by any horse in England, up to that time. Previous to his running for the King's Plate at Winchester, in 1769, Mr. O'Kelly gave Mr. Wildman 650 gs. for a half share of him; and afterwards bought the other for 1,100 gs.; even at that price he certainly proved a cheap horse.

Eclipse was never beaten, and was allowed by all turfmen to be the fleetest horse that had run in England, since the time of Childers.

Eclipse covered at Clay Hill, near Epsom, Surrey, in 1771, at 50 gs. and one guinea; in 1772-74, at 25 gs., and 10s. 6d; afterwards, by subscription, forty mares, besides those of his owner, at 30 gs. and one guinea; in 1779, not by subscription,

* Mr. Wildman was a salesman at Smithfield, and kept for many years a good stud of race-horses at Mickleham, near Epsom, where he also took in horses to train. Having received a hint of the superiority of this horse, he attended the sale; but before his arrival, the colt had been knocked down at seventy guineas. On looking at his watch, and perceiving that the appointed hour of sale had not yet arrived by a few minutes, according to the terms of the advertisement, he persisted that the sale was not lawful, and that the lots knocked down should be resold, which was done accordingly, and Eclipse was purchased by him for seventy-five guineas.

at 30 gs. and one guinea; in 1781-84, he was stinted to fifty mares, besides those of his owner, at 20 gs. and one guinea; in 1785-86, forty mares, besides those of his owner, at 30 gs. and one guinea; in 1787-88, twenty-five mares, besides those of his owner, at 30 gs. and one guinea. After which, Eclipse was advertised at the same price, at Cannons, Middlesex, to which he was removed from Epsom in his carriage. The machine had four wheels, was drawn by two horses, and the groom was an inside passenger.*

The following named horses, besides others, were by Eclipse, viz. :—

Achilles, Duke of Bolton.
Actress, Mr. Whitfield.
Adjutant, Mr. O'Kelly.
Adonis, Mr. O'Kelly.
Alexander, Lord Grosvenor.
Alphonso, Duke of Cumberland.
Anna, Duke of Cumberland.
Anna Liffey, Duke of Rutland.
Annette, Mr. Vernon.
Antiochus, Mr. O'Kelly.
Augusta, Mr. O'Kelly.
Aurelius, Lord Grosvenor.
Bank, Mr. Davis.
Basilius, Mr. O'Kelly.
Bobadil, Duke of Cumberland.
Bobtail, Lord Egremont.
Bonnyface, Mr. O'Kelly.
Boringdon, Mr. Parker.
Boudrow, Mr. O'Kelly.
Brush, Mr. Croke.
Butterfly, Mr. O'Kelly.
Canto Baboo, the Prince of Wales.
Carlton, Mr. Stapleton.
Charles, Mr. O'Kelly.
Charlemont, Mr. Croke.
Charlotte, Mr. Pigott.
Chaunter, Mr. O'Kelly.
Cherry, Mr. O'Kelly.
Chesfield, Mr. Pulteney.
Clarionet, Mr. O'Kelly.
Columbine, Mr. Williams.
Comet, the Prince of Wales.
Competitor, Lord G. H. Cavendish.
Corkscrew, Mr. Napier.
Cornwall, Lord Boringdon.
Crassus, Duke of Cumberland.
Deva Singh, the Prince of Wales.
Diana, Lord G. H. Cavendish.
Dido, Duke of Cumberland.
Dion, Mr. O'Kelly.
Don Quixote, Mr. Taylor.
Dorcas, Mr. Dutton.
Dungannon, Mr. O'Kelly.
Drummer, afterwards called Warwick, Mr. O'Kelly.
Duplicity, Mr. Pigott.
Eagle, Sir John Shelley.
Elegant, Mr. Hatton.
Eliza, Mr. O'Kelly.
Empress, Sir H. Featherstone.
Eutychus, Mr. O'Kelly.
Erasmus, Mr. Naper.
Everlasting, Sir John Shelley.
Fair Barbara, Mr. Stapleton.
Farmer, Mr. O'Kelly.
Firetail, Duke of Cumberland.
Flamer, Lord Grosvenor.
Frenzy, Sir J. L. Kaye.
General, Mr. O'Kelly.
Giant, Duke of Bolton.
Glow-worm, Mr. Brand.
Golden Rose, Mr. O'Kelly.
Grapeshot, Mr. O'Kelly.
Greybeard, Duke of Bolton.
Grey Surrey, Mr. Ladbroke.
Grimalkin, Lord Abingdon.
Gunpowder, Mr. O'Kelly.
Hackwood, Duke of Bolton,
Harmonia, Mr. Moody.
Hautboy, Mr. O'Kelly.
Henley, Mr. Parker.
Hermit, Mr. Wentworth.
Hiccup, Mr. Walker.
Hidalgo, Lord Grosvenor.
Hope, Mr. Gregson.
Horatia, Duke of Bolton.
Horizon, Mr. O'Kelly.
Javelin, Duke of Cumberland.
Jesse, Mr. Burlton.
Imprudence, Lord Clermont.
Jockey, Mr. Burlton.
Joe Andrews, first called Dennis-O!, Mr. G. Searle.
Isabella, Lord Grosvenor.
Jupiter, Mr. O'Kelly.
King Fergus, Mr. O'Kelly.
King Hermon, the Prince of Wales.
King Hiram, Mr. O'Kelly,
King Milesius, Mr. O'Kelly.
Lady Thigh, Mr. O'Kelly.
Lavinia, Sir John Shelley.
Laura, Mr. Garforth.
Light Infantry, Mr. O'Kelly.
Lightning, Mr. O'Kelly.
Little Henry, Duke of Cumberland.
Lily of the Valley, Mr. O'Kelly.
Luna, Mr. Parker.
Madcap, Duke of Bolton.
Margaret, Duke of Bolton,
Maria, the Prince of Wales.
Mercury, Mr. O'Kelly.
Meteor, Lord Grosvenor.
Mirmillo, Lord Grosvenor,
Miss Hervey, Mr. O'Kelly.
Mountebank, Mr. Dutton.
Mouse, Mr. O'Kelly.
Nina, Duke of Cumberland.
Obscurity, Lord Milford.
Paris, Mr. O'Kelly.
Pegasus, the Prince of Wales.
Planet, Lord Ossory.
Pluto, the Duke of Cumberland.
Plutus, Sir John Lade.
Polydore, Duke of Cumberland.
Poor Soldier, Mr. Wentworth.
Postilion, Mr. O'Kelly.
Pot-8-o's, Lord Abingdon.
Princess, Mr. O'Kelly.
Puffendorff, Mr. O'Kelly.
Queen Mab, Mr. O'Kelly.
Ready Rhino, Lord Abingdon.
Recruit, Mr. Parker.
Regatta, Duke of Cumberland.
Romp, Mr. Carteret.
Ruth, Duke of Cumberland
Saltram, Mr. Parker.
Satellite, Sir F. Poole.
Saturn, Mr. O'Kelly.
Sergeant, Mr. O'Kelly.
Serpent, Mr. O'Kelly.
Skylight, Sir C. Bunbury.
Soldier, Mr. O'Kelly.
Spark, Mr. Wentworth.
Spartacus, Duke of Grafton.
Speranza, Duke of Grafton.
Sphinx, Duke of Grafton.
Spinner, Lord Grosvenor.
Spitfire, Mr. Walker.
Spot, Mr. O'Kelly,
Squeak, Lord Grosvenor.
Stripling, Mr. Turner.
Sussex, Sir F. Poole.
Sweetheart, Lord Grosvenor.
Tempest, Mr. Bailey.
Theresa, Mr. Bullock.
Thunderbolt, Mr. O'Kelly.
Ticklepitcher, Mr. O'Kelly.
Tiffany, Lord Milsintowne.
Titania, Mr. Hicks.
Trimbush, Mr. O'Kelly.
Troy, Mr. O'Kelly.
Twilight, Mr. Parker.
Venus, Mr. O'Kelly.
Vertumnus, Mr. O'Kelly.
Vistula, Mr. O'Kelly.
Violet, Lord Grosvenor.
Volunteer, alias Cornet, Mr. O'Kelly.
Whim, Mr. Carter.
Whizgig, Lord Surrey.
Yarico, Mr. O'Kelly.
Young Eclipse, Mr. O'Kelly
Zantippe, Mr. Napier.
Zara, Lord Grosvenor.
Zelia, Lord Derby.
Zodiac, Sir J. L. Kayes.
Zoroaster, Duke of Grafton.

Eclipse was sire to the dams of the following, besides others, viz. :—

Abigail, Lord Darlington.
Adeline, Mr. Herrick.
Antony, Sir W. Aston.
Archduke, Sir F. Standish.
Archer, Mr. Broadhurst.
Ariadne, Lord Grosvenor.
Astonishment, Sir J. L. Kayes.
Attainment, Mr. Lockley.
Bab, Lord Derby.
The Babe, Mr. R. Hamilton.
Barnaby, Mr. Wentworth.
Belinda, Lord Grosvenor.
Biddy Tipkin, Mr. Elton.
Bobtail (by Precipitate), Lord Egremont.
Boldface, Lord Grosvenor.
Braganza, Mr. Fox.
Brontes, Lord Grosvenor.
Brown Charlotte, Mr. Herrick.
Cabin Boy, Mr. J. P. Smith.
Camel, Mr. Hale.
Carrots, Mr. Hale.
Chanticleer, Lord Egremont.
Cinnamon, Lord Clermont.
Clown, Mr. Vernon.
Cœur de Lion, Mr. Turner.
Commodore, Mr. Sitwell.
Crazy, Lord Egremont.
Don Carlos, Duke of Cumberland.
Doxy, Lord Clermont.
Eliza, Mr. Wentworth.
Eliza, Mr. J. Hutchinson.
Eliza, Mr. C. Wilson.
Embryo, Duke of Bolton.
Ephemera, afterwards Rushlight, Lord Egremont.
Expectation, Mr. Cookson.
Fire, the Prince of Wales.
First Fruits, Duke of Grafton.
Flambeau, Duke of Grafton.
Fogram, Duke of Grafton.
George, Mr. Cassan.
Geranium, Mr. Clifton.
Goldfinch, Mr. Panton.
Goose, Duke of Bedford.
Grape, Mr. Barton.

* We believe this to have been the first instance in which a van, drawn by horses (now so generally in use), was employed in conveying a race-horse; the rail has now superseded this great improvement in equine travelling for long distances.

Guildford, Mr. Durand.
Haphazard (by Sir Peter), Lord Darlington.
Haphazard (by Delpini), Mr. G. Baker.
Hawk, Mr. Ladbroke.
Hawker, Mr. Phillips.
Heroine, Lord Clermont.
Hickory, Lord Fitzwilliam.
Hospitality, Mr. Lockley.
Hutton, Mr. Craythorn.
Jack's Alive, Mr. G. Baker.
Icarus, Mr. Hale.
Ida, Lord Egremont.
Jenny Bull, Lord Grosvenor.
Jenny Spinner, Mr. J. Lord.
Joan, Mr. Douglas.
John Bull, Lord Grosvenor.
Junius, Mr. Kirwan.
Juno, Mr. Broadhurst.
King David, Mr. Elliot.
Lambinus, Duke of Bedford.
Lazarus, Mr. Ladbroke.
Leapfrog, Mr. Leeson.
Leviathan, Duke of Bedford.
Little Flyer, Lord Barrymore.
Little John, Sir F. Standish.
Little Luna, Mr. Montolieu.
Little Pickle, Mr. Broadhurst.
Logie o' Buchan, Lord Strathmore's.
Logie the Laird, afterwards Lithe, Lord Strathmore.
Lothario, the Prince of Wales.
Lucy, Sir. J. L. Kaye.
Luna, Duke of Queensberry.
Magpie, Mr. Ladbroke.
Mary Ann, Mr. R. Hamilton.
Master Bagot, Mr. R. Hamilton.
Mediocrity, Hon. G. Villiers.
Miss Hamilton, Mr. Astley.
Miss Zelia Teazle, Mr. W. N. W. Hewett.
Mr. Teazle, Sir F. Standish.
Mother Blackcap, the Prince of Wales.
Northampton, Lord Grosvenor.
Oberon, Mr. J. Hutchinson.
Oddity, Sir J. L. Kaye.
Pecker, Duke of Queensberry.
Peggy Bull, Lord Grosvenor.
Phenomenon, Sir J. L. Kaye.
Ponto, Lord Clermont.
Pyracmon, the Duke of York.
Queen Charlotte, Mr. Lockley.
Raby, Lord Darlington.
Rag, Lord Egremont.
Ratoon, Mr. Mr. Hammond.
Ringleader, Mr. Montolieu.
Rioter, Lord Clermont.
Ruby, Mr. Hale.
St. George, Lord Darlington.
Scotilla, Lord Stamford.
Shuter, Lord Grosvenor.
Silverlocks, Mr. Preston.
Skyscraper, Duke of Bedford.
Sloven, Mr. Dolphin.
Smart, Mr. Douglas.
Spider, the Prince of Wales.
Stamford, Sir F. Standish.
Statira, Lord Winchilsea.
Strathspey, Mr. R. Fletcher.
Stripling, Sir H. Williams.
Tray (or by Trentham*), Lord Egremont.
Tartar, Lord A. Hamilton.
Tidy, Lord Grosvenor, afterwards Mr. Smith, of Ireland.
Tom Tit, Mr. Broadhurst.
Topgallant, Duke of Bedford.
Trueman, Duke of Grafton.
Tulip, Mr. Hale.
Vandal, Duke of Grafton.
Venom, Duke of Grafton.
Vision, Mr. Elliot.
Volante, Mr. Montolieu.
Warrior, Lord Fitzwilliam.
Weasel, Mr. J. Hutchinson.
Wilkes, Mr. Whaley.
Xenia, Lord Grosvenor.
Zenobia, Lord Derby.

Eclipse had several full brothers and sisters; Hyperion, afterwards Garrick, Proserpine, Briseis, and others, but none of them racers of any high form.

A summary of the winnings of the produce of Eclipse is given in the *Historical Calendar*. It is of course merely approximative, but we give it as the best procurable at this distant period. Mr. Herring, the celebrated animal painter, has a collection of anecdotes and minute particulars, relating to Eclipse and other early turf celebrities, which we should be glad to see made public.

* Trentham, by Sweepstakes, out of Miss South, was a bay horse, foaled in 1766; he beat Metaphysician, Rosetta, Petit Maitre, Transit, Piccadilly, Pincher, Priestess, and other good horses, in matches, and ran a dead heat with Mambrino for the Jockey Club Plate, in 1775; he won £8,450 in stakes, besides plates, and was a stud horse at Lord Egremont's stables, at Petworth, Sussex.

The produce of Eclipse won as follows:—

		£	s.
In 1774	1 Winner won	210	0
1775	9 Winners won	3,269	5
1776	15 „	6,418	15
1777	17 „	8,986	0
1778	23 „	9,410	10
1779	29 „	7,726	5
1780	28 „	10,637	0
1781	26 „	11,539	10
1782	31 „	12,893	15
1783	29 „	13,914	5
1784	16 „	13,280	8
1785	21 „	8,961	5
1786	18 „	14,604	10
1787	19 „	15,288	5
1788	15 „	9,218	17
1789	14 „	4,417	5
1790	13 „	4,022	5
1791	10 „	1,744	10
1792	5 „	656	10
1793	1 Winner won	200	0
1794	2 Winners won	431	0
1795	1 Winner won	112	12
1796	1 „	105	0
In 23 yrs.	344 Winners won	£158,047	12

Besides the above sums:—

In 1779, at Newmarket, the Clermont Cup and subscription, also the October Cup, by Lord Grosvenor's Pot-8-o's.
1779, at Salisbury, the City silver Bowl, by Sir H. Featherstone's Empress.
1780, at Newmarket, the Clermont Cup and subscription, the Jockey Club Plate, and the Whip, by Lord Grosvenor's Pot-8-o's.
1781, at Newmarket, the Jockey Club Plate, and the Whip, by Lord Grosvenor's Pot-8-o's.
1781, at Epsom, Mr. O'Kelly's Young Eclipse received a forfeit.
1782, at Newmarket, the Clermont Cup, and Jockey Club Plate, by Lord Grosvenor's Pot-8-o's.
1783, at Newmarket, the Whip, by Pot-8-o's.
1785, at Oxford, a sweepstakes, by Mr. O'Kelly's General.
1786, at Newmarket, the Whip, by Mr. O'Kelly's Dungannon.
1788, at Newmarket, the Jockey Club Plate, by Mr. O'Kelly's Gunpowder.
1789, at Newmarket, the Jockey Club Plate, by Lord Grosvenor's Meteor.

Such is said to have been the bad temper of Eclipse, that at one time it was thought impossible to bring him to the post, except as a gelding. On this account, he was placed in the hands of a rough-rider, in the neighbourhood of Epsom, who, being likewise a notorious poacher, worked him almost off his legs, riding him about the country on business during the day, and frequently keeping him out on poaching excursions. This treatment, although it quieted him enough to enable him to race, still never entirely subdued his indomitable spirit; and, accordingly, Fitzpatrick and Oakley, who rode him in almost all his races, never attempted to hold him, contenting themselves with sitting quietly, and feeling his mouth.

In a painting of Eclipse with his jockey, Jack Oakley, going over the Beacon Course, at Newmarket, by Sartorius the elder, at Stockton House, Wilts, the horse appears to be going his

best pace, with his head very low, his jockey sitting still in the saddle.

Eclipse, in his form, constitution, and action, seemed to comprehend every excellence for the course—a vast stride, with unmatched rapidity; no horse ever threw in his haunches with more vigour and effect, and they were so extraordinarily spread in his gallop, that a wheel-barrow might have been driven between his hinder-legs.

We have no exact rule by which to judge of his stoutness or speed, since no contemporary racer was able to run by his side, far less able to try his power of endurance, and if it be said, that he contended with middling horses only, the two or three capital ones that met him having passed their prime, it must be remembered that those horses he distanced. The jockeys never held him, the horse always running according to his own will, yet never swerving from his course, and always pulling up easily enough at the ending post. O'Kelly was yet apprehensive that he might at some time break away; and when he ran over the course at York, with twelve stone, which he was judged to have performed in eight minutes, a number of men were placed at the ending post, with the view of stopping him, in case the jockey should be unable to pull him up; a precaution which proved entirely useless. He never felt the whip or spur on any occasion. He is asserted by old John Lawrence to have been fully master of sixteen stone.

The only contemporary who was supposed to have any pretensions to contend with Eclipse, was Mr. Shafto's famous horse, Goldfinder, by Snap, a beautiful long-reached brown horse. He was never beaten, and would have met Eclipse, to run for the King's Plates in the following year, but that he broke down in the October Meeting at Newmarket, in 1770. The speed of Eclipse was never timed by the watch, unless in running over the course at York, and this has not been satisfactorily authenticated.

About the year 1779, the Duke of Bedford, or some sporting member of his family, demanding of O'Kelly how much he would take for Eclipse, the reply was—"By the Mass, my Lord, and it's not all Bedford Level that would purchase him." Old Jack Medley, of the Sporting Coffee House, declared that he heard O'Kelly ask, with singular gravity, the sum of twenty-five thousand pounds down, an annuity of five hundred pounds on his own life, and the annual privilege of sending six mares to the horse, as the price for Eclipse. O'Kelly affirmed, that he had acquired upwards of twenty-five thousand pounds by Eclipse.

John Lawrence, the author of the book of Farriery bearing his name, and many contributions to the *Old Sporting Magazine*, was well acquainted with Eclipse; he says:—"Never, to the eye of a Sportsman, was there a truer-formed galloper in every part; and his countenance and figure as he stood in his box, notwithstanding his great size, excited the idea of a wild horse of the desert. His resolute and choleric temper was well known; and although he held a very familiar and dumb converse with us over the bar, we did not deem it prudent to trust ourselves alone with him in his apartment; he was nevertheless very kind and friendly with his groom."

The eye of Turf science is directed, in the portrait of Eclipse, to the curve in the setting on of his head, to his short fore-quarter, to the slant, extent, and substance of his shoulder, the length of his waist, and breadth of his loins; to the extent of his quarters, and the length and substance of his thighs and fore-arms. Although a strong, he was a thick-winded horse; and, in a sweat or hard exercise, was heard to blow at a considerable distance.

In Chapter III., when treating on the proportions of the race-horse, we quoted the scale made from the measurement of Eclipse by M. de St. Bel, the first president of the London Veterinary College, to which the reader may refer. We cannot here do better than resort to the same work* for the account of the last days and *post mortem* examination of this renowned racer:—

"In the morning of the 25th of February, 1789, Eclipse was seized with a violent colic. The remedies acknowledged as most proper in that case were administered, but without effect. He expired on the 27th, at seven o'clock in the evening, in the 26th year of his age.†

"The opening of the abdomen, or lower belly, presented immediately an overflowing of sanguineous serum; all the intestines were in a state of extreme inflammation, and even covered with gangrenous spots. The mesentery and the epiploon were in the same condition. The glands appeared much swelled, and the blood-vessels were filled with a black thick blood, apparently without any serum. The stomach was entirely empty; its inner membrane little inflamed; the spleen was much obstructed, as was also the liver, one lobe of which was partly in a state of putrefaction. The dissection of the reins, or kidneys, more particularly discovered the cause of the disease: the pelvis was filled with purulent matter, and the membranes completely destroyed by the effect of suppuration. The bladder did not contain a drop of urine, but only a certain quantity of pus, conveyed by the ureters: its villous coat was corroded by the matter.

* An Essay on the Properties and Proportions of Eclipse, by M. Charles Vial de St. Bel, Professor to the Veterinary College of London, published by Martin and Bain, Fleet Street, 1795.

† "His funeral," says John Lawrence, "was observed with the same solemnities, cakes and ale being distributed, as on the occasion of the interment of the Godolphin Arabian." There cannot have been much to bury after M. St. Bel's retaining the remains in his possession, for the preparation he speaks of. The following epitaph was written at the period:—

EPITAPH ON ECLIPSE.

Praise to departed worth! illustrious steed,
Not the fam'd Phrenicus of Pindar's ode
O'er thee, Eclipse, possess'd transcendant speed,
When by a keen Newmarket jockey rode.

Though from the hoof of Pegasus arose,
Inspiring Hippocrene, a fount divine;
A richer stream superior merit shows.
Thy matchless foot produced O'Kelly wine.

True, o'er the tomb in which this fav'rite lies
No vaunting boast appears of lineage good;
Yet the turf register's bright page defies
The race of Herod to show better blood.

"From the above circumstances, I infer, that the reins performed their functions in a very imperfect manner, and that the animal died in consequence of the affections of these viscera, and of a violent inflammation of the bowels. The viscera of the chest partook, in a slight degree, of this inflammation.

"It is worthy of notice, that the heart of Eclipse weighed 14lbs. The skull I did not open, as it was my intention to preserve the skeleton of so famous a horse."

The Essay of M. St. Bel, despite our modern lights and the lapse of time, is a monument to the horse-knowledge of that gentleman. In his preliminary remarks, M. St. Bel observes:—"This difference, which results from peculiar conformation, militates, in some respects, against the rules laid down in the geometrical table in use in the veterinary schools of the continent of Europe, and proves that no common standard of measurement can apply generally to different species. As each species, and even each individual, has its own peculiar beauty, we cannot pretend to establish any general rule of beauty for the horse. Were a man to collect the various beauties of individuals, it might indeed serve as a model for the painter or statuary, but would be of no use to direct him in the choice of a horse. *Eclipse was never esteemed handsome*, but in make he was nearly perfect, and speedy in proportion."

From these observations none can dissent; we shall, therefore, as the essay is scarce, and with difficulty procurable, give the dimensions of this wonderful horse from the same authority:—

HEIGHT AND LENGTH OF ECLIPSE.

	Inches.
Height from the withers to the ground	66
Height from the top of the rump to the ground	67
Length of the body, taken from the most prominent part of the breast to the extremity of the buttocks	69

LENGTH OF THE BONES OF THE LEGS.

Fore-Legs.	
Shoulder-blade	18
Humerus, or arm	12
Cubitus	16
Canon shank	22
Pastern, coronet, and foot	8
Hind-Legs.	
Os-ilium	12
Femur, or thigh	15
Tibia	12
Shank, or leg	14
Pastern, coronet, and foot	9

"We may propose that the legs of Eclipse, in their flexion in the gallop, described each a circle of three hundred and sixty degrees; and consequently the extent of the action of each leg was the same in the extension. To this may be added the force of action, without which a horse cannot even walk. This muscular and merely mechanical force can only be computed by experiment; and well organized as Eclipse was, as to his muscles, and the length and direction of his legs, we may venture to assert, that free of all weight, and galloping at full speed, he could cover an extent of twenty-five feet at each complete action of the gallop; that he could repeat this twice and one-third in each second; consequently that, doing his utmost, he could run nearly four miles in six minutes and two seconds.

"The excellence of the make of Eclipse may fairly be inferred from his superior speed; for this speed could result only from an harmonious combination in the organs of progression. Let us now suppose these same organs defective in their proportion, and enquire what would be the consequence.

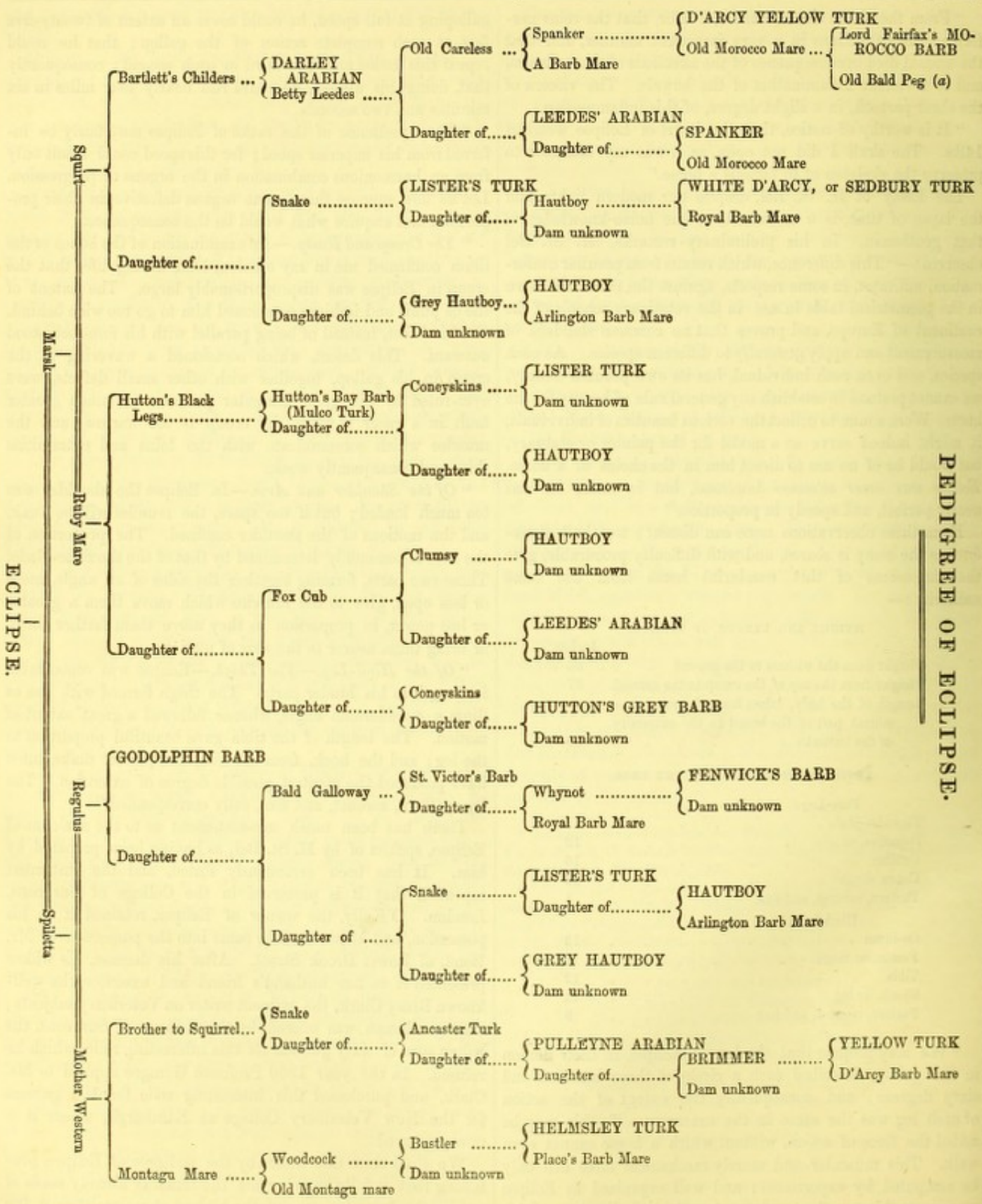
"*The Croup and Rump.*—An examination of the bones of the ilium confirmed me in my opinion, held during life, that the croup in Eclipse was disproportionably large. The extent of the os pubis and ischium occasioned him to go too wide behind. His hind-feet, instead of being parallel with his fore-feet, stood outward. This defect, which occasioned a wavering in the croup in his gallop, together with other small defects, were over-ruled by his great muscular powers. A much greater fault in a racer is when the croup is too narrow, and the muscles which communicate with the loins and extremities thin, and consequently weak.

"*Of the Shoulder and Arm.*—In Eclipse the shoulder was too much loaded; but if too spare, the muscles will be weak, and the motions of the shoulder confined. The proportion of the arm is commonly determined by that of the shoulder-blade. These two parts, forming together the sides of an angle, more or less open, give to the muscles which move them a greater or less power, in proportion as they move them farther form, or bring them nearer to the axis of motion.

"*Of the Hind-Leg.—The Thigh.*—Eclipse was remarkable for length in his hinder parts. The thigh formed with the os ilium a considerable angle, whence followed a great extent of motion. The length of the tibia gave beautiful proportion to the leg; and the hock, from its size, and perfect make, must have produced the greatest possible degree of extension. The leg, pastern, coronet, and foot, fully corresponded."

There has been much mis-statement as to the skeleton of Eclipse, spoken of by M. St. Bel, as having been prepared by him. It has been erroneously stated, and the statement repeated, that it is preserved in the College of Surgeons, London. O'Kelly, the owner of Eclipse, retained it in his possession, and at his death it came into the possession of Mr. Bond, of Lower Brook Street. After his decease, his widow presented it to her husband's friend and executor, the well-known Bracy Clark, the eminent writer on Veterinary subjects; that gentleman was offered, by the College of Surgeons, the paltry sum of sixty guineas for this interesting relic, which he refused. In the year 1860 Professor Gamgee applied to Mr. Clark, and purchased this interesting relic for 100 guineas for the New Veterinary College at Edinburgh, where it is now preserved.

We shall close this notice by the pedigree of Eclipse, premising that it fully corroborates the remarks already made of our indebtedness for some of the highest characteristics of the race-horse to African blood.



(a) Old Bald Peg was bred by General Lord Fairfax, from his Arabian and a Barb Mare.

Our pedigree of Eclipse presents many points for consideration. Those who feel interested in the subject of the genealogy of our most successful race-horses may pursue the subject further by consulting the *Stud Book*, and possessing themselves of a handsome lithographed chart, compiled by Mr. J. W. Goodwin, entitled, "*Pedigree of the Thoroughbred Horse, from Three Original Sources.*" Those three original sources being the Byerley Turk, the Godolphin Barb, and the Darley Arabian. The last edition contains a list of the Stallions for 1856, classed under the three ancestors above named; and an inspection of the list for 1859 shows the remarkable fact that out of upwards of 200 public stud horses, there is not one who does not trace his descent from one or other of these three imported sires.

POT-8-OS.

Among the progeny of Eclipse, this quaintly named race-horse holds a foremost place. He was a chestnut colt, foaled in 1773, his dam Sportsmistress. He was bred by the Earl of Abingdon, and sold by him to Lord Grosvenor; an anecdote relating to this sale will be found *ante* page 420.

Sportsmistress was a chestnut mare, foaled in 1765, bred by Lord Craven, and sold to the Earl of Abingdon. She was by Sportsman out of Goldenlocks, (Sportsman was by Cade out of Silvertail). Goldenlocks was also a chestnut mare, foaled in 1758; she was by Orinoco, her dam by Crab, grandam by Partner, out of Waite's dun mare by the Ancaster Turk.

The performances of Pot-8-os on the turf, with the principal colts and fillies of his descent, and their winnings, are thus registered.

At Newmarket First Spring, 1776, Pot-8-os won a sweepstakes of 100 gs. each. In the First Spring of the following year, he ran second to Yellow Jack, for the Claret Stakes; and in the same season was beaten by Grey Robin, Cannibal, and Country Squire. At Newmarket First Spring, 1778, Pot-8-os won a subscription of 100 gs. each, eight subs., R. C., beating Grey Robin and Titan; 11 to 5 on Pot-8-os. In the Second Spring he won 140 gs. B. C. At Ipswich, he walked over for a subscription stake of 25 gs. each. At Swaffham, he won £50. At Newmarket Second October, he won a sweepstakes of 5 gs. each. 13 subs., B. C., beating Laburnum, &c. At Newmarket First Spring, 1779, Pot-8-os won £50, D. C., and in the Second Spring walked over the B. C. for the Clermont Cup. On Wednesday he won 140 gs., B. C. On Saturday won a subscription of 25 gs. each, B. C. In the First October Meeting he walked over the B. C. for the Cup for 4-yr-olds and upwards. In the Second October, he won a sweepstakes of 300 gs. each, 100 gs. ft., B. C., and 140 gs., B. C. At Newmarket Second Spring, 1780, Pot-8-os, Laburnum, and Magog, were in a sweepstakes of 200 gs. each, B. C.; Laburnum walked over, and divided the stakes with Pot-8-os. On Tuesday, he walked over the B. C. for the Clermont Cup. On Wednesday, he won the 140 gs. On Thursday, he won the Jockey Club Purse, B. C. In the First October Meeting, he walked over the B. C. for the Cup. In the Second October he won a sweepstakes of 200 gs. each, h. ft., B. C., and walked over the B. C., for the 140 gs., besides winning a subscription of 10 gs. each, 15 subs., D. C. At Newmarket First Spring 1781, Pot-8-os won a sweepstakes of 200 gs. each, h. ft., seven subs., B. C. In the Second Spring Meeting he walked over the B. C. for the Jockey Club Purse; and won a sweepstakes of 200 gs. each, h. ft., 4 subs. At the same meeting, Lord Grosvenor challenged for the Whip, and named Pot-8-os, but the challenge not being accepted, the Whip passed to his Lordship. In the First October, he received 230 gs. compromise from Dictator, in a match, B. C., 500 gs., h. ft., and was named for the 140 gs., B. C., against Hollandaise,* &c., and received 85 gs. to withdraw. At Newmarket Craven, 1782, Pot-8-os won the Craven Stakes, beating Hollandaise. In the First Spring he won £50, beating Laburnum, &c.; and in the Second Spring, walked over the B. C., for the Clermont Cup, and again for the 140 gs.; he also won the Jockey Club Purse, a subscription of 25 gs. each, B. C. At Newmarket Second Spring, 1783, Pot-8-os at 10 yrs. old, beat Nottingham, B. C., for the Whip and 200 gs.

Pot-8-os stood at Oxcroft Farm, near Balsham, Cambridgeshire. In 1784, at 5 gs. and 10s 6d. In 1783—1788, at 10 gs. and 10s. 6d. In 1789, at 21 gs. In 1796, and subsequently, he was at Upper Hare Park, near Newmarket, where he died in Mr. Golding's stud, early in November, 1800, aged 27.

The merits of Pot-8-os in the stud were as remarkable as his exploits on the turf. The following are among his progeny in the *Stud Book:*—

Alderman, Lord Grosvenor.
Asparagus, Lord Grosvenor.
Aurora, Mr. Galway.
Bugbear, Duke of Grafton.
Canterbury, Lord Grosvenor.
Capsicum, Lord Grosvenor.
Cayenne, Lord Grosvenor.
Champion, Mr. Wilson.
Chegwell, Lord Grosvenor.
Coaxer, Mr. Golding.
Coheiress, Mr. Goodrick.
Confidence, Mr. Goodison.
Coriander, Mr. Dawson.
Crazy Jane, Mr. Concanen.
Cynthius, Lord Grosvenor.
Dr. O'Liffey, Sir W. W. Wynne.
Doricles, Lord Grosvenor.
Doubtful, Lord Sondes.
Druid, Lord Grosvenor.
Duchess of Limbs, Sir F. Poole.
Edwin, Lord Grosvenor.
Emma, Lord Grosvenor.
Enchanter, Lord Sackville.
Faunus, Lord Grosvenor.
Flea, Lord Grosvenor.
Galloper, Mr. Wyndham.
Golden Dab, Sir T. Mostyn.
Golden Rod, Duke of Bedford.
Gunecistus, Lord Grosvenor.
Grey, Lord Grosvenor.
Humming Bird, Gen. Grosvenor.
Jack, Mr. Abbey.
Kidney, Lord Derby.
Lady, Mr. Panton.
Lambourn, Mr. Harris's.
Lampedo, Mr. Golding.
Lilliput, Lord Grosvenor.
Mistletoe, Lord Grosvenor.
Miss George, The Duke of York.
Mrs. Clark, Mr. Haworth.
Molly Maybush, Mr. E. Dilly.
Nightshade, Lord Egremont.
Old Port, Lord Grosvenor.
Oliver, Lord Grosvenor.
Outcast, Mr. Blagrove.
Parsnip, Mr. Clifton.
Parasol, Duke of Grafton.
Parsley, Lord Grosvenor.
Polyanthus, Lord Grosvenor.
Radish, Lord Grosvenor.
Roland, Lord Grosvenor,
Roxalana, The Duke of York.
Schedoni, Mr. Heathcote.
Scrub, Mr. Cookson.
Smack, Sir C. Bunbury.
Snuff-Box, Mr. Grisewood.
Stag Hunter, Mr. Nottage.
Telescope, Mr. Goodricke.
Thereabouts, Mr. H. Sitwell.
Tiney, The Prince of Wales.
Trifle, Lord Donegal.
Trip-it, Lord Grosvenor.
Triptolemus, Lord Grosvenor.
Turnip, Lord Grosvenor.
Turnip-top, Lord Grosvenor.
Tyrant, Duke of Grafton.

* First winner of the Leger, in 1778.

Vesper, Lord Grosvenor. Waxy, Sir F. Poole.
Vixen, Mr. Golding. Whim, Lord Grosvenor.
Warwick, Lord Grosvenor. Worthy, Sir F. Poole.

The winnings of Pot-8-os produce are thus reckoned:—

		£	s.
In 1788	4 Winners won	1,817	0
1789	7 „	2,790	15
1790	10 „	5,053	0
1791	6 „	1,450	0
1792	10 „	5,657	0
1793	16 „	11,248	10
1794	19 „	8,351	15
1795	15 „	3,427	10
1796	15 „	3,864	1
1797	10 „	1,907	5
1798	9 „	1,427	0
1799	7 „	1,727	10
1800	8 „	4,507	0
1801	9 „	1,452	5
1802	6 „	1,778	0
1803	8 „	1,127	15
1804	5 „	2,009	5
1805	4 „	950	11
1806	2 „	1,016	5
1807	1 Winner won	199	10
1808	1 „	210	0
In 21 yrs.	172 Winners won	£61,971	17

HIGHFLYER.

Of the blood of the renowned King Herod, the name of Highflyer is inseparably associated with that of Tattersall, and that again with "The Corner." Highflyer was a bay horse, foaled in 1774, bred by Sir Charles Bunbury, and sold first to Viscount Bolingbroke, afterwards to Mr. Richard Tattersall. Highflyer was by King Herod out of Rachel, (dam of Marc Antony) by Blank; her dam by Regulus; grandam by Soreheels (the dam of Matchless, &c.,) out of Sir Ralph Milbanke's black mare, the dam of Hartley's Blind Horse.

The short, but brilliant, career of Highflyer, 1776—80, saw the establishment of the St. Leger, the Derby, and the Oaks, and, on the occasion of his christening, the celebrated Charles James Fox was present at a festive meeting.

At Newmarket Second October, 1777, Highflyer won a Sweepstakes of 100 gs., D. I.; 4 to 1 against Highflyer, who was out of condition. At Newmarket Second Spring, 1778, he again won a Sweepstakes of 100 gs., twenty-six subs., B. C., 6 to 4 on Highflyer. In the July Meeting he won the Grosvenor Stakes of 25 gs. each, twenty-four subs., B. C.; 4 to 1 on Highflyer. In the First October, he won the 140 gs., B. C., 9 to 1 on Highflyer; and at the same meeting the Weights and Scales of 100 gs. In the Second October, he received forfeit in a Post Stakes of 200 gs. each, h. ft., five subs., B. C. In the Houghton Meeting he beat Dictator, B. C., 500 gs.; 2 to 1 on Highflyer. At Newmarket First Spring, 1779, Highflyer won a Sweepstakes of 300 gs., B. C. In the Second Spring he won a Sweepstakes of 200 gs. each, B. C., beating Dorimant, aged, &c.; 4 to 1 on Highflyer. He was then sold to Mr. Tattersall, and at Nottingham walked over for a subscription of 10 gs., twenty-one subs., with 70 gs. added. In the York August Meeting, he walked over for the Subscription Purse of £295,* four miles; and the next day won the subscription purse of £295; 20 to 1 on Highflyer: our ancestors laid rash odds. At Lichfield he won the King's Purse of 100 gs., 3-mile heats; 10 to 1 on Highflyer, who was lame and out of condition; notwithstanding which he won easy—which merely proves what a bad lot he contended with.

This was the last of his public running. Highflyer, therefore, claims the peculiar good fortune of never having been beaten nor ever paid a forfeit. He was undoubtedly the best horse of the seasons, 1778—9. His winnings amounted to upwards of £9,336, although he never started after five years old.

Highflyer stood at "Ely," afterwards called "Highflyer" Hall, Cambridgeshire, in 1780-87, at 15 gs.; in 1788-89, at 25 gs.; in 1790-91, at 30 gs.; in 1792, at 50 gs.; and in 1793, at 30 gs. He was sire of a large number of racers and brood mares, whose produce figure in the genealogies of our very best horses.

Highflyer's immediate descendants won as follows:—

		£.	s.	d.
In 1783	2 Winner won	157	10	6
1784	9 Winners won	5,702	10	0
1785	22 „	9,768	0	6
1786	31 „	13,673	2	0
1787	31 „	13,360	4	0
1788	42 „	11,704	0	0
1789	41 „	16,197	12	6
1790	41 „	17,685	16	0
1791	40 „	17,814	5	0
1792	39 „	12,092	5	0
1793	35 „	12,834	10	0
1794	27 „	9,002	0	0
1795	30 „	6,807	0	0
1796	31 „	13,442	17	0
1797	24 „	4,116	15	0
1798	12 „	5,801	5	0
1799	7 „	1,501	5	0
1800	5 „	1,588	10	0
1801	2 „	357	10	0
In 19 yrs.	470 Winners won	£170,407	8	0

Highflyer died at Highflyer Hall, October 18th, 1793, aged 19 years.

Here lies the third† of the equestrian race,
That ne'er was conquered on the Olympic plain;
Herod, his sire, who but to few gave place.
Rachel, his dam, his blood without a stain,

By his prolific deeds was built a court,‡
Near where famed Ely's lofty turrets rise.
To this famed sultan would all ranks§ resort,
To stir him up to am'rous enterprise.

* Mr. Tattersall, not being a subscriber, had to pay 50 gs. entrance for Highflyer on the Wednesday, and the same sum for his entrance on Thursday, which entrance money was added to the three subscription purses.

† 1, Childers; 2, Eclipse.

‡ An elegant villa, with beautiful premises, near Ely, the property of his owner, Richard Tattersall, Esq.

§ Brood mares, from the Dairymaid, &c., to the Duchess, Princess, and Queen.

To these three patriarchs* the turf shall owe
The long existence of superior breed.
That blood in endless progeny shall flow,
To give the lion's strength and roebuck's speed.

III. MODERN CELEBRITIES.—BEESWING, ALICE HAWTHORN, THE HERO, RATAPLAN, SAUCEBOX, SAUNTERER, FISHERMAN, ETC., ETC.

Nothing would be easier than to extend this section by the importation of the doings of a vast number of race-horses, the interest in whose several careers is now confined to their places in pedigrees, or, perchance, have left no descendants to render their performances worthy of preservation. A few may, however, be named, as showing that horses of the 19th century are not so degenerate as superficial writers assume.

Flying Childers and Eclipse kept the turf for no more than two seasons. In the present century we have, among others, the following credited to race-horses, within memory of the elders of the present generation. Catherina† ran 171 races, winning 76 times; running second 35 times—63 of her races being heats. Isaac and Zohrab each ran 90 races. Fisherman,‡ ran 120 races to the close of 1859, of which number he won 69.

Potentate	ran	87	races.
Euphrates	„	92	„
King Cole	„	69	„
Alice Hawthorn	„	69	„
Independence	„	67	„
Barny Bodkin	„	66	„
Beeswing, Modesty, and Ascetic, each	„	65	„
Slim and Ratcatcher, each ...	„	64	„
Bodice and Adrian, each	„	63	„
Caliph and Sunbeam, each ...	„	62	„
Red Rover	„	61	„
Olympia, Burletta, and Shadow, each	„	59	„
May Flower	„	59	„
Mentor	„	55	„
Serpent, Laburnum, and Bravo, each	„	54	„
Northenden and Miss Kitty Cockle, each	„	52	„
Birdlime and Fortunio, each ...	„	51	„
Bellona	„	50	„

The list could easily be extended; but these will bear comparison with anything of the preceding century.

BEESWING.

The illustrious Beeswing was bred by Mr. W. Orde, of Nunnykirk, Northumberland, in 1833. Her sire Doctor Syntax, her dam by Ardrossan, out of Lady Eliza, by Whitworth—X. Y. Z's.§ dam by Spadille—Sylvia, by Young Marsk.

Beeswing's dam was winner of the Filly Stakes, at Doncaster, in 1820, the only time of her starting; she was dam of Lawnsleeves, Emancipation, Tomboy, &c.

Doctor Syntax, a brown horse, was foaled in 1811, his sire Paynator, his dam by Beningbrough. Paynator (1791) was by Trumpator (1782)—Conductor (1767)—Match'em (1742)—Cade (1734)—Godolphin Barb (1724). By the dam's side Doctor Syntax mingled the Beningbrough with the Trumpator blood. Beningbrough by King Fergus—Eclipse—Marsk—Squirt—Bartlett's Childers—the Darley Arabian. Doctor Syntax was sire of The Doctor, Lily of the Valley, The Pilot, Chapeau d'Espagne, and numerous other winners. The Doctor started 44 times, winning 29 races.

Beeswing's first appearance in public was on her own ground, at Newcastle, in June, 1835, when she went for the Tyro Stakes, won by Mr. Blakelock's Black Diamond; Lord Kelburne's ch. f. by Actæon (2), The Bard (3): Beeswing, Wizard, Carpenter, and seven others, not placed. Beeswing ran out in making the Coal Pit turn, when in a good place. At Doncaster, in September, Beeswing won her maiden victory, being first for the Champagne Stakes, for 2-yr-olds (Cartwright up); Mr. Dawson's Fair Jane (2), Major Yarburgh's St. Lawrence (3), Mr. Watt's b. f. by Lottery out of Baleine (4): Luther, Jericho, and Miss Garforth colt, also started, but were not placed. 11 to 8 against St. Lawrence; 7 to 4 against Fair Jane; 6 to 1 against Beeswing.

At Richmond, in September, Beeswing won cleverly a Sweepstakes of 20 sovs. each, 6 subs., beating, at 8st. 2lb., Mr. Smith's Florentia (2); Mr. Wormald's Zelinda, Mr. Attwood's filly by Waverley, out of The Earl's dam, and Col. Cradock's Patriot, were not placed.

In 1836 she was early in the field, starting, in April, at Catterick Bridge, for the Claret Stakes, and running a dangerous second to the Duke of Cleveland's ch. c. Jordan, Mr. L. S. Fox's Miss Lora (3): Jericho, ch. f. by Actæon, Wizard, Wentworth, Balmerino, Lithuanian, and Mildred, were not placed. For the Newcastle St. Leger, at 8st. 11lb., she beat Mr. Blakelock's Black Diamond, 8st. 3lb.: Black Hambleton, Elizabeth, and the Zegri Maid, not placed. The next day she won the Gold Cup, beating Mr. Ramsay's Despot, 6 yrs. (2), and Mr. Jaques's Burletta, 4 yrs. (3).

At Doncaster Beeswing went for the Great St. Leger, won by Lord Lichfield's ch. c. Elis, by Langar out of Olympia. As this event, and how the race was lost and won, has faded from memory, and yet must retain an interest in connection with Beeswing's fame as a racer, we shall make no apology for the interpolation of a descriptive paragraph or two in the succinct and compressed plan which we had prescribed to ourselves, in compiling these condensed records of the doings of our leading turf celebrities. The St. Leger of 1836 was marked by more than one notable incident: the south achieving a remarkable triumph over the north, on its own ground, with a southern horse, (Elis), trained by a southern trainer (John Day), and ridden by a southern jockey (J. Day). Another novelty was the conveyance of the victor to the

* Childers, Eclipse, and Highflyer.

† Catherina, bred by Mr Barrow, in 1830, was by Whisker; her dam Alecto by Filho da Puta (winner of Leger 1815), or Hetman; grandam by Stamford out of Trumpator. Whisker (Duke of Grafton's), by Waxy, (won The Derby 1815,) and was sire of Memnon and the Colonel (Leger winners in 1825 and 1828). Catherina was a brood mare in Mr. Nelson's stud in 1840 to 1846-7-8, and in Lord Exeter's from 1849-57.

‡ See *Fisherman, post.*

§ X. Y. Z. like her illustrious descendant, won the Newcastle Cup four times in succession, *viz.* in 1811, 1812, 1813, 1814, from 3 years old to 6 inclusive.

scene of action in a van; the former instance, long previously, of Eclipse thus travelling in his old age, not having been adopted as a practice with running horses. To the generalship of Lord George Bentinck this now-familiar mode of equine locomotion is due. We remember well the public interest which was excited by the appearance of the capacious vehicle, drawn by six horses, ridden by three postilions, in gay liveries, when on the Wednesday preceding the race-week, it drew up at the stable-gates of the Turf Tavern, Doncaster. Lord George had declared that he would show the racing world what could be accomplished by this new mode of conveyance; Bill Scott observing, that Lord Lichfield and friends "meant mischief, but they would find plenty to do—van and all!"

On the body of competitors, fourteen in number, out of seventy-five subscribers, advancing up to the post, the eyes of the principal jockeys were anxiously watching Elis. Vulture (J. Robinson) and The Carpenter (S. Templeman) showed indications of restlessness; and, in consequence, two false starts took place. At the third attempt, however, the whole got off well together, amid the expressions "A capital start!" "Now for the tug of war!" The lead was taken by Wedge (P. Conolly); but on reaching the first cross-road, it was taken up by Carew (F. Edwards), with Beeswing (R. Johnson), close at hand, along with the Black Diamond (G. Nelson), Redshank (Flatman), and Locomotive (J. Holmes). Elis (John Day) and Scroggins (W. Scott) were placed side-by-side behind these horses, one jockey watching the other with a determined spirit; the rear was drawn up by Trapball (J. Robinson) and Snyders (J. Chapple). They thus proceeded over the hill, at a tremendous pace. On streaming down the acclivity, The Black Diamond headed Wedge, but, having advanced into the second place, was again compelled to give way: the burst up the ascent had dimmed his brilliancy, and Lord Eglinton's hopes of victory were blighted. The two favourites now gradually advanced from the rear, and at the Red House appeared more forward still. Scott seemed resolutely determined to stick to his opponent as closely as possible, and never, on any former occasion, appeared to be animated with more energy. In this respect, John Day was not behind his opponent; and a terrible race hushed the multitude. At this point, they rushed past Carew, whose bolt was shot; but they were immediately followed by Beeswing. Carew was compelled to retire to the rear; while Snyders, The Bard (R. Hesseltine), and The Carpenter took up a position behind the three that were leading the race. At the second cross-road, the speed was tremendous: Elis, with his splendid action, looked most admirable, going with comparative ease, and nicely handled by his rider; while Scott, still eyeing the "van-horse," as he called Elis, looked more resolute than before. At the end of the white rails, Elis appeared to decided advantage; the ears of Lord George were delighted with the loud shouts, "Elis wins!" He took the lead: next to him were Scroggins (first favourite) and Beeswing. Scott roused his horse with a master's hand; and the whole energies of Bob Johnson were applied to Beeswing. At the distance, these three had separated themselves from the field. Elis held himself gallantly onwards, and got quite clear of his two opponents. Scott saw this, but he had other work close at hand; and the final struggle was not with Elis, but between Scroggins and Beeswing, as to which should be second. Elis maintained the lead, and won easily by two lengths. But it was an admirable race for second place. Beeswing stuck to her opponent "like wax;" and she ran so fine a race with Scroggins that he only beat her by a head. Snyders and The Bard were about a length and a half behind Beeswing, and made a good race for fourth. Several horses pulled up, on finding that the chance was entirely gone. Many persons considered that, in this instance, three races were combined in one for the first, second, and fourth places. On the announcement of the winner, great dissatisfaction was felt, and expressed in no measured terms. The judge placed only two. This course of proceeding gave great offence to the owner of Beeswing, and his friends, as well as the jockey himself. She ran the second horse up to a head; but, either from some obliquity of vision or a worse "because," was deemed unworthy of a place. Mr. Orde became afterwards exasperated, and denounced such "judgeship," as he called it, as wholly unentitled to the least respect. "My filly," he exclaimed, "placed herself! Nearly two lengths separated the third and fourth. She ran Scroggins to a head. I say, she placed herself; and she ought not to have been shut out by the judge, and deemed as nowhere." This opinion was ratified by all racing men; and all who saw the race joined in the condemnation of the judge. The speed, resolution, and bottom evinced on this occasion by this extraordinary mare fully justified the opinion which was then formed, that the racing career of Beeswing would eclipse that of any public runner for a long series of years. The race was run in three minutes twenty seconds.

This episode, but fairly due to the fame of this admirable mare, being dismissed, we return to our summary. On the Thursday in the same meeting, Beeswing ran fourth for the Doncaster Cup, won by Lord Westminster's renowned Touchstone, 5 yrs., (see *ante* p. 439) Lord Chesterfield's Carew (2), Mr. J. Day's Venison (3), Sir J. Boswell's General Chassé (5), and Mr. W. Richardson's Flying Billy (6). Perhaps in the five first horses a finer assemblage of first rate racers has seldom come together.

1837 was opened by a trip to Liverpool, where Beeswing, 8st. 4lb., met and ran second to the stout General Chassé, 6 yrs., 9st. 4lb., for the Gold Cup, Mr. Martyn's Trapball, 8st. 8lb. third. At Newcastle, in June, Beeswing repeated her victory of 1836, to be iterated on four after anniversaries, by winning the Gold Cup, beating the Duke of Cleveland's Wedge. Thus reversing the order of the previous Monday's running, when she ran second to Wedge, who won the Craven Stakes, the Potentate and Burletta third and fourth. After Mango had carried off the Doncaster St. Leger, Beeswing won the next race, the Cleveland Stakes, carrying 8st. 3lb., again beating Wedge, 8st. 8lb., and the Bard, 7st. 12lb. (3). 7 to 4 on Beeswing. On Thursday at the same meeting, she was victor, at

8st. 3lb., for the Gold Shield given by the Stewards, beating Lord Westminster's Cardinal Puff, 7st. (2), Mr. Fairlie's Abraham Newland, 7st. (3), Mr. Thornhill's Egeria, 7st., Mr. Osbaldeston's Dan Dawson, 7st. (5); 6 to 1 against Beeswing; 7 to 6 against Abraham Newland; 6 to 1 against Cardinal Puff. She next walked over, at Richmond, for the Gold Cap on Wednesday, and on the Thursday went through the like ceremony for the Queen's 100 gs. for mares, none daring to compete with her; and thus wound up her fourth year.

Beeswing began 1838 by winning the Gold Cup at Catterick Bridge, at 8st. 7lb., defeating Mr. Vansittart's Smollett, 6st. 6lb. (2); Mr. Jaques's St. Martin, 6st. 6lb. (3); and Mr. Armitage's Xarifa, 8st. 11lb. (4). On her favourite turf at Newcastle, she carried off the Craven Stakes, beating Remnant, who went to save his stake; and an hour after ran for and won, at 8st. 13lb., a Piece of Plate, presented by George Baker, Esq., and a Sweepstakes of 15 sovs., 10 subs., beating b. f., by Humphrey Clinker, out of sister to Mayday, 6st. 11lb., and Yarico, 8st. 2lb. On the Wednesday, at the same meeting, Beeswing, 9st., was second to Lord Eglinton's St. Bennett, 7st., Eaglet, 7st. (3); Olympic, 7st. 8lb. (4); Yarico, 7st. 8lb. (5); and next day (Thursday) she carried off the Gold Cup, from Bellona, 6st. 12lb., and Miss Eliza, 7st. 13lb. Beeswing opened the September racing, at Doncaster, by winning, at 8st. 12lb., the Fitzwilliam Stakes, beating Mr. Waggs, 8st. 12lb. (2); Slashing Harry, 8st. (3); and Allerton, 7st. (4). 7 to 4 on Beeswing, 5 to 2 against Slashing Harry, and 7 to 1 against Mr. Waggs. At the same meeting, Beeswing, at 8st. 10lb., ran second to the illustrious Don John, 7st. 3lb., (including 3lb. extra), for the Cup; The Doctor, (Beeswing's brother), 8st. 3lb. (3); Melbourne, 8st. 3lb. (4). 2 to 1 on Don John, 7 to 2 against Beeswing, 10 to 1 against The Doctor, 2 to 1 against Melbourne. At Lincoln, in the same month, Beeswing walked over for the Queen's Guineas, for mares, and travelling to Northallerton, found no opponent there for the Gold Cup, and again walked over; she then went into winter quarters until 1839.

April 1839 opened with a win of the Craven Stakes, at Catterick Bridge, Beeswing, 8st. 11lb., defeating Sir C. Monck's Garland, and Mr. Attwood's Thero, 7st. 11lb., and the next day, "t' auld mare" carried off the Gold Cup, 8st. 11lb., beating Lord Eglinton's The Potentate, 9st., and the Duke of Cleveland's Sampson, 6st. 6lb. In June, Beeswing was on her old turf again at Newcastle, where she won, at 8st. 11lb., the first race of the meeting, beating Mr. S. King's Juvenile, 6st. 11lb., if beating it could be called, as the young 'un only went to save his stake. At the same meeting a like race for the Gold Cup, ended in the mare, 9st. 1lb., being first, Lord Eglinton's Zoroaster, 6st. 7lb. (2). In the York August, Beeswing won the Queen's Guineas, at 9st. 7lb., Mr. Robinson's Melbourne, 9st. 4lb. (2); Mr. Bowes's Epirus, 9st. 4lb. (3); and Mr. Milner's Humphrey, 8st. 12lb. (4). At Stockton, in August, yet another Gold Cup fell to Beeswing, 9st. 7lb., Mr. Ley's Ararat, 6st. 4lb. (2). At Richmond, on the first day, she walked over, 9st. 2lb., for the Gold Cup, and the following day, at 9st. 5lb., defeated Mr. Bowes's Mickleton Maid, 7st. 2lb., for Her Majesty's Plate for mares. She then opened the Doncaster Meeting by once more winning, at 9st., the Fitzwilliam Stakes, Mr. Howard's Antigua, 7st. 3lb. (2); Mr. Bowes's Epirus, 8st. 12lb. (3); Mr. Osbaldeston's Alexandrina, 7st. 5lb. (4). 7 to 2 on Beeswing. On the Thursday of the same week, Beeswing, 9st., ran third for the Cup, won by the afterwards renowned Charles XII., 7st., Mr. Ramsay's Lanercost, 8st. 3lb. (2), and Mr. Denham's Compensation, 8st. 2lb. (4). 11 to 8 on Charles XII., 10 to 6 against Beeswing, 7 to 1 against Lanercost, 20 to 1 against Compensation. At Leicester, Her Majesty's Plate was obtained on the easy w. o., and next day, at the same meeting, Beeswing once again walked over for the Subscription Gold Cup. This was her last race in '39.

"T' auld mare" began her career of 1840 by winning (ridden by Cartwright, 9st.) the Gold Cup at Catterick Bridge, defeating The Hydra, 8st. 10lb.; Interlude, 6st. 3lb., by Voltaire, out of Pucelle, 6st. 3lb; Little Philip, 6st. 6lb. 7 to 4 on Beeswing; 3 to 1 against The Hydra. At Newcastle, in June, Beeswing carried off the Craven Stakes, 9st. 4lb. (7lb. extra), after a dead heat with Doctor Oliver, 8st. 2lb.; Sampson, 8st. 2lb.; and Cardinal Puff, 9st., third and fourth. 5 to 2 on Beeswing. Won easily. On the Wednesday in the same meeting she ran second, at 9st. 6lb., to Mr. Ramsay's Lanercost, 9st. 5lb. (Noble); The Young'un, 6st. 10lb., third. At Lancaster, in July, Beeswing won the Ashton Plate, carrying 8st. 9lb., beating b. f. by Winterfield, out of Fatima, 6st. 7lb.; and next day carried off the Cup Stakes, 9st. 9lb., beating Lord Eglinton's Interlude, 6st. 3lb. At York, August, The Queen's Plate fell to Beeswing, 9st. 9lb., she defeating Mickleton Maid, 8st. 12lb., and Kingston Robin, 7st. 9lb. 5 to 2 on Beeswing. The following day she won another Queen's Plate, for mares, 9st. 5lb., beating Calypso, 7st. 2lb. 3 to 1 on Beeswing. At Doncaster, September, she won the Fitzwilliam Stakes, 9st., beating Mr. Osbaldeston's b. c. by Trumpator, dam by Rubens, 7st. 5lb. 3 to 1 on Beeswing. On the Thursday, at the same meeting, she won the Steward's Cup; the Provost, 8st. 3lb. (2); Charles XII., 8st. 3lb. (3); Maroon, 7st. (4); Sampson, 8st 3lb. (5); Vermilion, 7st. (6), all placed. 6 to 5 against Maroon; 3 to 1 against Charles XII.; 9 to 2 against The Provost; 7 to 1 against Sampson; 8 to 1 against Beeswing. At Kelso she missed a victory, running second, at 9st. 10lb., to Lanercost, 9st. 10lb., The Rejected, 7st. 10lb. (3), The Doctor, 9st. 12lb. (4). 5 to 4 on Beeswing; 5 to 6 against Lanercost. The same day, and the very next race, Beeswing, 9st. 10lb., won the 50 sovs. given by the Caledonian Hunt, added to a sweepstakes of 10 sovs. each. A dead heat between Beeswing and her old rival, Lanercost, being followed by the mare winning; Neptune, 7st., being third in the first race. 7 to 4 on Lanercost. At the same meeting she won a sweepstakes, 8st. 10lb., beating The Doctor, 8st. 12lb. (2), and Dr. Caius, 6st. 12lb. (3). This closed the year's account with twelve races, ten of which were wins.

At Chester Spring, 1841, Beeswing opened the meeting on the Monday by winning the Trial Stakes, 9st. 3lb., beating Roscius, 9st. 2lb. (2); Nightshade, 6st. 1lb. (3); Miss Tatt, 6st. 6lb. (5lb. over), and Lugwardine, 9st. 6lb., were not placed. 3 to 1 on Beeswing. At the same meeting, on the Wednesday, she won the Stand Plate, at 9st. 6lb., beating Tubal Cain, 9st. 2lb. 20 to 1 on Beeswing. At Newcastle, in June, the old mare struck her flag, at 9st. 4lb., to Mr. Johnstone's Charles XII., 9st. 3lb.; Hull Bank, 7st., and Assagai, 7st., third and fourth. 5 to 4 on Beeswing; 7 to 4 against Charles XII. At the same meeting, on the Thursday, Beeswing, 9st., won the Gold Cup, beating Calypso, 8st. 2lb., and Lanercost, 9st. 3lb. 5 and 6 to 4 on Lanercost; 2 to 1 against Calypso; 5 to 2 or 3 to 1 against Beeswing. At Stockton, in August, another Gold Cup fell to Beeswing, 9st. 8lb., she defeating Ararat, 9st. 5lb. (2); Galen, 7st. 7lb. (3); and Little Bundle, 6st. 11lb. (4): all placed. On the Wednesday after the St. Leger, at Doncaster, Beeswing walked over for the Doncaster Stakes, of 10 sovs. each, 7 subs.; and the next day beat, at 9st., Mr. Hesseltine's, The Shadow, 8st. 10lb., for the Corporation Cup (150 sovs.), and Steward's gift of 50 sovs. Almost any odds on Beeswing. And on Friday she wound up the week by winning the Hornby Castle Stakes, 9st. 6lb., beating the Duke of Cleveland's Sampson, 9st. 2lb. 4 to 1 Beeswing. At Richmond, on the Wednesday, this wonderful animal wound up the year by winning the Gold Cup, 9st. 4lb. Smollett, 9st. (2); and next day walked over for the Queen's Plate of 100 gs., for mares.

The year 1842 opened by Beeswing, 10st. 5lb., walking over for Her Majesty's Plate at Chester. At Ascot, for the Queen's Vase, won by St. Francis, 9st. 9lb., The Nob, 9st. (2); Beeswing ran third, 9st. 4lb. The following not placed: Jack, 6st. 13lb. (carried 7st. 3lb.), Rosalind, 6st. 12lb., Pannakin, 6st. 8lb., Yorkshire Lady, 6st. 8lb.; Bosphorus was mounted, fell lame, and did not go to the post. Even on Beeswing, 4 to 1 against Jack, 4 to 1 against St. Francis, 8 to 1 against The Nob, 100 to 1 against Rosalind, 20 to 1 against Bosphorus. Won by a head, a close third. At the same meeting, on Thursday, Beeswing won the Gold Cup, of 300 sovs., with 200 added, beating, at 9st., The Nob, 8st. 5lb., St. Francis, 9st., 3lb., Eringo, 8st. 5lb., and Lanercost, 9st. 3lb. 6 to 5 on Lanercost, 7 to 2 against St. Francis, 9 to 2 against The Nob, 7 to 1 against Beeswing, 20 to 1 against Eringo. Won by half a length.

At Newcastle, in June, Beeswing met and triumphed, at 9 yrs., 9st., over her old opponent, Charles XII., 6 yrs., 9st. 3lb., by four lengths, for the Gold Cup, by subscription, of 10 sovs., 20 subs. Even betting. This was the sixth Newcastle Cup to her account. At Doncaster, on the Thursday after the Leger, won by Blue Bonnet, t' auld mare repeated her previous year's exploit by winning the Corporation Cup of 300 sovs., Charles XII., 9st. 2lb. (2); Attila, 7st. (3); The Shadow, 9st. 2lb. (4). 7 to 4 on Beeswing, 3 to 1 against Charles XII., 7 to one against Attila, 12 to 1 against Shadow. Won by five lengths. This was Beeswing's last race, her respected owner, W. Orde, Esq., dying in the autumn of this year, 1842.

In her tenth year Beeswing became a brood mare, being put to Sir Hercules, to whom she threw a ch. colt, Old Port; in 1845 she was barren to Lanercost; in 1846 produced a bl. colt (Nunnykirk), by Touchstone; in 1847, b. f. Bonny Bee, by Galanthus; in 1848, the famous Newminster, by Touchstone; in 1849, Norham, by Birdcatcher; in 1850, bl. f. by Touchstone; in 1851, br. f. Honeydew, by Touchstone; in 1852, bl. f. (dead) by Touchstone. She was barren in 1853, and died from the mismanagement of a groom, in March, 1854, aged 21 years, at Eaton Hall, Cheshire, in foal to the Flying Dutchman. Beeswing's stock were taken regularly by Mr. A. Nichol, of Newcastle upon Tyne, whose prize in Newminster may cover other shortcomings.

In 1835 Beeswing started three times and won twice:—

The Champagne Stakes, at Doncaster	£850
Sweepstakes, at Richmond	100
	£950

In 1836 she started five times and won twice:—

The St. Leger, at Newcastle	£250
The Gold Cup, &c., at Newcastle	110
	£360

In 1837 she started eight times and won five times:—

The Gold Cup, at Newcastle	£160
The Cleveland Stakes, at Doncaster	110
The Gold Shield, at Doncaster	350
The Gold Cup, at Richmond	105
The Queen's Plate for mares, at Richmond	105
	£830

In 1838 she started nine times and won seven times:—

The Gold Cup, at Catterick Bridge	£90
The Craven Stakes, at Newcastle	60
A Plate, &c., at Newcastle	100
The Gold Cup, at Newcastle	140
The Fitzwilliam Stakes, at Doncaster	70
The Queen's Plate for mares, at Lincoln	105
The Gold Cup, at Northallerton	90
	£655

In 1839 she started twelve times and won eleven times:—

The Crown Stakes, at Catterick Bridge	£40
The Gold Cup, at ditto	60
The Craven Stakes, at Newcastle	60
The Gold Cup, at ditto	145
The Queen's Purse, at York	105
The Gold Cup, at Stockton	90
The Gold Cup, at Richmond	70
Her Majesty's Plate for mares, at ditto	105
The Fitzwilliam Stakes, at Doncaster	60
The Queen's Plate, at Lincoln	105
The Gold Cup, at ditto	90
	£930

In 1840 she started twelve times and won ten :—

The Gold Cup, at Catterick Bridge	£80
The Craven Stakes, at Newcastle	60
The Ashton Stakes, at Lancaster	35
The Cup Stakes, at Lancaster	140
The Queen's Plate, at York	105
Do. for mares, at York	105
The Fitzwilliam Stakes, at Doncaster	50
Steward's (350) and 50 sovs., at Doncaster	400
Fifty sovs. and 10 sovs. Sweepstakes (6 subs.), Caledonian Hunt, Kelso (Wednesday)	100
Ditto, ditto (Thursday)	90
	£1,165

In 1841 she started ten times and won nine :—

The Trial Stakes, at Chester	£125
The Stand Cup and Sweepstakes, at Chester	275
The Gold Cup, at Newcastle	170
The Gold Cup, at Stockton	90
The Doncaster Stakes (w. o.)	60
The Corporation Cup, at Doncaster	200
Hornby Castle Stakes, at Doncaster	110
The Gold Cup, at Richmond	80
The Queen's Plate, at Richmond	105
	£1,215

In 1842 she started five times and won four :—

The Queen's Plate, at Chester.	105
The Gold Cup and Sweepstakes, at Ascot.	400
The Gold Cup, at Newcastle	170
The Corporation Cup, at Doncaster.	360
	£975
Total of winnings	£7,080.

In all Beeswing, in eight seasons, started sixty-four times, and won fifty.

ALICE HAWTHORN.

This remarkable mare, foaled in 1838, was bred by Mr. John Plummer: her sire Muley Moloch;* dam Rebecca, by Lottery; grandam by Cervantes, great grandam Anticipation by Beningbrough; Beningbrough—King Fergus—Eclipse, &c. —Darley Arabian.

In 1841 Alice made her début at the York October Meeting, by running fourth, 8st. 7lb. in the All-aged Stakes, won by Jack Sheppard, 8st. 10lb., Tamburini, 9st. 12lb. (2), Cattonian 8st. 10lb. (3); The Saddler, 6st. 10lb. (5); Dwarf 9st. 5lb. (6). Her first win was at Northallerton, where, rode by Hesseltine, 7st. 8lb., she beat Maria Monk, 8st. 6lb., Ten Pound Note, 7st. 8lb., Malheureuse, 7st. 8lb., b. g. by Macedonicus, 7st. 10lb. On the Saturday, at the same meeting, at 6st. 12lb., she won the silver Cup, two mile heats, beating Arnagill, 7st. 0—2, Tamburini, 8st. 10lb, Maria Monk, 8st. 11b., Ten Pound Note, 6st. 12lbs.

In 1842, Alice, ridden by Bumby, opened the ball by carrying off the Chester Cup, at 6st., against a formidable field, comprising the aged Lanercost, 9st. 9lb. (2); Vulcan, 8st. 5lb. (3), and the following 17 horses not placed :— Satirist, 8st. 7lb., Cruiskeen, 8st., Clinker, 7st. 12lb, Cormorant, 7st. 9lb., Retriever, 7st. 8lb., Nancy Dawson, 7st. 7lb., Rory O'More, 7st. 5lb., The Young Un, 7st. 5lbs., Pagan, 7st. 5lb., Marshal Soult, 7st. 4lb., Ermengardis, 7st. 2lb., The Maid, 7st., Jolly Tar, 6st. 10lb., Fidhawn, 5st. (carried 5st. 6lb.), bro. to Harpurhey, 5st. (carried 5st. 6lbs), Topsail, a feather, Tripoli, a feather, Proof Print, a feather. 4 to 1 against Marshal Soult, 9 to 1 against Alice Hawthorn, 5 to 1 against Vulcan, 9 to 1 against Lord G. Bentinck's three, 12 to 1 against Lanercost or Rory O'More, 20 to 1 against Satirist. On Thursday, at the same meeting, Alice Hawthorn was first in both heats for a handicap Stake, Humming Bird, 7st. 2lb, 0—3; Hudibras, 6st. 8lb., 2—3; Fenella, a feather, 0—dr. 5 to 1 on Alice Hawthorn. The next day, pursuing her career of success, she won the Cheshire Stakes, at 6st. 8lb., beating Bellona, 8st. 5lb., Miss Kitty Cockle, 7st., and Cruiskeen, 8st. 5lb. 3 to 1 on Alice Hawthorn. At Manchester, Alice, 7st. 8lb., was third* for the Cup, won by David, 6st., Collina, 6st. 12lb. (2); Champagne, 8st., and The Maid, 7st. 2lb., not placed. 4 to 1 on Alice Hawthorn. At York August, at 8st. 7lb., she won Her Majesty's Plate for mares, beating Margaret, 9st. 5lb. (2); Priscilla Tomboy, 7st. 2lb. (3); Waterlily, 7st. 2lb. (4) 11 to 10 on Priscilla Tomboy against Alice Hawthorn, in running even on Alice against the Field. At Stockton, in August, she ran second in the All-aged stake, at 8st. 4lb., to Jack Sheppard, 8st. 2lb; Aristotle, 7st., and Edmond, 6st. 9lb., third and fourth. At Richmond, in September, she won the Gold Cup Stakes, 8st., Sally, 6st. 9lb. (2); Maid of Auckland, 6st. 9lb. (3); Playful, 6st. 12lb. (4); 5 to 4 on Sally, 2 to 1 against Alice Hawthorn. Won by three lengths. At Northallerton, on Friday, the Gold Cup fell to Alice, 8st. 11lb., Sally (2); Millipede (3); Playfellow (4); Disclosure (5); Sampson (6), all placed. On Saturday in the same meeting, she won a Sweepstakes of 10 sovs. each, with 10 added, 4 subs., at 8st. 7lb., beating Pagan, 8st. 6lb. Thus ended 1842.

Alice, 8st. 8lb., in 1843, was not placed for the Chester Cup, won by Millipede, 7st. 3lb., Jamie Forest, 7st. 2lb. (2); Ga-

* Muley Moloch, a dark brown horse of great substance, was by Muley, by Orville, out of Nancy (Longwaist's dam), by Dick Andrews (sire of Tramp), grandam Spitfire, by Beningbrough (sire of Orville). Muley, his sire, was out of Eleanor (the mare that won both the Derby and Oaks in 1801), by Whiskey. Orville, sire of Muley, won the Leger in 1802 and twenty-one other races. Muley Moloch won the Champagne at Doncaster at two years old; the York Derby, at three years old; the Park Stakes at Newmarket; the Gold Cup and King's Plate at Carlisle, and the Doncaster Stakes at four years old; and the Gold Cup at Newcastle and the Doncaster Stakes at five years old; starting 17 times and winning eleven; beating some of the best horses of his day, Belshazzar, Mussulman, Inheritor, Physician, Glaucus, Hornsea, &c. Muley Moloch appears in 1854, at 24 years of age, with 82 winners to his name, of whom Alice Hawthorn is the most illustrious.

* On this occasion there were several false starts, in two of which Alice ran a great distance, and was much fretted, losing temper at the final go off.

lanthus, 7st. 7lb. (3); 21 started. At the same meeting, she was not placed, at 8st. 10lb., (entered as Mr. Robert Hesseltine's), for the Marquis of Westminster's Plate, won by Galanthus, 8st., Marian, 7st. 7lb., (2); four others ran, not placed. 3 to 1 against Alice Hawthorn or Queen of the Tyne, 4 to 1 against Johnny or Galanthus. Won by a neck. At Epsom she was not placed for the Craven Stakes, won by Discord, Knight of the Whistle (2). At Manchester, in June, she carried off the Welter Stakes, 8st. 9lb., beating Retriever, 9st. 2lb.; 6 to 4 on Retriever. Won by a length. On Thursday, in the same meeting, ridden by Holmes, she won Her Majesty's Plate, beating Aristotle, (2), Vakeel, King of Trumps, Coheiress and Clinker: 6 to 4 against Alice Hawthorn, 7 to 4 against Aristotle. Won by three lengths Next day, at 9st. 4lb., she ran third for the Licensed Victuallers' Cup, won by David, 7st. 10lb., Billingham Lass, 8st. (2); Chance, 8st. 2lb., Flagsman, 8st., and Roderick, 7st., started, but were not placed. 7 to 4 on Alice Hawthorn. At Leicester, 8st. 10lb., ridden by Oates, she won the Cup Stakes, beating Betsy Bird, 6st. 11lb.; and on the same day, won the Queen's Plate, at 9st. 8lb., in two mile heats, beating Bobadil, 10st. 11lb. At Newcastle, she won the Queen's Plate, 10st., beating Peggy, 7st. 11lb., Robinson, 10st. 5lb., Gander, 9st. 2lb., Sleight-of-Hand, 10st. 5lb.: 5 to 4 against Alice, 5 to 2 against Peggy, 5 to 1 against Robinson. (Sleight-of-Hand went to get the allowance for the Goodwood Cup). On Thursday at the same meeting, ridden by Templeman, she won the Members' Plate, (handicap), 9st. 7lb., beating Flagsman, 8st. (2), Margaret, 7st. 7lb. (3), Egidia, 6st. 10lb., ch. c., by Muley Moloch, 7st. 5 to 4 on Alice Hawthorn, 2 to 1 against Flagsman. Won by a neck. Her next win was the Queen's Plate at Liverpool, July, two mile heats, beating Jack, 2—dr.; Sir Abstrupus, 3—dr.; The Puncher, 4—dr., Marius distanced: 4 to 1 on Alice Hawthorn. The same day she was not placed in the Liverpool Derby, 9st. 5lb., won by Semiseria, 6st. 10lb., Knight of the Whistle, 9st. 4lb. (2), Pagan, 8st. 5lb. (3). Marshal Soult, Ermengardis, Billingham Lass, St. Jean d'Acre, Vakeel, Recompense, ch. c. by Amurath, and Atalanta started, but were not placed: 6 to 4 against Semiseria, 3 to 1 against Alice Hawthorn. At York August, she won Her Majesty's Plate, rode by Hesseltine, beating Heslington and Sally. Even on Alice, 6 to 4 against Sally. Next day, Alice Hawthorn, 5 yrs., 9st. 7lb., ran fifth in the Great Ebor Handicap, won by Pagan, same age, 7st. 13lb., Nat, 6st. 2lb. (2), Bella Dame, 6st. 7lb. (3), Millipede, 8st. 10lb. (4), Lara, 7st. 10lb. (6), Idolatry, 6st. 10lb. (7), Priscilla Tomboy, 7st. 13lb. (8), all placed. 2 to 1 against Nat, 6 to 1 against Alice Hawthorn. At Stockton, Alice, carrying 9st. 8lb., won the Members' Gift of 50 sovs., and a Sweepstakes, beating Freedom, 6st 8lb., Queen of Tyne, 8st. 3lb., Our Nell, 7st. 13lb., Billingham Lass, 8st. 3lb. 2 to 1 against Alice Hawthorn or Billingham Lass; 3 to 1 against Freedom; 4 to 1 against Queen of Tyne; 6 to 1 against Our Nell. At Doncaster, on the Thursday after the Leger, Alice won the Cup of 300 sovs., the gift of the Corporation, beating Charles XII. (2), Arundo (3); and the following not placed:—Venus, Gorhambury, Semiseria, Wee Pet, Dumpling, Peter the Hermit, and The Biddy. 5 to 1 against Charles XII. or Alice Hawthorn, 9 to 2 against Venus; 7 to 1 against Peter the Hermit; 10 to 1 against Semiseria; 20 to 1 against Wee Pet; 25 to 1 against Gorhambury. Won by twenty lengths. Next day she won the Town Plate, two mile heats, Alice, 8st. 11lb. 1—1; Portrait, 9st., 2—2; Peter the Hermit, 7st. 5lb., 3—3. At Lichfield, the Staffordshire Stakes fell to her share, 9st., Rochester, 7st. 4lb. (2), Roderick, 6st. 10lb. (3), Morpeth, 7st. 9lb. (4). At the same meeting she walked over for the Queen's Plate. She next won the Queen's Plate at Nottingham, two mile heats, 9st. 8lb., beating King of Trumps, 8st. 2lb. (2—2); and walked over for Her Majesty's Plate for mares at Richmond, in October. The next day, at the same meeting, Alice won the Gold Cup Stakes, at 9st. 3lb., Bumby up, beating Nutwith, (winner of the St. Leger), 7st. 3lb., and Sally, 8st. 5lb. Won by a length. At Northallerton on Friday, the Gold Cup, at 9st. 11lb., was awarded to Alice Hawthorn, she beating Peggy, 6st. 12lb., by half a length, and on the following Tuesday, at Northampton, she carried off Her Majesty's Plate, 9st. 6lb., against John of Gaunt, 9st. 9lb. (2), and Coheiress, 7st. 8lb. (3). At Newmarket Houghton on Tuesday, she was second, at 9st. 8lb, (Hesseltine) to Reciprocity, 5st. 7lb., for the Handicap Plate for 3-yr.-olds and upwards, Hyrcanian, 6st. 7lb. (3), Ma Mie, 8st. 6lb. (4), and the following ten not placed: I-am-not-aware, Trueboy, Edmund of Langley, Magna Charta, Fairplay, Fraulein, Cracksman, ch. c. by Muley Moloch, gr. f. by Rococo, b. f. sister to Ramadan. 4 to 1 against Ma Mie; 5 to 1 against Alice Hawthorn; 6 to 1 against Reciprocity. On the Saturday in the same meeting, Alice Hawthorn ran ninth and last, at 9st. 8lb., for the Audley End Stakes, won by Ma Mie, 8st., Robert de Gorham, 7st. 7lb. (2), Hyrcanian, 5st. 13lb. (3), Scalteen, 7st. 3lb. (4), I-am-not-aware, 6st. 12lb. (5), Master Thomas, 6st. 12lb. (6), Priscilla Tomboy, 7st. 1lb. (7), Armytage, 6st. 8lb. (8). 4 to 1 against Robert de Gorham; 5 to 1 against Scalteen; 5 to 1 against Hyrcanian; 6 to 1 against Ma Mie, or Alice Hawthorn; 8 to 1 against Priscilla Tomboy, I-am-not-aware and Armytage; 12 to 1 against Master Thomas. And thus ended the busy and chequered year 1843.

Alice Hawthorn (Mr. Salvin's), rode by Hesseltine, opened 1844 by running second, at 9st. 8lb., to Red Deer's remarkable win of the Chester Cup (Kitchener up), 4st., Freedom, 7st. 3lb. (3), General Pollock, 7st. 8lb. (4). Not placed:—Nutwith, Pagan, Cattonite, Bramble, Hooton, Merry Andrew, Rowland, The Broken-down, Arnagill, Roscius, Ermengardis, Greenfinch, Vakeel, Pharaoh, Martyr, Everton, Xanthus, Birdeen, Miss Miggs, Celeste, and Best Bower. The winner jumped off with the lead, and won in a canter by five lengths. Celeste fell; Roscius, Vakeel, and Broken-down broke down in the race. The next day Alice Hawthorn, 9st. 6lb., went for and won the Marquis of Westminster's Plate (Handicap), beating Philip, 7st. 6lb. (2), Brevity, 6st. 12lb. (3); and, not

placed, Rowland, 6st. 6lb., Glossy, 6st. 6lb., The Lily, 6st., Gipsy Queen, 5st. 12lb., and Yarrow, 4st. 7lb. 5 to 4 on Alice Hawthorn; 6 to 1 against Rowland: 8 to 1 against any other. Won by a length. At Ascot, Alice, 9st. 4lb., carried off the Gold Vase and Sweepstakes, beating Robert de Gorham, 9st. 7lb. (2); Delapre, 7st. 3lb. (3): Bramble, 9st., b. f. by Gladiator—Elegance, 8st. 9lb., and Princess Alice, 6st. 12lb., not placed. 3 to 1 on Alice. Won in a canter by six lengths. At Newcastle she won easily the Gold Cup, 9st., beating Winesour, 8st. 5lb. On the Thursday in the Goodwood Meeting, Alice Hawthorn, at 9st. 5lb. (Templeman up), won the Goodwood Cup of 300, and rest in specie, by subscription, of 20 sovs. each (52 subs.), with 100 added; beating Prizefighter, 8st. 5lb. (2), The Era, 8st. 8lbs. (3); and the following, not placed:—Wiseacre, 8st. 1lb., Antler, 7st. 4lb., Discount, 7st., Little Vivian, 6st. 13lb., bl. h. by Cameleon, by Camel, 6st. 12lb., and The Ashtead Pet, 6st. 3lb. 3 to 1 on Alice Hawthorn; 12 to 1 against Prizefighter; 14 to 1 against Ashtead Pet; 20 to 1 any other. Won easily by three lengths. At Salisbury she walked over for the Queen's Plate. At Brighton, for the Queen's Plate, two mile heats, with 6 and 7 to 1 on her, Alice Hawthorn ran on the wrong side of a post, and was distanced in the first heat. Pineapple, 8st. 7lb., 1—1; Elegance, 8st. 9lb., 2—2; Ace of Diamonds, 8st, 4—3; Queen of the Chase, 6st. 8lb., 3—dr. 4 to 1 on Pineapple after Alice Hawthorn's blunder. The next Monday she went to Lewes, and there won the Queen's Plate easily, at 10st. 3lb., heats. Queen of the Chase, 8st. 2lb., 2—2. Any odds on the winner. At York August Alice walked over for the Dundas Stakes; and on the same day won the Queen's Plate, 9st. 7lb., beating Teresa, 7st. 9lb.; Lady Sale and Dog Billy third and fourth. 10 and 15 to 1 on Alice Hawthorn. At the same Meeting, next day, she walked over for the All-aged Plate; and on the same day went through the like ceremony for the Queen's Plate for mares. These four wins were followed at Doncaster September by carrying off, at 9st., the Fitzwilliam Stakes, beating Lothario (2), Peggy (3), and Trueboy (4). 3 to 1 on Alice Hawthorn; 4 to 1 against Trueboy. Won by several lengths. On the same day she walked over for the Queen's Plate. On the Thursday, at the same meeting, Alice won the Doncaster Cup, 8st. 13lb., beating Aristotle, 8st. 12lb. (2); Pride of Kildare, 6st. 11lb. High odds on Alice, who won in a canter. At Richmond, on Thursday, Sept. 25th, Alice won the Gold Cup, beating bl. f. by Confederate out of Ringlet, 8st., in a canter. Thence, still travelling north, she went to Kelso, and on the 1st of October won the Roxburgh Cup, 9st. 5lb. (ridden by Noble,) beating The Shadow, 9st. 2lb., and walked over at Dumfries for the Gold Cup at that place; and further won at the same meeting, 9st. 1lb., the County Members' sovs., beating Wm.-le-Gros, 8st. 13lb. (2); The Shadow and Flagman started, but were not placed. She wound up this meeting by carrying off the Queen's Plate, 10st., beating Best-of-Three, 7st. 9lb., who bolted. Returning south she came to Carlisle, where she walked over for another Queen's Plate, and found none dared meet her for the Subscription Gold Cup, for which she also walked over. Still southwards to the Newmarket Houghton, where on the Tuesday she ran a dead heat at 9st. 10lb. (S. Edwards up.), with I-am-not-aware, aged, 7st. 2lb. (Chapple), for the Subscription Handicap Plate, Croton Oil, 5st. 3lb. (3); f. by Achmet out of Well-a-day, 5st. (4); Aristotle, 8st. 4lb. (5); Winesour, 8st. 8lb. (6). 2 to 1 on Alice Hawthorn, 3 to 1 against I-am-not-aware, 8 to 1 against Well-a-day filly. After the dead heat I-am-not-aware walked over, and Col. Peel and Mr. Salvin divided the plate. On the Saturday in the closing meeting, she paid 150 sovs. compromise to Mr. Irwin's Foig-a-ballagh (winner of that year's Leger), in a match, Alice at 9st. to Foig-a-ballagh's 7st. 7lb., for 500 sovs., 200 forfeit, D.I.

In 1845, the last year of Alice Hawthorn's glorious career, she opened the ball by winning the Queen's Plate at Chester, beating Naworth, aged. 10 to 1 on Alice Hawthorn, who won by several lengths. At Newmarket Second Spring, carrying 9st. 9lb., she was not placed for the Suffolk Stakes, won by Queen Mab, 7st. 5lb., Bishop of Romford's Cob, 7st. 9lb. (2), Prologue, 5st. 5lb. (3); 8 others started. 5 to 4 against Alice Hawthorn, 5 to 1 against Prologue, 7 and 8 to 1 against the others. Won by two lengths. At Ascot, Alice, 9st., was third for the Emperor of Russia's Plate, won by The Emperor, 8st. 5lb., Foig-a-ballagh, 8st. 5lb. (2), Cowl, 6st. 10lb. (4). 7 to 4 on Foig-a-ballagh, 5 to 2 against Alice Hawthorn, 6 to 1 against Cowl, 100 to 6 against the Emperor. Won by two lengths. Alice was now amiss for a month or two, and certainly Messrs. Hesseltine, Plummer, and Salvin had taken their change out of her; but in September she came out at Doncaster, running second, at 8st. 13lb., to the celebrated horse, Sweetmeat, 7st., Pantasa, 6st. 7lb. (3), and Miss Elis, 6st. 11lb. (4). 5 to 4 on Sweetmeat, 7 to 2 against Pantasa, 6 to 1 against Miss Elis, 8 to 1 against Alice Hawthorn. Won easily by a length. At the York Hunt Club Meeting, Alice Hawthorn, carrying 12st. 9lb. (Captain Williams), won the Champagne Stakes, &c., beating Red Rover, 11st. 2lb. 3 and 4 to 1 on Alice Hawthorn, won by a neck. The next day Alice won the Dinner Stakes. At the Newmarket Houghton she closed her racing career by running a dead heat at 8st. 12lb., with Little Hampton, 7st. 4lb., and Naworth, 8st. 12lb. for the Subscription Plate. 5 to 4 on Naworth, 5 to 2 against Alice Hawthorn, 3 to 1 against Little Hampton. Subduer took the lead, at a moderate pace, the rest lying off; at the Duke's Stand Little Hampton and Naworth were in front, and improving the pace. About 100 yards from home, Alice Hawthorn attempted to go between them, but was prevented by their closing; she then took the lower side, and the three ran a dead heat, Subduer beaten off. After the dead heat, 5 to 4 against Naworth, 6 to 4 against Alice Hawthorn, and 2 to 1 against Little Hampton. Little Hampton made the running, Naworth lying next. At the Duke's Stand Alice resigned. A good race home was won by Little Hampton by a head.

We subjoin a summary of her winnings.

In 1841 she started thrice and won twice :

	£.
Town Plate (at Northallerton), value ...	50
Subscription Plate, same place	45
	£95

In 1842 she started nine times and won seven :

The Chester Cup...	1,025
A Handicap of 20 sovs., at Chester	170
The Cheshire Stakes, same meeting	205
Queen's Plate, at York	105
The Gold Cup Stakes, at Richmond	105
The Gold Cup, at Northallerton	60
Sweepstakes, same meeting	30
	£1,700

In 1843 Alice Hawthorn started twenty-six times, and won eighteen :

The Wilton Stakes, at Manchester	60
The Queen's Plate, at Manchester	105
The Cup Stakes, at Lancaster	40
Her Majesty's Plate, at Lancaster	105
Her Majesty's Plate, at Newcastle	105
The Members' Plate, &c., at Newcastle ...	106
The Queen's Plate, at Liverpool	105
The Queen's Plate, at York	105
The Members' Gift & Sweepstakes, at Stockton	230
The Cup, at Doncaster	300
The Town Plate, at Doncaster	100
The Staffordshire Stakes, at Lichfield ...	235
The Queen's Plate, at Lichfield	105
The Queen's Plate, at Nottingham	105
The Queen's Plate, at Richmond	105
The Cup Stakes, at Richmond	80
The Cup, at Northallerton...	60
The Queen's Plate, at Northampton... ...	105
	£2,156

In 1844 she started twenty-four times, and won twenty and a-half times :

The Marquis of Westminster's Plate (Heap.), at Chester	320
The Gold Vase and Sweepstakes (200 sovs.), at Ascot	200
The Gold Cup, &c., at Newcastle	180
The Goodwood Cup, &c.	970
The Queen's Plate, at Salisbury	105
The Queen's Plate, at Lewes	105
The Dundas Stakes, at York	60
The Queen's Plate, at York	105
Do. All-aged Plate, at York	150
The Queen's Plate, for mares, at York ...	105
The Fitzwilliam Stakes, at Doncaster ...	90
The Queen's Plate, at Doncaster	105
The Doncaster Cup	300
The Gold Cup, at Richmond	172
The Roxburgh Cup, at Kelso	280
The Dumfries Gold Cup	70
The Members' Gift, at Dumfries	75
The Queen's Plate, at Dumfries	105
The Gold Cup, at Carlisle	31
The Queen's Plate, at Carlisle	105
Half of £50, at Newmarket Houghton ...	25
	£3,658

In 1845 she started seven times and won three :

The Queen's Cup, at Chester	105
The Champagne Plate, at Yorkshire Hunt ...	90
The Dinner Stakes, at ditto	90
	£285

In all she started sixty-nine times, and won fifty and a-half races.

Total winnings £7,894

Alice Hawthorn's history now belongs to the stud. She missed to Lanercost in 1847 and 1848 ; in 1848 she threw a b. c., Young Hawthorn, to the same sire. The same year she was put to Irish Birdcatcher and produced in 1850, b. c. Lord Fauronberg (first called The Skinner). In 1851, she had b. f. Terrona, by Touchstone ; in 1855, b. c. Oulston, by Melbourne ; in 1853, b. c. Findon, by Touchstone ; in 1854, b. f. Lady Hawthorn, by Windhound ; in 1855, b. c. Coxwold, by the Flying Dutchman. Early in 1855 she slipped foal to West Australian, and was covered again by him the same year, but proved barren. In 1857 she produced Thormanby, winner of the Derby, 1860 (of whom we give a portrait), to Melbourne, or Windhound.

CHANTICLEER.

Chanticleer, a whitish grey horse, standing as near as possible sixteen hands, is a horse with a rather coarse head, immense ribs, and somewhat "roach-backed," straight in the quarters, and drooping towards the tail; good thighs and hocks, but rather upright in the pasterns, and not very large in the bone. His great point is depth of girth, measuring, while in training, in September 1848, five feet seven inches and three quarters.

Chanticleer was bred in Ireland by Mr. St. George in 1843, got by Irish Birdcatcher, (see *ante* p. 440) out of Whim, by Drone, her dam Kiss, by Waxy Pope—Champion (son of Pot-8-os, see *ante* p. 457) out of Brown Fanny, by Maximin.

Whim, a grey mare bred by Colonel Westenra in 1832, figured for three or four seasons on the Irish turf, but with no very great success, having a knack more of running up than running first. Towards the end of her career she was purchased of Colonel Westenra by Mr. St. George, and put to the stud in 1838, but threw nothing of note previous to the Birdcatcher cross.

In 1845 Chanticleer, then two years old, made his first appearance on the Curragh, where, at the September Meeting, he ran third for the Anglesea Stakes, won by Lord Howth's Mermaid, Mr. Preston's Osprey second. Ten others started.

At the Curragh October Meeting he ran second to Mr. Kennedy's Burgundy for the Paget Stakes. Three others started.

In 1846, at the Curragh April Meeting, Chanticleer, at 8st. 2lb., was not placed for the Madrid Stakes, won by Mr. White's Plover, 7st. 10lb. Nine others started.

At the Curragh June Meeting, carrying 7st. 7lb., he won a handicap of 15 sovs. each, &c., Conolly's Mile, beating Mr.

Disney's Rhadamanthus, 3 yrs., 7st. 11lb. (2), Mr. Armstrong's Star of Erin, 5 yrs., 8st. 7lb. (3); and the following not placed:—Lord Waterford's King Dan, 6 yrs., 9st. 7lb., and Mr. Watt's General Tom Thumb, 3 yrs., 7st. 11lb. At the same meeting, carrying 7st. 13lb., he won a sweepstakes of 15 sovs. each, with 50 added, for 3-yr-olds, Post on the Flat, beating Mr. Courtenay's Bantam, 7st. 9lb. (2), Mr. Digby's Woodpecker, 8st. 2lb. (3), Mr. Preston's Osprey, 8st. 7lb., and Mr. Connor's Kellyville, 7st. 13lb., not placed.

At the Curragh September Meeting he ran second to Mr. Whaley's Burgundy for Her Majesty Plate. Four others started, but were not placed.

At the Curragh October Meeting, carrying 8st. 5lb., he ran second to Mr. Courtenay's Bantam, 7st. 8lb., for the Kirwan Stakes. Three others also started, but were not placed. At the same meeting, he won Her Majesty's Plate of 100 guineas, three miles, beating Captain Hamilton's Fairy Queen, aged (2), Mr. H. Osborne's Red Vixen, 3 yrs. old (3), and the following, not placed:—Mr. Irwin's Patriot, 5 yrs. old; Mr. Maher's Highwayman, 4 yrs. old; Mr. Armstrong's Emla Roy, 3 yrs. old; Mr. J. Brennan's colt by The Saddler, 2 yrs. old; Mr. Watts's Five-Pounder, 2 yrs. old; Mr. Baldwin's Derry, 3 yrs. old; and Mr. Dawson's Flirt-away, 3 yrs.

Al the same meeting he ran third for the Lord Lieutenant's Plate, Red Post. Won by Mr. Watts's Mogador, 2 yrs. old; Mr. Irwin's The Horn of Chase, 2 yrs. old, second. Five others started.

In 1847, at the Curragh April Meeting, Chanticleer won Her Majesty's Plate of 100 guineas, two miles, beating Mr. Whaley's Burgundy, 4 yrs. (2), Mr. White's Rat-trap, 4 yrs. (3), and the following, not placed:—Mr. O'Moore's Gamester, 3 yrs; Mr. Armstrong's Protection, 3 yrs.; Mr. Keary's Mickey Clear, 3 yrs.; Mr. Ferguson's Clear-the-way, 5 yrs.; and Mr. Watts's General Tom Thumb, 4 yrs.

At the Curragh June Meeting, carrying 9st. 3lb., he ran third for the Kirwan Stakes, won by Colonel Westenra's Joc-o'-Sot, 4 yrs., 7st. 4lb.,; Mr. Courtenay's Bantam, 4 yrs. 8st. 2lb. (2). Two others started, not placed. Even on Chanticleer. At the same meeting, won Her Majesty's Plate of 100 guineas, two miles, beating Mr. Mangan's Farnham, 3 yrs. (2), Colonel Westenra's Venom (3), and the following, not placed:—Mr. Whaley's Sherry, 3 yrs.; Mr. Watts's Chat, 3 yrs.; Mr. Keegan's Flirtaway, 4 yrs., and Mr. Littledale's Maid of Erin, 4 yrs. At the same meeting, won Her Majesty's Plate of 100 guineas, Red Post, beating Mr. Ferguson's Fireaway, aged (2), Mr. Mangan's Farnham, 3 yrs. (3), and Mr. Igoe's Wren, 3 yrs. At the same meeting, won Her Majesty's Plate of 100 guineas, four miles, beating Mr. White's Rat-trap, 4 yrs. (2), and the following, not placed:—Mr. Watts's General Tom Thumb, 4 yrs.; Mr. O'Moore's Gamester, 3 yrs.; Mr. Igoe's Wren, 3 yrs.; and Mr. Ferguson's Fireaway, aged.

In the July of this year Chanticleer crossed the Channel for Liverpool, where, carrying 8st. 4lb., and giving weight to everything in the race, he ran fourth, though not placed, for the Liverpool Cup, two miles, won by Mr. Meiklam's Inheritress, aged, 8st. 3lb.; Mr. Johnson's Rowena, 6 yrs., 7st. 8lb. (2), and Sir W. Stanley's Pic-Nic, 5 yrs., 7st. 4lb. (3). Thirteen others started.

Immediately after this, Chanticleer was purchased of Mr. St. George by Mr. Merry, a Scotch gentleman, and appeared next at Paisley, where, ridden by H. Robinson, he won the Glasgow Cup, two miles, at 8st. 4lb., beating Mr. Robertson's Tom Tough, aged, 8st. 9lb. At the same meeting, ridden by H. Robinson, he won the Silver Bells, with 50 added, &c., two miles and a distance, beating Mr. Robertson's Tom Tough, aged, and Mr. Johnson's Roper's Daughter, aged.

At Doncaster, he ran third for the Fitzwilliam Stakes, a mile and a-half, won by Mr. Mostyn's Wilderness, 4 yrs.; Lord Glasgow's Conspiracy, 4 yrs., second. Sir C. Monck's Gaiety, 3 yrs., also ran. 6 to 5 on Chanticleer.

In 1848, Chanticleer, at 8st. 7lb. (the top weight), ran third for the Ascot Stakes, won by the Duke of Richmond's Vampire, 4 yrs., 6st. 5lb.; Lord Chesterfield's Lady Wildair, 6 yrs., 8st. 4lb. (2). Twenty others started. 11 to 1 agst. Chanticleer. At the same meeting, 8st. 7lb., he was not placed for the Royal Hunt Cup, won by Sir R. Pigot's Conyngham, 4 yrs., 8st. 5lb. Seventeen others also started. 9 to 1 agst. Chanticleer.

At Manchester, ridden by Mr. Osbaldeston, he won the Welter Cup, one mile and a distance, beating Sir J. Gerard's Blackie, 5 yrs. (2); and Mr. C. Boynton's Lucaria, 3 yrs. 3 to 1 on Chanticleer. Won easily. At the same meeting, ridden by Bumby, he won easily the Castle Irwell Stakes, of 10 sovs. each, &c., a mile and a half, beating Mr. Meiklam's The Spaniard, 3 yrs. 4 to 1 on Chanticleer.

At Newcastle-on-Tyne, ridden by Bumby, 8st. 8lb., he won the Northumberland Plate, of 200 sovs., &c., two miles, beating Mr. L. S. Fox's Executor, 4 yrs., 6st. 8lb. (2); Mr. Murphy's Dough, 3 yrs., 5st. 2lb. (3); Mr. J. Gray's Reality, 3 yrs., 4st. 4lb. (4); and the following not placed:—Mr. Meiklam's Inheritress, aged, 8st. 12lb.; Sir J. Monck's Vanish, 5 yrs., 7st. 6lb.; Mr. Holmes's Vesta, 4 yrs., 6st. 8lb.; Captain Potts's St. Oswald, 4 yrs., 6st. 4lb.,; Mr. Pedley's Administrator, 4 yrs., 6st.,; Lord Eglinton's Glen Saddel, 3 yrs. 5st. 8lb.; and Mr. B. Green's Sylva, 3 yrs., 4st. 10lb. 7 to 1 agst. Chanticleer. Won by a length. At the same meeting, ridden by Bumby, he walked over for the Gold Cup.

At Goodwood, ridden by Marlow, at 9st. 2lb., he won the Goodwood Stakes of 25 sovs. each, &c., two miles and a-half, beating Lord Eglinton's Plaudit, 6 yrs., 7st. 5lb. (2); Mr. Shelley's Remembrance, 3 yrs., 5st. 2lb. (3); and the following not placed:—Mr. Courtenay's Bantam, 5 yrs., 7st. 12lb.; Mr. Verity's Diplomatist, 4 yrs., 7st. 11lb.; Mr. J. B. Day's The Tartar, 4 yrs., 7st. 7lb.; Mr. Stephenson's Sheraton, 5 yrs,, 6st. 13lb.; Mr. Woffenden's Raisthorp, 4 yrs., 6st. 12lb.; Sir C. Monck's Gaiety, 4 yrs., 6st. 8lb.; Mr. Drinkald's Pillage, 4 yrs., 6st. 3lb.; Major Pitt's Fern, 3 yrs., 6st.; Mr. Shelley's Tarella, 4 yrs., 5st. 13lb.; Sir J. Hawley's Millwood, 4 yrs., 5st. 12lb.; Lord Strathmore's Latitat, 3 yrs., 5st. 2lb.; and

the Duke of Richmond's Reflection, 3 yrs., 4st. 10lb. 6 to 1 agst. Chanticleer. Won by a length. At the same meeting, he was not placed, at 9st. 9lb., for the Goodwood Cup, won by Lord Eglinton's Van Tromp, 4 yrs., 9st. 3lb. Seven others also started.

At Stirling, ridden by H. Robinson, and carrying 9st. 5lb., he won the Gold Cup, two miles, beating Mr. Wauchope's Cybele, 3 yrs., 5st. 5lb. (2); Mr. Binnie's Whizgig, 3 yrs. 5st. 12lb. (3); and Mr. Price's Legislator, 4 yrs., 7st. 11lb. Won easily.

At the Western Meeting (at Ayr), ridden by H. Robinson, and carrying 8st. 12lb., he won the Ayr Gold Cup, two miles, beating Lord Eglinton's Glen Saddel, 3 yrs., 7st. 5lb. Won easily.

At Doncaster, ridden by Flatman, and carrying 8st. 12lb., he won the Cup, beating Captain Harcourt's Ellerdale, 4 yrs., 8st. 2lb. (2); and Lord Eglinton's Van Tromp, 4 yrs., 9st. 3lb. 3 to 1 agst. Chanticleer. Won easily by a length and a-half.

At the Royal Caledonian Hunt (Edinburgh), ridden by Riley, he won Her Majesty's Plate, in two two-mile heats, beating Mr. R. Jolly's Dog Billy, aged. At the same meeting. ridden by Riley, he won the second of Her Majesty's Plates. four miles, again beating Dog Billy. Won easily.

At Newmarket Houghton Meeting, ridden by Marlow, and carrying 9st. 11lb., he was not placed for the Cambridgeshire Stakes, won by Colonel Peel's Dacia, 3 yrs., 5st. 9lb. Twenty-two others started. 10 to 1 agst. Chanticleer.

Chanticleer opened 1849 by running, without a place, at 9st. 9lb., for the Chester Cup, won by Mr. Stebbing's Malton, 4 yrs., 6st. 10lb.; Mr. Pedley's Cossack, 5 yrs., 9st. 11lb. (2); Mr. Gregory's Loup Garou, 3 yrs., 4st. 10lb. (3).

At Ascot Heath Chanticleer ran second by half a length, 9st. 3lb., to Lord Eglinton's Van Tromp, 9st., for the Emperor of Russia's Plate; Cossack, 9st., and Collingwood, 9st. 3lb., being third and fourth.

At Newcastle-on-Tyne Chanticleer won the Gold Cup and Subscription Stakes, 2 miles, 3 subs., beating Capt. Cookson's Hampshire, 4 yrs., very easily. 5 to 1 on Chanticleer.

At Carlisle he ran third to Mr. S. L. Fox's Executor, 5 yrs., 7st. 10lb.; Mr. Pedley's Cockermouth, 4 yrs., 6st. 12lb. (2): Chanticleer carrying 9st. 8lb., Mr. Bateman's Strychnine, 3 yrs., 5st. 10lb. (4); St. Bennett, 5 yrs., 6st. 6lb., bolted.

At Goodwood Chanticleer (9st. 13lb.) was fourth for the Goodwood Stakes, won by Maid of Lyme, 6 yrs., 6st. 13lb; Van Dieman, 3 yrs., 5st 6lb. (2); Giselle, 6 yrs., 6st. 12lb. (3): Collingwood, Wanota, Maid of Masham, The Admiral, The Tartar, Plaudit, Antagonist, Clermont, Hornpipe, Hagley, Miss Whip, Tophana, Fire-eater, Priestess, Emma Donna, Wallflower, Over-fork-over, not placed. Next day Chanticleer, carrying 10st., ran second to Lord Stanley's Canezou, 4 yrs., 8st. 11lb.; Black Eagle, 3 yrs., 7st. 10lb. (3); Landgrave, 3 yrs., 6st. 3lb. (4); Glenalvon, 3 yrs., 7st. 4lb. (5); The Hero, 6 yrs., 10st. (6); Chicaneur (bred in France) 4 yrs., 7st. 11lb. (7); Juggler (bred in France), 3 yrs., 5st. 10lb. (8).

For the Warwick Gold Cup he ran second to Glenalvon, 3 yrs., 6st. 10lb.; Chanticleer carrying 9st. 12lb.; Eagle's Plume, 4 yrs., 9st., (3). 6 to 4 on Chanticleer.

At Lichfield, at 10st. 3lb., he carried off the Queen's Guineas, in two two-mile heats, as follows:—Chanticleer, 1—1; Burghley, 8st. 2lb., 0—2; Pity-the-Blind, 8st. 2lb., 0—3; The Dart, 10st., 2—dr.; Selina, 8st. 2lb., 3—dr. First heat, 3 to 1 on Chanticleer; 4 to 1 against Pity-the-Blind. Second heat, 5 to 1 on Chanticleer. Both heats won without effort.

Chanticleer travelled north in October, where, at the Royal Caledonian Hunt, he was fourth, at 9st. 8lb., for the Gold Cup, won by Lord Eglinton's Elthiron, 3 yrs., 6st. 8lb.; Arthur Briggs, 4 yrs., 6st. 10lb.; Phizgig, 6st. 3lb. This was Chanticleer's last appearance on the turf.

SUMMARY OF CHANTICLEER'S PERFORMANCES.

In 1845 he started twice without winning.

In 1846 he started seven times and won three:—

	Value Clear.
A Handicap Sweepstakes, at the Curragh June Meeting...	£160
A Sweepstakes, at the Curragh June Meeting	180
The Queen's Plate, at the Curragh October Meeting ...	105
	£445

In 1847 he started nine times and won six:—

The Queen's Plate, at the Curragh April Meeting ...	£105
The Queen's Plate, at the Curragh June Meeting ...	105
The Queen's Plate, at the Curragh June Meeting ...	105
The Queen's Plate, at the Curragh June Meeting ...	105
The Glasgow Cup, at Paisley	100
The Silver Bells, at Paisley, with, in specie	60
	£580

In 1848 he started fourteen times and won ten:—

The Welter Cup, at Manchester	£100
The Castle Irwell Stakes, at Manchester	90
The Northumberland Plate, at Newcastle-on-Tyne ...	995
The Gold Cup, at Newcastle-on-Tyne	160
The Goodwood Stakes	1,120
The Gold Cup, at Stirling...	215
The Ayr Cup, at the Western Meeting	100
The Cup, at Doncaster	470
The Queen's Plate, at the Royal Caledonian Hunt ...	105
The Queen's Plate, at the Royal Caledonian Hunt ...	105
	£3,460

In 1849 he started nine times and won twice:—

The Newcastle Gold Cup, at Newcastle	140
The Queen's Plate, at Lichfield	105
	£245

Started 41 times, won 21. Total of winnings £4,730

Chanticleer now stood at Birch Farm, near Oswaldkirk; subsequently to 1852 at the Rawcliffe Stud Company's Paddocks, near York; then at Croft Stud Farm, Darlington. In 1859 Chanticleer had 57 winners to his credit—a number afterwards augmented. Among these were Vengeance (winner of the Cesarewitch, 1856; and second, at 8st. 2lbs., for the Cambridgeshire, the same year, with 35 starters); Bonnie Morn,

winner of four out of five races, at 2 yrs. old; Sunbeam, (out of Sunflower); winner of five races out of nine, at 2 yrs. old, eight races out of thirteen, at 3 yrs. old; Sunrise (out of Sunflower); Rara Avis (out of Prairie Bird); Moorcock (out of Woldsmaid); Gallus (out of Hag); the last three good winners in 1860. Crocus, Coxcomb, Clare, Peeress, Sunlight, Cheery Chop, Childrey, Chuckle, &c., &c.

THE HERO.

The Hero, bred by George Allen, Esq., of Cresselly, Pembrokeshire, in 1843, was by Chesterfield, out of Grace Darling, by Defence, her dam by Don Cossack, out of Mistake, by Waxy.

Chesterfield, an own brother to Crucifix, bred by Lord Chesterfield in 1834, was by Priam, out of Octaviana, by Octavian, her dam by Shuttle, out of Zara, by Delpini. As a race-horse, he received in a produce stake at Newmarket; and then, being drafted out of his noble namesake's string, was taken down into Wales, where he got beaten at Aberystwith by one of Mr. Pryse Pryse's flyers. This closed his career on the Turf, while as a stud-horse he only lived to father The Hero, who, with a steeple-chase horse of Mr. Bisse's, called Pembroke, are, we believe, the only two by him that ever appeared.

Grace Darling, bred by Mr. Isaac Sadler in 1832, figured for some seasons on the midland county circuit as Mr. Sadler's, Mr. Reeve's, or Mr. Mathews' Sister to Desperate. Her performances, however, never exceeded those of a third-rate plater; and her produce, with this one grand exception, were quite on a sample with her own inferior merits as a race-horse. So unpromising, indeed, did she appear to Mr. Allen, into whose hands she passed after leaving the turf, that he sent her, with the Chesterfield colt at her foot, to Bath races in the summer of 1843, to be sold for what she would fetch. Fifteen sovereigns was the maximum offered for the two; and at this price they became the property of Mr. John Powney, of Landsdown, Bath, who kept the mare, as well as owning half of The Hero; John Day agreeing for the other half, on the horse being sent into training.

The Hero was a chestnut horse, with no white beyond a star on the forehead and a few well-worn saddle-marks. His height was about fifteen hands three inches: he had a rather long lean head, well set on; a good and strong neck; good shoulders, with fair depth of girth, but run slight in his back-ribs, and mean in his quarters; straight thighs, though rather long from hip to hock, and tail set on low. He stood upright on his joints, with a shuffling walk: in fact, as a proof horses go in all forms, he was a mere hack in appearance.

In 1845 The Hero, then two years old, commenced his career at Epsom, where, ridden by young John Day, he ran second to Lord George Bentinck's Cherokee for the Woodcote Stakes; Mr. Dawson's Lord Harry (3); and the following not placed:—f. by Liverpool out of Carolina, Malt, Ipecacuanha, c. by Camel out of Daisy, Guzman, Tom Sare, f. by Elis, out of Delightful.

At Ascot he ran third for the Trial Stakes, new mile, won by Mr. A. W. Hill's the Libel; Lord Chesterfield's Knight of the Whistle (2); and the following not placed:—Loadstone, Pyrrha, Discord, Master Stepney, and Syllabub. A good race between the Knight of the Whistle and The Hero for second.

At Newmarket Second October Meeting, ridden by S. Day, he won £50 for 2-yr-olds, T. Y. C., beating Mr. Payne's Repeal and Lord George Bentinck's Terrier, who ran a dead heat for second, and the following not placed:—Lord Exeter's c. by Beiram, out of Agnes; Mr. Hook's Buttress; Lord Chesterfield's Snake; Duke of Bedford's Black Cat; and Mr. S. Herbert's c. by Venison, out of Pet. 4 to 1 against The Hero, who won by half a length.

In 1846, ridden by Donaldson, and carrying 5st. 7lb., The Hero ran second to Mr. O'Brien's Jonathan Wild, 3 yrs., 4st. 7lb., for the Goodwood Stakes, New Cup course; Dulcet, 4 yrs., 6st. 10lb. (3); and the following not placed:—A-la-mode, 5 yrs., 8st. 4lb.; Glossy, 6 yrs., 8st. 2lb.; Vol-au-vent, 5 yrs., 7st. 2lb.; Red Robin, 4 yrs., 7st.; Clumsy, 4 yrs., 6st. 12lb.; Pic Nic, 4 yrs., 6st. 11lb.; My Mary, 4 yrs., 6st. 10lb.; Connaught Ranger, 4 yrs., 6st. 9lb.; Giantess, 4 yrs., 6st. 7lb.; b. g. Teetotaller, aged, 6st. 6lb.; Ima, aged, 6st. 2lb.; Sir Diggory Diddle, 5 yrs., 6st.; Jack Cade, 5 yrs., 5st. 9lb.; Petitioner, 3 yrs., 5st. 8lb.; Maid of Lyme, 3 yrs., 5st. 7lb.; Cherry, 3 yrs., 4st. 12lb.; Camera Obscura, 3 yrs., 4st. 10lb.; and Hydrangea, 3 yrs., 4st. 7lb. 4 to 1 against The Hero, who was beaten by a neck.

At Salisbury, ridden by A. Day, 7st. 6lb., he won the Salisbury Handicap of 20 sovs. each, h. ft., with 150 added, two miles and a quarter, beating Miss Shirley, 3 yrs., 5st., and Giantess, 4 yrs., 8st. 9lb. Won in a canter by two lengths. At the same meeting he walked over for the Gold Cup, by subscription of 10 sovs. each, two miles, 11 subs.

At York, ridden by A. Day, he won the Dundas Stakes of 15 sovs. each, 10 ft., with 30 added, a mile and a quarter, beating Mr. Meiklam's Lightning (2), Mr. Plummer's The Barmaid (3), and Mr. Allen's Lady Alice. 6 to 5 on The Hero, who won easily by two lengths. On the same day, ridden by A. Day, he won Her Majesty's Plate of 100 gs., two miles, beating Mr. Meiklam's Inheritress (2), Mr. Maher's The Highwayman (3), and Colonel Cradock's Jingle-pot. 2 to 1 on The Hero. On the following day, ridden by A. Day, and carrying 7st. 8lb., he won the County Cup of 150 sovs., added to a Handicap Sweepstakes of 10 sovs. each, two miles, beating Mr. Wormald's Quadruped, 3 yrs., 6st. 11lb. (2); Major Yarburgh's Red Robin, 4 yrs., 8st. 1lb. (3); and the following not placed:—Mr. Lane Fox's Wrestler, 3 yrs., 6st. 6lb.; Lord Zetland's Co-heiress, 5 yrs., 8st. 1lb.; Mr. Jacques's Philip, 6 yrs., 8st. 3lb.; Mr. Cuthbert's Queen of Tyne, aged, 8st. 5lb.; Mr. S. L. Fox's Waxholme, 3 yrs., 6st. 11lb.; Mr. O'Brien's Mentor, 4 yrs., 9st. 1lb.; and Mr. Worley's Example, 5 yrs., 8st. 9lb. 2 to 1 against The Hero. At Egham, ridden by A. Day, he won Her Majesty's Plate of 100 gs., two miles and a distance, beating Mr. Moore's Wolf-dog (2); Sir Gilbert Heathcote's c. by Hetman Platoff, out of

Nannette (3); Count Batthyany's Tragical (4); and Mr. Winch's Oliver Cromwell. 5 to 2 on The Hero. Won easily. At Warwick he walked over for Her Majesty's Plate of 100 gs. two-mile heats. At Lichfield, ridden by A. Day, he won Her Majesty's Plate of 100 gs., two miles heats, beating Mr. Copeland's Arthur and Mr. Meeson's The Dart, who were both drawn after the first heat. At Leicester, ridden by A. Day, he won Her Majesty's Plate of 100 gs., three miles, beating Mr. Cowper's Roebuck and Mr. Wildman's The Heiress. At Doncaster, ridden by A. Day, he won Her Majesty's Plate of 100 gs., four miles, beating Mr. Hesseltine's Fitzwilliam. 8 to 1 on the Hero, who won by fifteen lengths. At the same meeting, ridden by A. Day, he won the Doncaster Cup of 300 sovs., two miles and five furlongs, beating Lord Strathmore's Brocardo (2), Sir J. Hawley's Bravissimo (3), and the following, which did not pass the chair:—Major Yarburgh's Red Robin, Mr. Wormald's Quadruped, and Mr. Stephenson's Sheraton. 7 to 4 against The Hero, who won in a canter by eight lengths.

In 1847 The Hero, ridden by A. Day, and carrying 9st. 7lb., won Her Majesty's Gold Vase at Ascot, two miles, beating the Duke of Bedford's Bridle, 3 yrs., 6st. 12lb. (2); Lord Lonsdale's Jericho, 5 yrs., 9st. 1lb. (3); and the following not placed:—Colonel Anson's Bingham, 3 yrs., 7st. 3lb.; Lord Caledon's Wonata, 3 yrs., 7st. 3lb.; Mr. E. R. Clarke's Miles's Boy, 3 yrs., 7st. 3lb.; Captain Harcourt's Ellerdale, 3 yrs., 6st. 12lb.; and Lord Exeter's Cosachia, 3 yrs., 6st. 12lb. 9 to 2 against The Hero, who won by a head. At the same meeting, ridden by A. Day, he won the Emperor of Russia's Plate, value 500 sovs., two miles and a half, beating Lord Waterford's Wolfdog (2), Lord Lonsdale Jericho (3), and the following not placed:—Lord E. Russell's Sting, Mr. Meiklam's Poynton, Sir J. Hawley's Mendicant, and Mr. Isaac Day's Sir Tatton Sykes. 6 to 4 against the Hero, who won by a length. At Winchester, ridden by A. Day, he won Her Majesty's Plate of 100 gs., two-mile heats, beating Mr. Elwes' Bourton and Captain Delmes's Silver Eel in two heats. Both won easily. At Goodwood, ridden by John Day, jun., 9st. 6lb., he won the Goodwood Cup, two miles and three quarters, beating Lord Eglinton's Eryx, 3 yrs., 7st. 4lb. (2); Duke of Richmond's Halo, 3 yrs., 7st. 4lb. (3); Lord Waterford's Wolfdog, 5 yrs., 9st. 11lb. (4); and the following not placed:—Mr. O'Brien's Mentor, 5 yrs., 9st. 4lb.; Lord E. Russell's Sting, 4 yrs., 9st. 4lb.; Mr. Tilbury's Golden Rule, aged, 7st. 12lb.; Mr. Fox's Dreamer, 6 yrs., 7st. 8lb.; and Captain James's Monarch (an Arab), aged, 5st. 4lb. 5 to 4 on The Hero, who won by a length. At Egham he walked over for Her Majesty's Plate of 100 gs., two miles and a distance. At Warwick he walked over for Her Majesty's Plate of 100 gs.; heats, two miles. At the same meeting, ridden by A. Day, and carrying 8st. 10lb., he won the Warwick Cup, four miles, beating Mr. Moore's Wolfdog, 5 yrs., 8st. 13lb.; and Mr. Minor's Hawkestone, 3 yrs., 6st. 5lb. 6 to 1 on The Hero, who won by three lengths. At Doncaster he walked over for Her Majesty's Plate of 100 gs., two miles and five furlongs. At the same meeting, ridden by A. Day, and carrying 9st. 5lb., he was beaten by Mr. Bouverie's War Eagle, 3 yrs., 7st. 7lb., for the Doncaster Cup, two miles and five furlongs. 2 to 1 on The Hero, who was beaten easily by a length. At Lichfield, ridden by A. Day, he won Her Majesty's Plate of 100 gs., heats, two miles, beating Mr. Copeland's Arthur, who was drawn after the first heat. At Leicester, ridden by A. Day, he won Her Majesty's Plate of 100 gs., three miles, beating Mr. Wildman's ch. f. by Johnny Boy (pulled up).

In 1848, The Hero, ridden by A. Day, again won the Emperor's Vase, at Ascot, beating Mr. Green's Flatcatcher (2), Duke of Bedford's Saddle (3), and Mr. Pedley's Foreclosure. 2 to 1 on The Hero, who won by a length.

At Salisbury, ridden by A. Day, he won Her Majesty's Plate of 100 gs., three miles, beating Mr. W. Etwall's gr. c., by Thistlewhipper: 20 to 1 on The Hero, who walked in. At Goodwood he walked over for the Craven Stakes, one mile and a quarter. At the same meeting, ridden by A. Day, he was beaten by Lord Clifden's Footstool, for Her Majesty's Plate, three miles and five furlongs: 5 to 2 on The Hero, who was beaten by a length. At Weymouth, ridden by A. Day, he won Her Majesty's Plate of 100 gs., heats, two miles, beating Mr. Wadsworth's Heriar, who was drawn after the first heat.

In 1849, The Hero, 10st. 4lb., was not placed at Northampton for the Queen's Plate, won by Quiver, 6st. 10lb., The Model, 6st. 10lb. (2), Swordplayer, 9st. 2lb. (3). Iron Rail, 9st. 12lb., Chicaneur (French), Clairvoyance, Isaac of York, and Didsbury, also started. At Winchester, 10st. 2lb., he won the Queen's Plate, two mile heats, both heats easily. Rosalinda, 9st. 2lb., 4—2; Buffalo Gal, 7st. 5lb., 2—dr; Diana, 7st. 5lb., 3—dr., Fair Ellen was distanced: 5 to 1 on The Hero, 7 to 1 against Buffalo Gal. At Salisbury he won the Queen's Plate, 10st. 3lb., beating Hippona, 9st. 6lb. At Goodwood on the Thursday, carrying 10st., he was placed sixth for the Cup, won by Canezou, 8st. 10lb., Chanticleer, 10st. (2), Black Eagle, 7st. 4lb. (3); Landgrave, 6st. 3lb. (4); Glenalvon, 7st. 4lb. (5); Chicaneur, 7st 11lb., and Juggler, 5st. 10lb. (both French), seventh and eighth: 13 to 8 on Canezou, 5 to 1 against Hero, 6 to 1 against Chanticleer, 12 to 1 against Glenalvon, 20 to 1 any other. At the York August Meeting, The Hero won the Great Ebor Handicap, at 9st. 4lb., beating Fernhill, 8st. (2); Maid of Team Valley, 5st. 5lb., (3); Ellerdale, 8st. 5lb., (4); Executor, 7st 13lb., Melton, 7st., Blucher, 7st., Giselle, 6st., 9lb., Glen Saddel, 6st. 7lb., Cockermouth, 6st. 5lb., Miss Whip, 6st. 4lb., Chantrey, 5st. 8lb., Westow, 5st. 8lb., Castanette, 5st. 3lb., Alp, 5st. 2lb.: 3 to 1 against Westow, 5 to 1 against Ellerdale, 6 to 1 against Glen Saddel, 7 to 1 against Giselle, 10 to 1 against Cockermouth, 28 to 1 against Executor, 40 to 1 against The Hero. Won by a neck. At Egham, he ran second for the Queen's Plate, 10st. 2lb., to Oneida, 7st. 5lb., Prior of St. Margaret's, (3); Kremlin, 9st. 1lb., last. This closed his fifth and last season. His winnings are thus summarised:

SUMMARY.

In 1845 he started three times, and won once :—

	£.
A Plate at Newmarket, value clear	50

In 1846 he started twelve times, and won eleven :—

The Handicap, at Salisbury	300
The Cup, at Salisbury	100
The Dundas Stakes, at York	145
Her Majesty's Plate, at York	105
The County Cup, at York	225
Her Majesty's Plate, at Egham	105
Her Majesty's Plate, at Warwick	105
Her Majesty's Plate, at Lichfield	105
Her Majesty's Plate, at Leicester	105
Her Majesty's Plate, at Doncaster	105
The Cup, at Doncaster	300

In 1847 he started eleven times, and won ten :—

Her Majesty's Vase, at Ascot	360
The Emperor of Russia's Plate, at Ascot ...	880
Her Majesty's Plate, at Winchester	105
The Cup, at Goodwood	690
Her Majesty's Plate, at Egham	105
Her Majesty's Plate, at Warwick	105
The Cup, at Warwick	240
Her Majesty's Plate, at Doncaster	105
Her Majesty's Plate, at Lichfield	105
Her Majesty's Plate, at Leicester	105

In 1848 he started five times, and won four :—

The Emperor of Russia's Plate, at Ascot ...	780
Her Majesty's Plate, at Salisbury	105
The Craven Stakes, at Goodwood	25
Her Majesty's Plate, at Weymouth	105

In 1849 he started six times, and won three :—

Her Majesty's Plate, at Winchester	105
Her Majesty's Plate, at Salisbury	105
Great Ebor Handicap, at York	1,100
Total	£6,874

In all started thirty-seven times, and won twenty-nine.

The Emperor's Vase of 1847 was presented by Messrs. John Day and John Powney to Mrs. Gully; and that for 1848 was purchased of them by John Day, jun., and presented by him to Lady Mill.

The Hero now went to stud, but his stock for the first few seasons were nothing to boast of. Namur and Bavaria out of Bohemienne, Dejanira, out of Dart, Heroine, out of Sir Richard's dam, and Rogerthorpe, were but moderate animals. Some good reflections on the points and pedigree of the Hero, may be found in a little volume entitled *The Stud Farm, or Hints on Breeding*, by Cecil, published by Longmans, in 1851. The Hero died in 1858.

The following elegy on the departed chestnut sums up his weight-carrying qualities :—

Weight him, Earth, as you like,
'Tis to Hero the same;
When we had him in "form"
"Half a ton was his game."
True as steel at a finish,
He'd "wait" or he'd "go,"
He'd cut down in a trice,
But ne'er "savage" a foe.

Scores have heard his foot-rattle,
So deadly and sure,
At Ascot, York, Goodwood,
And Doncaster Moor.
Twenty-nine races won,
The best monument raise
To this crack of four seasons—
This pet of four "Days."*

RATAPLAN.

As a winner of twenty-one Royal Plates, and twenty other races, the stout old "Ratty," who now bids fair to figure A 1 among our stud-horses, asks a place.

He was bred by Captain Thellusson in 1850, his sire the Baron, his dam Pocahontas, by Glencoe, her dam Marpessa by Muley—Clare by Marmion—Gohanna.

The Baron, bred in Ireland by Mr. Watts in 1842, was got by Birdcatcher out of Echidna, by Economist. He won the St. Leger in 1845, as well as the Cesarewitch of the same year, and was altogether a first-rate race-horse. His career on the turf was not a long one, and his trial as a stud-horse, at least in this country, equally short. At the sale following the decease of Mr. Theobald in 1850, he was knocked down to a French commissioner for 1,010 guineas. His stock, which came out as two-year-olds in 1851, include in the list of winners with us Aitchbone, Benita, Chief Baron Nicholson, and Lady Isabel; the first year of his three-year-olds producing a St. Leger winner, and a first-class stud-horse, in Stockwell, own brother to Rataplan. In France he has also been very successful, and his departure from his country, after so brief a trial, may be looked upon as a national loss.

Pocahontas, bred by the late Mr. Forth in 1837, was a strong favourite for the Oaks of her year; but she never fulfilled the promise made for her. In 1842, having been purchased by Mr. Greatrex, Mr. Theobald put her to the stud. Here again, up to the Baron cross, she showed with but little success—Cambaules and Dolly Varden being amongst the most remarkable of her produce. The latter was one of the plainest mares we ever saw. Indeed, Pocahontas is not famous for throwing them very handsome. They are, however, often something better, as witness her three celebrated sons—Stockwell, Rataplan, and King Tom. At Mr. Theobald's sale the mare was knocked down to Captain Thellusson for 260 guineas, and she has since been again sold to Lord Exeter.

Rataplan is a dark chestnut horse with white ticks, standing sixteen hands high. He has a rather plain but very expressive head, with a strong neck, shoulder somewhat inclined to be upright, and immense chest—a short, strong back, powerful quarters, also inclining to be short, and arms, gaskins, knees, hocks, and bone quite equal to carrying sixteen stone over a country. He is, in fact, an immensely powerful horse, with something remarkably "prepossessing in his appearance;" carrying his bushy tail well away from him, and walking

* Sam Day rode him the first season, and Alfred Day from 1846—49 He was owned by Mr. John Day and Mr. J. B. Day.

along in the most careless, indolent manner. With only just a turn more speed, he would have figured in a yet more extraordinary manner among our modern "flyers;" indeed, we look upon Rataplan as an improved specimen of the very best race-horse of the olden time.

In 1852, Rataplan, then two years old, and ridden by J. Sharp, made his first appearance, at Epsom, where he was not placed for the Woodcote Stakes, three-quarters of a mile, won by Baron Rothschild's Orestes. At Goodwood, ridden by Wakefield, at 7st. 7lb., he was not placed for the Nursery Cup, a mile, won by Mr. Wauchope's Catherine Hayes, 8st. 7lb. At Brighton, ridden by A. Day, at 8st. 7lb., he won a Sweepstakes of 100 sovs. each, T. Y. C., beating Sir J. Shelley's Lucy Banks filly. 5 to 4 on Rataplan, who won by a length.

In 1853, Rataplan, ridden by Wells, (who rode him throughout the year) ran fourth for the Derby Stakes, at Epsom, a mile and a-half, won by Mr. Bowes's West Australian. 30 to 1 against Rataplan. At Ascot, at 7st. 3lb., he won Her Majesty's Vase, two miles, beating Lord Clifden's Pelion, 3 yrs., 7st. 5lb. (2), Captain Lowther's Rackapelt, 3 yrs., 6st. 8lb. (3), and six others not placed. 6 to 4 against Rataplan, who won by a length. At Stockbridge, at 6st. 10lb., he won the Stewards' Plate, two miles, beating Captain Lane's Ninnyhammer, 3 yrs., 6st. 10lb., and three others. 7 to 2 on Rataplan, who won by a head. At Doncaster, he ran fourth for the St. Leger Stakes, won by Mr. Bowes's West Australian. 7 to 1 against Rataplan. At Newmarket Second October Meeting, (8st. 10lb.), he won a Handicap Plate of 100 sovs., A. F., beating Lord Clifden's Poodle, 4 yrs., 7st, 6lb. 3), Mr. E. R. Clark's Missive, 4 yrs., 6st. 12lb. (3), and ten others not placed. 7 to 1 against Rataplan, who won by two lengths. At the Houghton Meeting, at 7st. 12lb., he was not placed for the Cambridgeshire Stakes, a mile and a distance, won by Mr. W. Smith's Little Davie, 3 yrs., 5st. 10lb. 100 to 1 against Rataplan.

In 1854, Rataplan, having been let for the year by Mr. Thellusson, to Mr. T. Parr, ran through the season in the latter's name and colours. At Nottingham Spring Meeting, ridden by Flatman, (who was on him throughout the year, except where otherwise mentioned) he won the Trial Stakes, weight for age, a mile and a quarter, beating Mr. Stevens's Sir George, 3 yrs. (2), and two others. At Warwick he was beaten, at 8st. 9lb. each, by Baron Rothschild's Orestes, 4 yrs., for the Trial Stakes, a mile. 6 to 4 on Rataplan, who was beaten by a length. At Northampton, he won Her Majesty's Plate, two miles, beating Mr. Osborne's Lord John, 3 yrs, (2), Lord W. Powlett's Sharavogue, 5 yrs. (3), and four others. 5 to 2 against Rataplan, who won by three lengths. At Epsom Spring Meeting, he won the Trial Stakes, a mile, beating Mr. Death's Crambourne, 3 yrs. 5 to 2 on Rataplan, who won by four lengths. At Newmarket First Spring Meeting, he won Her Majesty's Plate, R. C., beating Mr. Daly's Lamartine and another. 4 to 1 on Rataplan. Won by a length and a half. At Chester, (8st. 12lb.) he won the Grosvenor Stakes, a mile and a quarter, beating Captain Lane's Epaminondas, 3 yrs., 6st. 12lb. (2), and six others. 5 to 2 against Rataplan. Won by a length. At the same meeting he won her Majesty's Plate, three miles, beating Mr. Moseley's Bourton (2), and three others. 5 to 2 on Rataplan. Won by a length. At the Lothians' Club, ridden by Templeman, (8st. 7lb.) he won the Lothian Handicap, two miles, beating Mr. A. Johnstone's Robgill, 3 yrs., 5st. 6lb. (2), and five others. 6 to 4 on Rataplan. Won by a length and a half. At the same Meeting, ridden by Templeman, he won Her Majesty's Plate, two miles, beating Mr. Pringle's Grampian, 4 yrs. Any odds on Rataplan, who won easily by two lengths. At Bath and Somerset, (8st. 10lb.) he won the Somersetshire Stakes, two miles and a distance, beating Mr. Shepherd's Aribbas, 3 yrs., 5st. 9lb. (2), Lord Clifden's Poodle, 5 yrs., 7st. (3), Mr. Henderson's Lough Bawn, 6 yrs., 7st. 8lb. (4), and ten others not placed. 5 to 1 against Rataplan, who won by a length. At the same meeting, (9st. 5lb.) he won the City Cup, two miles and a half, beating Mr. Night's Jephson, 3 yrs., 5st. 13lb. (2), and three others. 5 to 1 on Rataplan, who won by eight lengths. At Epsom, (8st. 7lb.) he ran second to Mr. Morris's Kingston, 5 yrs., 9st., for the Epsom Cup, a mile and a half. Four others also started. 5 to 2 on Rataplan, who was beaten by a head. At Manchester, at 9st. 3lb., he won the Tradesmens' Cup, two miles and a quarter, beating Sir J. Boswell's La Belle, 4 yrs., 6st. 2lb. (2 , and seven others. 5 to 1 against Rataplan, who won easily by a length. At Ascot, at 9st. 7lb., he was beaten by Mr. Gully's Hermit, 3 yrs., 7st. 7lb., for Her Majesty's Vase, two miles. 5 to 4 on The Hermit. Won by a length and a half. At the same meeting, ridden by Flatman, he ran third for the Gold Cup, two miles and a quarter, won by Lord Londesborough's West Australian. 3 to 1 against Rataplan. At the same meeting, ridden by Flatman, he won Her Majesty's Plate, beating Captain Lane's Epaminondas, 3 yrs. (2), and another. 6 to 4 against Rataplan, who won by a length. At Winchester, he won Her Majesty's Plate, two miles, beating Mr. Barber's Cobnut, 4 yrs. (2), and another. 4 to 1 on Rataplan, who won easily by a length and a half. At Goodwood, ridden by Mr. Parr, at 9st. 9lb., he was not placed for the Goodwood Stakes, two miles and a half, won by Lord Bruce's Bribery, 3 yrs., 5st. 11lb. 20 to 1 against Rataplan. At Wolverampton, (9st. 6lb.) he was not placed for the Wolverhampton Stakes, won by Mr. E. Parr's Newbold, 3 yrs., 5st. 7lb. 7 to 1 against Rataplan. At the same meeting, ridden by Flatman, at 8st. 13lb., he ran fourth and last for the Cleveland Cup, twice round, won by Mr. Meiklam's Peggy, 4 yrs., 7st. 6lb. At Plymouth, ridden by Mr. Parr, at 9st. 7lb., he won Her Majesty's Vase, in two two-mile heats, beating Mr. Wadlow's Kiteflyer, 5 yrs., 10st. 2lb., by twenty lengths for the first, and walking over for the second heat At Weymouth, ridden by Mr. Parr, at 9st. 7lb., he won Her Majesty's Plate, two miles, beating Mr. Cooper's Miss Tennyson (2), and another. At the same meeting, ridden by Mr. Parr, at 9st. 12lb., he ran third for the Melcombe Stakes, two miles.

won by Mr. Cooper's Miss Tennyson, 4 yrs., 6st. 4lb. At Doncaster, 9st. 3lb, he won a Sweepstakes of 10 sovs. each, a mile and a half, beating Mr. Thompson's Syvagee, 3 yrs., 7st. 3lb., and another, 2 to 1 against Rataplan. Won by three lengths. At Pontefract, ridden by Marlow, at 9st., he won the Trial Stakes, a mile, beating Mr. Osborne's Sweet Agnes, 3 yrs., 7st. 7lb. Any odds on Rataplan, who won in a canter. At Bedford, ridden by Marlow, 9st. 7st., he was not placed for the Scurry Handicap, half a mile, won by Mr. Marc's Michaelmas Maid, 4 yrs., 8st. 7lb. 3 to 1 against Rataplan. At the same meeting, ridden by Marlow, he won Her Majesty's Plate, three miles, beating Mr. Marc's Ilex, 5 yrs. (2), and two others. 9 to 2 on Rataplan, who won in a canter. At Newmarket Second October Meeting, ridden by Mr. Parr, at 9st. 7lb., he was not placed for the Cesarewitch Stakes, two miles and a quarter, won by Mr. Greville's Muscovite, 5 yrs., 8st. 3lb. At Worcester, at 9st. 2lb., he was not placed for the Autumn Handicap, two miles, won by Mr. Fryer's Jack Leeming, 6 yrs., 6st. 6 to 4 against Rataplan.

In 1855, having been returned to Mr. Thellusson, Rataplan came out again in that gentleman's name. At Northampton, ridden by Prince, (who, with Cowley and Flatman, was in the pigskin throughout 1855,) at 9st. 6lb., he was not placed for the Great Northampton Handicap, two miles. Won by Baron Rothschild's Hungerford, aged, 7st. 13lb. 20 to 1 against Rataplan. At the same meeting, he ran second to Mr. Hill's Kingstown for Her Majesty's Plate, two miles. Six others also ran. 5 to 4 against Rataplan, who was beaten by a head. At Chester, ridden by Flatman, at 9st. 6lb., he ran fourth for the Grosvenor Stakes, a mile and a-quarter. Won by Capt. Lane's Ephesus, aged, 9st. 3lb. 6 to 4 against Rataplan. At the same meeting, ridden by Prince, at 9st., he was not placed for the Wynnstay Handicap. Won by Lord Chesterfield's Typee, 5 yrs., 7st. 13lb. At Shrewsbury, ridden by Prince, he won Her Majesty's Plate, three miles, beating Mr. Palmer's The Chicken, 3 yrs., and another. 6 to 4 on Rataplan, who won easily by two lengths. At Bath, (9st. 2lb.,) he ran third for the Somersetshire Stakes, two miles and a distance. Won by Lord Chesterfield's Typee, 5 yrs., 7st. 13lb. Eleven others also ran. 10 to 1 against Rataplan, who was beaten a neck from the winner. At the same meeting, ridden by Prince, at 10st. 4lb., he won the City Cup, two miles and a half, beating the Duke of Bedford's Triton, 3 yrs, 6st. 9lb., and two others. 6 to 4 on Rataplan, who won easily by a neck. At Epsom, ridden by Prince, he won the Cup, a mile and a-half, beating Lord Anglesea's Nabob, 6 yrs., and two others. 6 to 4 on Rataplan, who won easily by a length. At Ascot, at 9st. 7lb., he ran second to Mr. Howard's Oulston, 3 yrs., 7st. 3lb., for Her Majesty's Vase, two miles. Four others also ran. 6 to 4 against Rataplan, who was beaten by two lengths. At the same meeting, he ran second to Lord Zetland's Fandango for the Gold Cup, two miles and a-half. Four others also ran. 9 to 4 against Rataplan, who was beaten by three-quarters of a length. At Stockbridge, at 8st. 11lb., he ran fourth for the Stewards' Plate. Won by Mr. Howard's Oulston, 3 yrs., 6st. 10lb. 4 to 1 against Rataplan. At Newcastle-on-Tyne, he won Her Majesty's Plate, three miles, beating Mr. Williams's Bolton, 3 yrs. 4 to 1 on Rataplan, who won easily by half a length. At Carlisle, at 9st. 4lb., he won the Cumberland Plate twice round and a distance, beating Mr. Norton's Courteney, 3 yrs., 5st. 12lb. (2), and seven others. 5 to 2 against Rataplan, who won by a head. At the same meeting he walked over for Her Majesty's Plate, two miles. At Liverpool, he won the Croxteth Stakes, a mile and a quarter, beating Lord Derby's Acrobat (2), and Mr. Parr's Saucebox. 7 to 4 against Rataplan, who won by a length. At the same meeting, he won Her Majesty's Plate, two miles, beating Mr. Parr's Saucebox by a head. 4 to 1 on Rataplan. At Nottingham, he won Her Majesty's Plate, two miles, beating Mr. Barber's Goorkah, and three others. 5 to 1 on Rataplan, who won easily by a length. At Chelmsford, he won Her Majesty's Plate, two miles, beating Mr. Robinson's Newbold, and another. 100 to 4 on Rataplan, who won by twenty lengths. At Goodwood, at 9st. 11lb., he ran third for the Cup, two miles and a half. Won by Baron Rothschild's Baroncinos, 3 yrs., 5st. 13lb. Four others also ran. 10 to 1 against Rataplan. At the same meeting he walked over for Her Majesty's Plate, three miles and five furlongs. At Brighton, he ran second to Mr. Stanley's Orinoco for the Champagne Stakes, a mile. 6 to 5 against Rataplan, who was beaten by a length and a-half. At the same meeting, ridden by Prince, at 10st., he won the Brighton Cup, a mile and three-quarters, beating Lord W. Powlett's Sharavogue, 6 yrs., 9st., and another. 2 to 1 on Rataplan, who won by four lengths. At Plymouth, ridden by Cowley, at 10st. 9lb., he won the Saltram Stakes, a mile and a-half, beating Mr. Andrew's Little Davie, 6 yrs., 8st. 7lb., and another. Won easily by a length. At the same meeting, he won Her Majesty's Vase, in two two-mile heats, beating Mr. Andrew's Little Davie, who was drawn after the first heat. At Canterbury, he won Her Majesty's Plate, two miles, beating Mr. Barnard's Piccadilly, and another. Won in a canter. At Egham he ran second to Mr. Walker's Winkfield, for Her Majesty's Plate, two miles and a distance. Two others also ran. High odds on Rataplan, who was beaten easily by a length. At Warwick he won Her Majesty's Plate, two miles, beating Mr. Barber's Domino, 4 yrs., and three others. 5 to 2 on Rataplan, who won by six lengths. At the same meeting, at 9st. 11lb., he won the Cup, three miles, beating Lord Clifden's Homily, 3 yrs., 6st. 10lb., and another. 2 to 1 on Rataplan, who won by a short head. At Doncaster, at 9st. 2lb., he ran second to Mr. Merry's The Wild Huntsman, 4 yrs., 7st., for the Great Yorkshire Handicap, St. Leger Course. Fourteen others also ran. High odds against Ratapian, who was beaten by a neck. At the same meeting (Cowley) he won Her Majesty's Plate, two miles and a-half, beating Mr. Dawson's Jack Leeming, and two others. 5 to 1 on Rataplan, who won in a canter, by ten lengths. At the same meeting, ridden by Cowley, he won the Doncaster Cup, two miles and a-half,

beating Admiral Harcourt's Ellermire, 3 yrs. (2), Lord Derby's Acrobat, 4 yrs. (3), Mr. Howard's Little Harry, 6 yrs. (4), Mr. Popham's Wild Dayrell, 3 yrs. (broke down), and Mr. Morris's Indian Warrior. 5 to 2 against Rataplan, who won in a canter, by six lengths. At Lichfield he walked over for Her Majesty's Plate, two miles. At Leicester, at 9st. 3lb., he ran fourth for the Leicestershire Handicap, a mile and a-half. Won by Mr. Oliver's Bright Phœbus, 4 yrs., 6st. 10lb. 2 to 1 against Rataplan.

This stout chestnut now retired from the turf, and gives fair promise of perpetuating his game as a sire. In 1859, he had one winner out, Plumper; in 1860, 15 winners, of the amount of 2,863*l.* Among his stock are Tattoo, Parasite, &c.; Kettledrum and Little Drummer, the former winner of the Derby of 1861.

SUMMARY.

In 1852 he started three times and won once—

A Two-year-old Stakes at Brighton . Value clear	£150

In 1853 he started six times and won three—

The Vase, &c., at Ascot	480
The Stewards' Plate at Stockbridge	570
A Handicap Plate at Newmarket	100

In 1854 he started twenty-nine times and won eighteen—

The Trial Stakes at Nottingham	55
The Trial Stakes at Epsom	60
The Grosvenor Stakes at Chester	130
The Lothian Handicap at Edinburgh	213
The Somersetshire Stakes at Bath	860
The City Cup at Bath	330
The Tradesman's Cup at Manchester	1,000
A Sweepstakes at Doncaster	135
The Trial Stakes at Pontefract	15
The Queen's Plates at Ascot, Bedford, Chester, Edinburgh, Northampton, Newmarket, Plymouth, Weymouth, and Winchester	900

In 1855 he started thirty-three times and won twenty—

The Queen's Plates at Canterbury, Carlisle, Chelmsford, Doncaster, Goodwood, Lichfield, Liverpool, Newcastle-on-Tyne, Nottingham, Plymouth, Shrewsbury, and Warwick	1,200
The City Cup at Bath	250
The Cup at Epsom	185
The Cumberland Plate at Carlisle	276
The Croxteth Stakes at Liverpool	70
The Cup at Brighton	170
The Saltram Stakes at Plymouth	98
The Cup at Warwick	360
The Cup at Doncaster	300
Total	£7,907

Has started seventy-one times, and won forty-two.

SAUNTERER.

Among the stout horses of our own day Saunterer may claim a place: the fact of running seventeen races as a two-year old substantiates his claim. He was bred by Mr. R. M. Jaques in 1854, is by Birdcatcher, out of Ennui by Bay Middleton, her dam Blue Devils by Velocipede—Care by Woful.

Birdcatcher, more commonly "Irish" Birdcatcher, by Sir Hercules, out of Guiccioli by Bob Booty, is well known as a most successful stallion (see page 440, *ante*). Birdcatcher died in 1860, aged 27 yrs.

Ennui, bred by Lord George Bentinck in 1843, was a fair runner, and a winner, amongst other things, of the great 4-yr-old Stake at Goodwood. She passed successively through the hands of Lord George, Mr. Mostyn, John Scott, and Mr. Pearce, who wound her up at welter weights in her fourth season. She produced one foal, that died young in 1849, and was then transferred to Mr. Jaques, with whom she remained for five seasons, the produce being Dear Me! Alas! Bravery, and Saunterer. At the sale of the Easby Abbey stud, in the summer of 1824, Ennui was bought by Lord Londesborough for 95 guineas.

Saunterer, a black, or perhaps more properly a dark-brown horse, stands about fifteen hands and a half high. In 1854, as a foal just weaned, he fetched only a fifty at the Easby sale, John Osborne being his registered purchaser. The young one came out in his name as a two-year-old in 1856, when he started no less than seventeen times, of which he won his four first races clean off. He made his first appearance in the spring at Doncaster, where with 8st. 7lb. (Johnny Osborne) he beat a large field for the Hopeful, including Magnifier, Adamas, and Red-white-and-blue. At the same meeting he walked over for the Betting-room Stakes. At Thirsk, in the same week, carrying the top weight of 8st. 11lb., he beat Red-white-and-blue and two others for a two-year-old stake. In that following at Croxton Park he beat Lord Wilton's Peeping Tom for another small sweepstakes. At York Spring, giving weight to everything, but still with even "on" him, he succumbed to Magnifier, Blink Bonny, and two others, for the Zetland Stakes. It was a memorable race—a dead heat between Magnifier and Nougat, Blink Bonny beaten a head from them, Madame Clicquot a head from her, and Saunterer separated by another head only; nothing else near. At Chester, on the Tuesday, he was not placed for the Mostyn Stakes, won by Lambourn, (he gave the winner 5lb.,) Blink Bonny, who was third, 9lb., and so on; and on the Friday ran second to Theodora for the Wirral. At Manchester he suffered another couple of defeats, running third to Blink Bonny for The Sapling, and second to Lambourn for another 2 yr-old stake. A brace more rebuffs awaited him at Newton, where he was second, twice over, to Madame Clicquot, with nothing very famous behind him. At Ripon, despite the top weight, he carried off a stake against such good company as Underhand, Skirmisher, and Co. Then Ignoramus, with 2lb. the best of it, beat him for the Prince of Wales at York, with ten more following. He was third to Lance for the Portland Plate at Doncaster, and finished the season with another run of luck. He won an all-aged stake at Pontefract; the Alma at Chester Autumn, giving Adamas 7lb. and a beating; and the Easby Stakes at Richmond. Gill rode him for this; Osborne for nearly all his other 2-yr old races.

As Mr. Jackson's, Saunterer came out in nineteen races at three years old, the first of which was the Derby, 1857, when

he started a strong favourite, with only eight to one against him. His old opponents, however, Blink Bonny and Adamas, had the best of him. At Ascot another old acquaintance—Skirmisher—beat him for the Cup, Gemma di Vergy dividing them by a head. At Newcastle he won the Grand Stand Stakes, and walked over for the Gateshead. At Liverpool he won three times—the Bentinck Testimonial, on the Wednesday, beating Commoner, Ellermire, and others; a sweepstakes again at York on the Thursday; and the Licensed Victuallers' Plate on the Friday, giving lots of weight to everything, including Lord Nelson, Ellermire, Hospitality, and Vandermulin. At York he finished a bad third at even weights to Védette (1), and Skirmisher (2), for the Great Yorkshire. At Doncaster he won the Eglinton Stakes, beating Gildermire, Tournament, Princess Royal, and others. Tournament, who fell, carried, with Saunterer, the top weight, 8st. 12lb. each. In the same meeting, in a field of five, at even weights, he was a good third for the Doncaster Stakes—Skirmisher first, Wardermarske second, Zuyder Zee fourth, and Augury fifth. A fellow voyager, Fisherman, spoiled him in his trip to Chantilly; but returning, Chester Autumn quickly credited him with two races—a walk over for the Mostyn, and the Chester Handicap, in which he gave heaps of weight, and won in a canter. In the Newmarket Second October Meeting he won a plate Across the Flat on the Monday, and received a match forfeit from a fancy of Mr. Ten Broeck's. On the Tuesday, with 8st. 5lb. on him, he was not placed in the memorable Cesarewitch—now known as the Prioress'; and on the Friday Mr. Robinson got the best of Mr. Jackson in a match with Heroine *versus* Saunterer, although it was two to one on "the black un." On the Monday, in the Houghton, however, the tables were turned, and Saunterer beat Anton, although giving seven pounds. On the succeeding day Saunterer did what must be considered his best performance. Carrying 8st. 12lb. —a stone more than anything else in the race, although only a three-year-old—he was beaten a neck for the second in the Cambridgeshire. Odd Trick, a three-year-old, who won, carried 7st. 4lb., and Mœstissima, not a bad filly, 6st. 5lb. Saunterer thus gave her two stone and a-half. Twenty-eight others, equally well in against him, also started, but were not placed. The Ring readily laid a hundred to one against Mr. Jackson's horse. Osborne again rode Saunterer in the majority of his races, and Charlton at the lighter weights.

Ere the opening of another year, 1858, Saunterer changed hands, Mr. Merry bidding up as high as two thousand one hundred for him, at which price Mr. Jackson yielded. The horse, however, by no means ran up to his form at the beginning of the season. The first of seventeen more races was at Warwick Spring, where at even weight he was a bad third to Commotion (1), Odd Trick (2), for The Trial. At Newmarket First Spring he finished last of the three at even weights for a hundred-guinea stakes—Ignoramus first and Commotion second; but the next day he won a handicap plate, beating a rough lot of nine "others." At Chester he was all "out" again—Fisherman beat him a head for the Grosvenor; at 8st. 8lb. he was not placed though well up for the Cup; and Fisherman again vanquished him for the Stewards' Cup. At Epsom Zuyder Zee beat him just a head for the Craven, and he was another far less glorious second to Fisherman for the Cup, beaten by twenty lengths. Nowhere for the Hunt Cup at Ascot, he was laid by for a bit, and did not appear again until the Goodwood, when he created an immense "sensation" by winning the Cup, beating Frenchmen and Yankees, and, yet more, getting his revenge on Fisherman. Quite a horse of another colour by this time, he went on to Brighton, where he polished off the Happy Land and Tournament for the Champagne, and walked-over for the Cup. At Doncaster the Knight of Kars and Ignoramus could get no nearer than second and third against him for the Fitzwilliam; but in the Cup Védette beat him by half-a-length, with Black Tommy, Fisherman, Tournament, and Zuyder Zee a long way from the two. He then paid another visit to Chantilly, and with more success, winning the Emperor's Prize against the Zouave, Ventre-Saint-Gris, and two more natives. In the Newmarket Second October Meeting Mr. Merry challenged for the Whip, and Mr. Starkey resigned it. In the Houghton Saunterer finished the year, by giving two stone-and-a-half to Sir Joseph Hawley's Gilliver, in a Handicap, and running up to him: Ignoramus, with 8lb. in hand, and two others, "all behind." Wells, Osborne, Chilman, Alderoft, were in turn "up" during the season; but his old pilot had still done the best with him. Osborne rode him at Goodwood, and again accompanied him across the Channel.

In 1859, Saunterer being put in at the top weight for the Chester Cup, did not go, but made his first appearance in June at Ascot, where he was second (5 yrs., 9st.) for the Gold Cup, won by his old conqueror Fisherman (*see* FISHERMAN). A long rest found him in October at Newmarket, when, at 10st., he challenged for the Whip and 200 sovs., p. p., received from Leamington, (6 yrs., 10st.), and retained the trophy.

SUMMARY.

In 1856 Saunterer started seventeen times, and won eight:—

	£
The Hopeful, at Doncaster, value clear	390
The Betting-room Stakes, at Doncaster	70
A Sweepstakes, at Thirsk	95
A Sweepstakes, at Croxton Park	35
A Sweepstakes, at Ripon	115
A Sweepstakes, at Pontefract	35
The Alma Stakes, at Chester	230
The Easby Abbey Stakes, at Richmond ...	45

In 1857 he started nineteen times, and won eleven:—

The Grand Stand Stakes, at Newcastle-on-Tyne ...	125
The Gateshead Stakes, at Newcastle	25
The Bentinck Testimonial Plate, at Liverpool ...	265
A Sweepstakes, at Liverpool	180
The Licensed Victuallers' Plate, at Liverpool ...	320
The Eglinton Stakes, at Doncaster	350
The Mostyn Stakes, at Chester	40
The Autumn Handicap, at Chester	365
A Plate, at Newmarket Second October ...	50

A Match Forfeit, Newmarket Second October	...	100
A Match, Newmarket Houghton ...	...	300

In 1858 he started seventeen times, and won seven :—

A Handicap Plate, Newmarket First Spring	...	50
The Cup, at Goodwood	...	740
The Champagne, at Brighton ...	...	215
The Cup, at Brighton	...	50
The Fitzwilliam, at Doncaster ...	...	145
The Emperor's Prize, at Chantilly ...	...	530
The Whip, Newmarket Second October, and	...	200

In 1859 he started twice, and won once :—

The Whip, and 200 sovs. at Newmarket	...	200

Saunterer now went to stud, and was advertised for his first season, 1860, at Darlington, at 15 gs.

Saunterer started fifty-four times and won twenty-seven (including the Whip).

SAUCEBOX.

The Leger of 1855 was won by a remarkably stout horse, the neat and wiry Saucebox.

Saucebox, bred by Henry Stebbing in 1852, was got by St. Lawrence, out of Priscilla Tomboy, her dam Catalani, by Tiger—Wilna, by Smolensko.

St. Lawrence, bred in Ireland in 1837, was by Skylark or Lapwing, out of Helen, by Blacklock. Like his son Saucebox, it was almost impossible to bring the Saint out too often—he having started in 58 races, of which he won 28, winding up with the Chester Cup as his chief victory. As a stud horse he claims among others the following winners :—Ben Neder, Ethelbald, Grimalkin, Saquenay, Surprise, St. Spiro, Saucebox, Thames Ditton, Whitenose. In 1852, at 22 yrs. old, he was standing at Market Harborough with 50 winners to his name.

Priscilla Tomboy, bred by Mr. Kitching in 1839, was also a stout runner—having been kept in work until eight or nine years old. She had a dead foal to Gilbert Gurney in 1850, was barren in 1851, and dropped Saucebox in 1852. She died the day after foaling, and the St. Leger winner was brought up by hand.

Saucebox, a bright bay horse, stands fifteen hands an inch and a-half high. At two years old, the performances of Saucebox, like many horses of his stamp, were by no means promising. He started eleven times between April and September, inclusive, and sustained eight defeats. On October 18th, he was put up at the Corner, with Mr. Arnold's horses, and sold for 155 gs. to Mr. Parr. He finished the year at the Houghton Meeting by running, without a place, in a Selling Plate, winner to be sold for 300 gs.

In 1855, he ran third in the Coventry Handicap, for the Queen's Plate at Northampton, and second for the Cup Stakes at the same Meeting. At Lincoln he won the Spring Handicap ; but at Newmarket was third in a Handicap won by Bluebeard, and not placed in the Great Northern Handicap, won by Neville. At Bath, ridden by his owner, he was in his accustomed place of third for the Aristocratic Handicap. He now turned the tide, and began to show his lasting qualities. At Manchester, he won the Tradesmen's Cup, beating easily Andrew (2), Aribbas (3), Neoptolemus (4), Shoreham (5), and Little Davie. At Ascot, he ran third for Her Majesty's Vase, won by Oulston. At the same meeting he won Her Majesty's Plate, beating Vension in a canter. At Newton, he ran second to Lurley for the Gold Cup, being beaten by a head. At the same meeting he again ran second to Lurley (Palmer's), for the Great Newton Handicap, losing by half a length. At Liverpool July, he ran third to Rataplan, for the Croxteth Stakes. At the same meeting, ran second to Rataplan, for Her Majesty's Plate, being beaten only by a head. (See RATAPLAN). At Nottingham, he ran second to Le Juif, for the Portland Handicap, being beaten by a short head. At Lancaster, he won the Cup, beating Fanny Fern (2), Patience (3), and Dear-me. On the same day, he again beat Fany Fern, by a neck, for Her Majesty's Guineas, two miles. At Airdrie, he ran second to Blarney for the Gartsherrie Plate. At the same meeting he won the Burgh Cup, beating Mary Ann (2), Leda (3), Friar's Hall, Waverley, and Chisel. Won easily by two lengths. At Wolverhampton, walked over for the Cleveland Cup. At York, was not placed for the Great Ebor Handicap, won by Vandal. At the same meeting, ran fourth for the Great Yorkshire Stakes, won by Rifleman. At Derby he won the Tradesmen's Plate, beating Gamelad (2), Aribbas (3), Little Davie (4), Jack Leeming (5), and his old antagonist Lurley. Won by a length. At the same meeting, he won the Chatsworth Stakes, beating Gamelad (2), Knight Errant (3), Kiteflyer (4), Whalebone, and Kidnapper. Won by a neck. At Doncaster, ridden by Wells, he won the Great St. Leger Stakes, beating Rifleman (2), Lady Tatton (3), Rotherham (4), Alice, Græculus Esuriens, Herald, Marchioness, Blooming Heather, Oulston, Capucine, and c. by Surplice out of Clementina. 40 to 1 agst. Saucebox, who won by nearly a length. Run in 3 minutes 22 seconds. At the same meeting, ridden by Wells at 9st. 3lb., he won the Doncaster Stakes, beating Lady Tatton, 8st. 3lb. (2), Vandal, 8st. 7lb. (3) ; c. by Surplice, out of Clementina, 8st. 7lb. (4), Dr. Cooke, 8st. 7lb. (5), and Little Brownie, 8st. 7lb. 4 to 1 agst. Saucebox, who won by half a length. At Kelso, he ran fourth for the Roxburgh Handicap, won by Clotilde.

Saucebox opened the ball in 1856 by winning Her Majesty's Plate on March 14th, at Salisbury : beating Smack, Tame Deer, December, Sideboard, Favus, Coleshill, and Libellist. Won easily. He repeated the feat at Northampton on the 25th, for another Queen's Plate, beating Idmon, Ugly Mug, Besika, Homily, General Wyndham, Stork, Van Brakel, and Music. At Newmarket Craven, Saucebox was second, by half a length, (4 yrs., 8st. 12lb.) to Lawn (3 yrs., 5st. 12lb.) Sir Rowland Trenchard, aged, 7st. 6lb., and Adamant, 3 yrs., 5st. 7lb., 3rd and 4th. On Friday in the same week he won by three lengths the Queen's Plate, beating Sir Rowland Trenchard, Minos, and Iona. At Chester Spring was third for the Grosvenor Stakes, won by Gabbler, and was second to Heir of Linne, for the Queen's Plate. In the same week, at 9st., he won the Eaton Stakes, beating Stork, 7st. 6lb.,

and Alfred, 7st. 3lb., each 3 yrs. At Shrewsbury he won the Queen's Plate, at 9st. 2lb., beating Ugly Mug, 3 yrs., 7st. 2lb., in a canter by two lengths. In his next four races Saucebox did not add to his wins. At Manchester, 9st. 2lb., he was second to Heir of Linne, 7st. 2lb., for the Queen's Plate; at Epsom third for the Craven Stakes, won by Kalipyge; same meeting second to Typee for the Epsom Cup; and at Ascot, second to Middleton for the Queen's Plate, and second to Winkfield for the Gold Cup, on following days. He wound up the year at Abingdon by winning the Old Berkshire Hunt Stakes, with his owner up, 10st. 9lb., cantering away from Parga, 9st. 5lb., and finishing five lengths in front. Making fourteen times of starting in 1856, with six wins.

SUMMARY.

In 1854 he started twelve times, and won three:—

The King John Stakes, at Egham, value clear	...	£225
Magna Charta Stakes, at Egham	...	45
Sweepstakes at Marlborough	...	90

In 1855 he started twenty-eight times, and won eleven:—

The Spring Handicap, at Lincoln	...	80
The Tradesmen's Cup, at Manchester	...	740
Her Majesty's Plate, at Ascot	...	105
The Cup, at Lancaster	...	66
Her Majesty's Plate, at Lancaster	...	105
The Burgh Cup, at Airdrie	...	73
The Cleveland Cup, at Wolverhampton	...	70
The Tradesmen's Plate, at Derby	...	300
The Chatsworth Stakes, at Derby	...	146
The St. Leger Stakes, at Doncaster	...	2,750
The Doncaster Stakes, at Doncaster	...	1,190

In 1856 he started fourteen times, and won six:—

Her Majesty's Plate, at Salisbury	...	105
Ditto at Northampton	...	105
Ditto at Newmarket	...	105
Eaton Stakes, at Chester	...	80
Queen's Plate, at Shrewsbury	...	105
Berkshire Hunt, at Abingdon	...	40
	Total	6,465

Saucebox started 54 times, and won twenty.

FISHERMAN.

As a game and lasting horse FISHERMAN may challenge the best of the "days that are gone." He was bred by the late Mr. Fowler, of Erdington, in 1853; his sire Heron, out of Mainbrace, by Sheet Anchor, her dam by Bay Middleton, out of Nitocris, by Whisker. The rest of his dam's pedigree is simply traced—Whisker—Waxy—Pot-8-os—ECLIPSE. (See p. 456).

Heron, foaled in 1833, was by Bustard, out of an Orville mare. Orville, 1779 (his dam by Highflyer), was by Beningbrough, 1791 (his dam by Herod), King Fergus, 1795, by Eclipse, &c. A useful country race-horse, more stout than speedy, he started forty-one times and won seventeen. Heron is sire to Moorcock, Kingfisher, Oyster-Girl, Whalebone, The Drag, Ibis, Purser, Vestris, Egret, Ribaldry, The Witch, Charlotte, Seafowl, and others. Fisherman, the colt of his twentieth year*, leaves his other progeny in the shade.

Mainbrace, bred by Mr. Watt, in 1844, went into Mr. Fowler's stud in 1848. She threw an own brother to Fisherman (Purser) the following spring; in 1851 a filly, Wave, by Gabbler; and Midshipman (also own brother to Fisherman) in 1852. On the death of Mr. Fowler, in 1853, Mainbrace (in foal with Fisherman) was sold for 80 gs., and went into Mr. Halford's stud. Maraschino, by Peppermint, is her only recorded foal since.

Fisherman was a dark brown horse, nearly an inch over sixteen hands high. He had a coarse head, wide between the ears, good oblique shoulders, and great depth in girth. Well-ribbed up and high in the croup, drooping towards the tail, which was thin and ragged. Large arms, set well-forward, and a somewhat large oval foot. The angle from the hip to the round bone is unusually acute, and his quarters straight. His walk consequently ungainly, and with a rocking action. In brief, a tall gaunt animal, and another proof that there is often in the horse as the human "that within which passeth show." A white splash on the coronet of a fore and hind foot, and a star on the forehead, are also among his adornments. His performances, however, are more to the question than his *personnel*, although that may be interesting in time to come.

In June, 1855, Fisherman, under Mr. Halford's white and blue cap, went, as his *coup d'essai*, at Newton, in the Gelborne Park Stakes, for 2-yr. olds, and saved his stake by running second, in a field of seven, to Mr. Morris's Tilly. The unprepossessing youngster was not in the betting. On Friday, at the same meeting, he ran third for the Lyme Park Stakes, won by Mr. E. Parr's Stork; his previous victrix, Tilly, second. At Carlisle, next month, he again met his kinsman, Stork,† and was again second in a 2-yr. old Sweepstakes, beating four others; all six placed. At Liverpool July he was third for the Stanley Stakes, won by the 3-yr. old Ellermire (by Chanticleer; Gaudy (2), Alfred, Hanover, and Thirty-to-Five, 4th, 5th, and 6th. He was now sold to Mr. T. Parr, who ran him at Great

* This may be a fit opportunity for a remark on the ages of sire and dam. It has been frequently observed that the best foals have not been produced till both the parents have been well advanced in years. This, we believe, is proving too much, as it applies more to the sire than the dam. There is certainly this objection to breeding from very old mares, that their offspring are usually smaller than the younger produce: extremes should be avoided. Doctor Syntax, Filho-da-Puta, Touchstone, and Sir Hercules were the first foals of their respective dams. Of their sires it may be observed: Paynator was twenty years when Doctor Syntax was foaled; Whalebone was the same age when he got Sir Hercules; Haphazard was fifteen, and Camel nine, when Filho-da-Puta and Touchstone were produced. These examples are in favour of elderly sires and juvenile dams. It may be observed that frequent training is likely to deteriorate the mare permanently more than the horse. Of old mares it may be noted, that Octaviana was nineteen when she produced Chesterfield (sire of The Hero); and twenty-one when she threw the renowned Crucifix. Her previous thirteen foals were of little pretension or performance. The later stock of most of our fashionable stallions have been far better than the early produce. Numerous examples of this will present themselves to those who watch the descent of our greatest public performers on the turf.

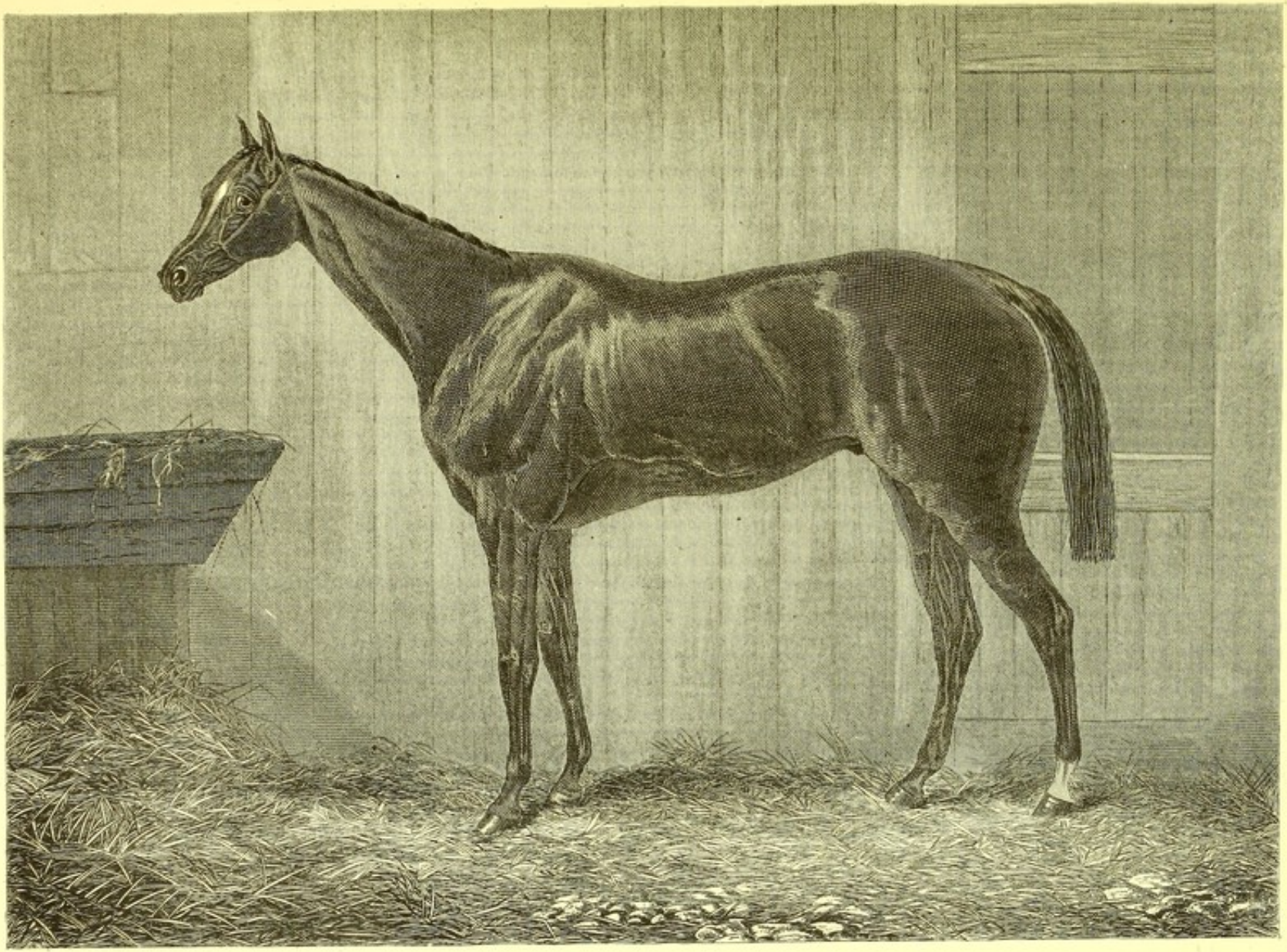
† Stork, br. c. by Gabbler or Sir Isaac; dam by Heron, out of Mystery.

Yarmouth for a 2-yr old Sweepstakes (at 8st.), won by Captain Lane's br. f. Persia, 7st. 11lb.; Fisherman second, Keepsake a bad third. At Abingdon, in August, he finished third for a 2-yr. old Sweepstakes, won by Mr. Elwes's f. The British Remedy: The Unexpected (2), The Houri, Teddy, and bro. to Mary Ann, nowhere. This finished a short three months' season, and the lengthy youngster rusticated for the year.

1856 brought out Fisherman no less than thirty-four times.

He opened his third year in February, and the first race in Weatherby's Calendar, at Lincoln, by playing second fiddle (at 7st.) to the lead of Mr. Parker's Tame Deer, 6st. 11lb., for the Trial Stakes. The following day, not to be idle, he went for the Lincoln Spring Handicap, at 6st. 4lb., won by the 4-yr old Flageolet: Vanessa, 4 yrs., 6st. 4lb. (2); Fisherman, 6st. 4lb. (3); Eulogist, Cardsharper, Little Tom, Prince Plausible, Victory, Sandboy, Charlotte Weston, and Gipsy Girl, not placed. A neck between first and second, and the same between second and third. Fisherman now began to "run on." At Nottingham Spring he won the Trial Stakes (6st. 6lb.), beating Anthracite, 4 yrs., 7st. 13lb. (2), Alfred, 6st. 7lb. (3), and The Bold Buccleugh, 6st. 7lb. (4). At Warwick Spring he carried off the Trial Stakes, beating his old antagonist, Stork, at even weights; Jack Sheppard and Magus third and fourth. At Northampton he opened the meeting by winning the Trial Stakes, at 7st. 4lb. (inc. 9lb. extra), turning the tables on another old victrix, in Tame Deer, 6st. 6lb., by four lengths. Travelling far south to Epsom, he was second, by half a length, to Mr. Ridley's Hospitality, for the City and Suburban Handicap; Ellermire, another opponent, third. A good field of twenty horses not placed. He took second place (at 9lb. extra) again at the Newmarket Craven, in the Craven Stakes, won by Mr. Dawson's Napoleon III.; Tug-o'war (3), Mary (4). At the same meeting, on Thursday, he ran third, carrying 5st. 12lb., to the Earl, 4 yrs., 6st. 4lb., and Diego, 3 yrs., 5st. 7lb., the first and second in the Newmarket Handicap: Rattle, Defiance, Speed-the-Plough, Mary, Jolly Mariner, and Besika not placed. Fisherman now won a dozen races in succession, close together. At York Spring, on Tuesday, he won the Spring St. Leger, at 8st. 10lb., beating Heir of Linne, 8st. 12lb., and Clarendon, 8st. 4lb., easily. Wells was now, for the first time, astride him, and next day won the Spring Biennial Stakes, at 8st. 10lb., beating Ellington, 8st. 10lb., and Viscount, 8st. 4lb. 2 to 1 on Ellington. At Chester Spring the Chesterfield Stakes fell to him, at 8st. 5lb.; Prince of Orange, 6st. 10lb., and Melissa, 7st., second and third: ten others not placed. Won easily by two lengths. At the same meeting, on Wednesday, Fisherman won the Members' 60 sovs., and a Sweepstakes, beating Night Hawk, Lady Mary, colt by Surplice, General Picton, and Flather, in a canter. At Manchester he won the Corporation Stakes, beating Hospitality (thus reversing their former places) and Lance, at even weights. Won easily by a length. At Bath he was first for Lord Powlett's Gold Cup, and the sovs. (7st. 9lb.); King Cob, 3 yrs., 6st. 12lb. (2); Topsy, 5 yrs., 8st. 13lb. (3); and Black Tulip, 3 yrs., 6st. 9lb. (0). Won by a length and a half. At Ascot Heath her Majesty's Gold Vase fell to Fisherman, 7st. 3lb.; his old jockey, Quinton, up. Aleppo, 7st. 3lb. (2); Coroner, 7st. 3lb. (3); Winkfield, 5 yrs., 9st. 7lb. (4); Pitapat, 7st. 3lb. (5); Sultan, 4 yrs., 9st. (6); and California Dick, 6st. 13lb. (7). Won easily; a bad third. All the way north to Carlisle; and there he won the Cumberland Plate, at 7st. 7lb., defeating Warlock,* same age, 5st. 11lb., Freddy, 4 yrs., 6st. 8lb., Elastic, 4 yrs., 6st. 7lb., King of the Gipsies, 3 yrs., 6st. 3lb., Mary Ann, aged, 7st. 4lb., Gathercole, 3 yrs., 5st. 11lb., Gaudy, 3 yrs., 5st. 9lb. Won by a head. (Warlock's rider was said to have pulled his horse by mistake at a wrong ending post, and thus lost ground.) At Liverpool July Fisherman walked over for the Croxton Park Stakes; and at the same meeting, at the top weight, 9st. 5lb., beat Remedy, 7st. 7lb., and Katherine Logie, 8st. 12lb., for the Stanley Stakes, with little effort. At Nottingham, on Wednesday, her Majesty's Plate fell to him; Creeping Jane, 6 yrs., being beaten in a canter. Over to Stamford on the following day (Thursday); and he carried off the Welland Stakes (8st. 7lb.); Melissa, 8st. 4lb. (2); Turbit, 6st. 7lb. (3); Madame Clicquot, 6st. 7lb. (4). Away to Sussex, on the Thursday, at Goodwood, at 7st. 7lb., he was not placed for the Goodwood Cup, won by Rogerthorpe, 7st. 2lb.: Yellow Jack, 3 yrs., 7st. 10lb. (2); Monarque (French horse), 4 yrs., 8st. 11lb. (3). Fisherman pulled up, and did not pass the chair. At York August Fisherman was fifth and last for her Majesty's Plate, won by Fandango (see *ante*, p. 118,) Pretty Boy (2), Typee (3), Stork (4). Next day, at the same meeting, he won the Hopeful Stakes in a canter, at 8st. 7lb., beating Coup-de-Main, 8st. 4lb. At Plymouth he walked over for the Queen's Vase, for 3-yr. olds and upwards (heats). But at Warwick, at 7st. 2lb., he was beaten by two lengths by Melissa, 6st. 10lb., for the Warwick Cup; Mr. Sykes, 9st., (3), Announcement, 5st. 12lb. (4), Ugly Mug, 5st. 9lb. (5), and Homily, 8st. 3lb. (6). At Weymouth (rode by George Hall) he won her Majesty's Plate; Rogerthorpe (winner of Goodwood Cup) (2), Lymington (3). Fisherman, 9st. 3lb., was second to Sneeze, 6st. 10lb., by a neck, for the Revival Plate at Doncaster, on the Tuesday; Bashi Bazouk, 7st. (3), Black Tommy, 6st. 9lb. (4), Codrington, 7st., Strathnaver, 6st. 9lb., King of Argos, 7st., not placed. On Wednesday, at the same meeting, Fisherman, after a dead heat, won her Majesty's Plate (heats); Zeta (0—2), Lady Tatton (3), Mr. Sykes (4), Pretty Boy (5), The Scotchman (6). In the deciding heat, with 5 to 4 on her, Zeta broke down. On Thursday Fisherman had a walk over for the Scarborough Stakes; and made a trip to Pontefract the next week, where he was third for the West Riding Handicap, won by Sir Tatton Sykes, 8st. 7lb.; Yorkshire Grey, 7st. 7lb. (2), The Martlet, 5st. (4), and De Ginkel, 5st. 7lb. (5); Scotchman, 5st. 11lb., and Midsummer, 6st. 13lb., not placed. At Bedford he won the Queen's Plate, beating Sirocco, Primus, Sir Tatton, and Firebrand, in a canter. At

* Winner of the Great Ebor Handicap and the Great St. Leger in August and September of the same year.



BLUE GOWN.

WINNER OF THE DERBY STAKES AT EPSOM & THE GOLD CUP AT ASCOT 1868.

By Beadsman out of Bas Bleu. Trained by Porter. Ridden by Wells.

Newmarket Second October Fisherman went and won the 50 sovs., A. F., beating Saraband, 4 yrs., Blue Rock, 3 yrs., Pitapat, 3 yrs., Winkfield, 5 yrs., Clarissa colt by Orlando, 3 yrs., Firmament, 3 yrs., Ulysses, 3 yrs., Teddy the Tiler, 5 yrs., Nathan, 6 yrs. Even on Fisherman; 6 to 1 against any other. Won by three lengths. Next day he was not placed, 8st. 11lb., for the Cesarewitch, won by Vengeance (by Chanticleer), 7st. 7lb.; Polestar, 8st. 2lb. (2), December and Rogerthorpe (3 and 4). Twenty-two others went. Fisherman wound up his 3-yr. old campaign at the Newmarket Houghton, as winner, at 8st., of the 100 sov. Handicap, A. F., beating Mincepie, 8st. 5lb. (as winner of the Oaks), Artillery, 8st. 4lb. (3), Stork, 8st. 4lb. (4), Vandermulin, 7st. 12lb. (5). Even on Fisherman; 4 to 1 against Artillery; 3 to 1 against Vandermulin; 10 to 1 against Mincepie. Won by half a length; bad third. This was indeed a strong year's work for a 3-yr. old; but Tom Parr does not let a horse "rust in idleness," and the rail has multiplied and accelerated the rapidity and safety of transit incalculably.

Early in 1857, Fisherman, at 4 yrs. old, began the same round game—running thirty-six times, and winning twenty-three. At Liverpool Spring (March 3) he began by winning the Trial Stakes, at 8st. 4lb., beating Special License, 6st. (2), Miss Harkaway, 3st. (3); Breeze, 8st., Duet, 8st, and Kenardy, 6st. 6lb., not placed. 3 to 1 on Fisherman. Won by half a length; a bad third. A trip to Salisbury brought his owner the Queen's Guineas, carrying 9st. 2lb. He beat Areca, 6st. 7lb. (2), Shirah, 6st. 7lb., Parga, 9st. 2lb., Mohawk, 6st. 7lb., and Enchanter, 9st. 2lb., not placed. 3 to 1 on Fisherman. Won by two lengths, the others tailed off. The following Tuesday he was at Warwick, where, at 8st. 9lb., he won the Trial Stakes from a capital field. Gemma di Vergy, 7st. (2), Stork, 8st. 9lb. (3), Wentworth, 8st. 9lb. (4), Melissa, 8st. 9lb. (5). 5 to 6 against Gemma di Vergy, 2 to 1 against Fisherman. Won by a length; Stork beaten by five or six lengths, Wentworth as far from him, and Melissa a dozen from Wentworth. At Northampton he was first for the Queen's Plate, 9st. 2lb., Malacca, 9st. 2lb. (2), Grayling, 6st. 10lb. (3), Kilbride, 6st. 10lb. (4). 7 to 1 on Fisherman. Won by a length, a bad third, the rest beaten off. Epsom was again unfavourable. Fisherman, 9st., was not placed for the Metropolitan, won by Poodle, 8st., Adamas, 8st. 8lb. (2), Pantomime, 7st. 13lb. (3). At Chester Spring Gemma di Vergy, 6st. 12lb., reversed a former verdict, by winning the Grosvenor Stakes, for which Fisherman, 8st. 7lb., ran third, Drumour, 7st. 3lb., being second, Honour Bright, 6st. 12lb. (4), Vandermulin, 8st. 7lb. (5), Melissa, 8st. 9lb., not placed. At the same meeting on Wednesday, Fisherman, 9st. 9lb., won the Queen's Guineas from Sirius, at even weights, by two lengths. Long odds on Fisherman. On the Friday Gemma di Vergy, at 7st. 9lb. (inc. 5lb. extr.), met and beat Fisherman, 9st. 2lb., by a short head, for the Eaton Stakes. 7 to 4 on Gemma di Vergy. At Stockbridge he won the Steward's Plate, of £305, at 8st. 9lb., beating Polestar, 8st. 8lb., and giving him a year. Colt by Surplice—Blue Devil, 6st. 6lb. (3), Bro. to Homily beaten off. The next day he was over at Winchester, and won the Queen's Plate, beating, at 9st., Fright, 7st. 7lb. (2), Perfume, 7st. 7lb. (3), and Huntington, 7st. 7lb. (4). 2 to 1 on Fisherman. Won by a head. At Liverpool July he was first (8st. 2lb.), for the first race, the Croxteth Stakes, beating Lord Nelson, 6st. 10lb., in a canter. 5 to 1 on Fisherman. He walked over next day for the Queen's Plate. On this occasion Fisherman having changed hands, appeared in Mr. Starkey's name and colours. At Goodwood (8st. 12lb.) he ran fifth for the Stakes, won by Leamington, 8st. 6lb., Gunboat, 6st. 7lb. (2), Somerset, 6st. 4lb. (3), Hartley Buck, 6st. 2lb. (4). Fisherman was pulled up and trotted in. Next day he went for the Goodwood Cup, won by the French horse, Monarque, 5 yrs., 8st. 9lb., Riseber 7st. 2lb., (2), Fisherman, 9st. 1lb. (3), Anton, 7st. 7lb. (4), Mary, 9st. 5lb., Prior (American) 5 yrs., 8st. 9lb., Kestrel, 8st. 7lb., Melissa, 8st. 4lb., Viscount, 8st. 1lb., Prioress (American—see *ante* p. 443) 7st, 11lb., Gemma di Vergy 7st. 9lb., Arsenal, 7st. 2lb., Gunboat, 7st. 7lb., and Florin bred in France) not placed. At Wolverhampton he won twice. First the Wolverhampton Handicap at 8st. 12lb., beating Queen Bess, 5st. 11lb. (2), Tame Deer, 7st. 6lb. (3), Kestrel, 7st. 7lb. (4), Oakball, 7st. 3lb. (5), and The Shadow, 6st. 2lb. (6). 7 to 4 against Oakball, 2 to 1 against Fisherman, 5 to 1 any other. Won easily. Next day he again met and beat Oakball, for the Cleveland Cup, Fisherman at 8st. 11lb., Oakball, 7st. 6lb. (2), Mary, 9st. 1lb. (3). Won by two lengths. Mary tailed off. Fisherman was objected to as not having carried his proper weight, but the Stakes were paid over to his owner. On Wednesday in the York August Meeting, Fisherman again met his old friend Warlock for the Queen's Plate, at even weights, 8st. 12lb., and with 5 to 2 and 3 to 1 on him, got beaten by a neck. All that night he travelled, and next day (Thursday) was at Abingdon, Berks, where he won the Berkshire Handicap, carrying 9st. 7lb., beating Vulcan, 7st. 4lb. (2), Rialto, 6st. 7lb. (3), Redemption, 7st. (all three 5 yrs. old), Curious, 6st. 12lb., and December, 6st. 12lb., not placed. Won by two lengths. August 26th, at Egham (9st. 5lb.) he won the Queen's Plate, beating Winkfield, 10st. (2), Tame Deer, 9st. 5lb. (3), Leamington, 9st. 5lb. (4), and Weatherglass 8st. 2lb. (bolted). Won by two lengths easy. 6 to 4 on Fisherman. Two days afterwards we find him at Hereford, where, on the 27th, he won, carrying 9st. 1lb., the Royal Plate, 300 sovs., beating Cotswold, 8st. 1lb. (2), Chevalier d'Industrie, 7st. 7lb., (3), Melissa, 8st. 6lb. (4). 7 to 2 on Fisherman. Won by a neck, three lengths between second and third, bad fourth. Again at Warwick he wins the Queen's Plate, at 9st. 4lb., beating Oakball, 8st. 2lb., easily by a length and a half. Oakball, not yet satisfied, met him once more at the same meeting for the Warwick Cup, Fisherman, 8st. 7lb., Oakball, 7st., Lecompte, aged, 8st. 9lb. Won in a canter by a length, Lecompte beaten off. Once again at Lichfield, Oakball, 8st. 2lb., measured himself against Fisherman, 9st. 4lb., for the Queen's Plate, but was beaten by four

lengths; Hamlet, 8st. 2lb., Kingfisher, 9st. 4lb., Polestar, 9st. 9st., in the order named; Polestar fell. 5 to 2 on Fisherman, 4 to 1 against Polestar. At Derby, Fisherman (9st. 6lb,) was not placed for the Tradesmen's Plate, won by Tiff, 5st. 11lb., Cockatoo, 7st. 7lb. (2), Moonshine, 5st. 10lb., (3). Fisherman pulled up and walked in, and did not pass the chair. A trip to Weymouth, Sept. 10th, and Fisherman netted Her Majesty's Guineas, beating Polestar, 5 yrs., 9st. 9lb., by two lengths. At Doncaster, at 9st., he was placed fourth for the Fitzwilliam Stakes, won by Vedette, 8st. 5lb., Princess Royal, 6st. 1lb. (2), and Lady Alice, 6st. 1lb. (3), East Langton 6st. (5), Fright, 7st. 12lb. (6), Minnie, 7st. 12lb. (7). Won by a head, same between second and third, a neck between third and fourth, East Langton and Fright together, a length from Fisherman, Minnie several lengths behind; a close run race. On the Wednesday he went third for the Queen's Plate, at 8st. 5lb., won by Skirmisher, 7st., Fright, 7st. (2), General Bosquet, 7st. (4). Won by fifteen lengths, the Fisherman did not persevere. Fisherman now took a trip to "furrin parts," to return the visit of Monarque and Co., and at Chantilly won easily the Emperor's Prize, beating Saunterer and Commotion, who went over specially to compete for it, as well as Monarque and Madame de Chantilly. Thence he returned to Old England, and at Bedford kept up his renown by winning the Queen's Plate, by beating in a length, at 9st., Black Tommy, 7st. 7lb., and Poodle, 9st. 9lb.; the latter pulled up. At Newmarket Second October, he was not placed, carrying the top weight, 9st. 3lb., for the Cesarewitch, won by Prioress (American), 6st. 2lb., after a dead heat with El Hakim, 6st. 9lb., and Queen Bess, 4st. 10lb., (see *ante* p. 443). In the same week Mr. Starkey challenged for the Whip, with Fisherman, but there was no response, and the trophy was handed over to his owner. After a journey to the far north, at Kelso, he ran, at 8st. 12lb., Queen Bess, 5st., by a head for the Roxburghe Handicap, Bourgeois, 7st. 8lb. (3), Assayer, 7st. 13lb. (4), Minnie, King of Scotland, Assortment, and Hegira, not placed. The same afternoon he won the Steward's Cup, at 9st. 4lb., beating Breeze, 4 yrs., 8st. 8lb. 5 to 1 on Fisherman, who won easily. Back to Newmarket, in the Houghton, he won (8st. 7lb.) the Thursday's Sweepstakes, turning the tables on Skirmisher, 7st., whom he beat easily by three-quarters of a length. 7 to 4 on Skirmisher. In the Liverpool Autumn he closed the year by running, 8st. 12lb., unplaced, for the Autumn Cup, won by Special Licence, 5st. 7lb., Cotswold, 6st. 7lb. (2), Dunboyne, 6st. 2lb. (3), St. Giles, 6st. 10lb. (4); Tournament, 7st. 4lb., Victoria, 6st., Strathnaver, 6st. 12lb., Underhand, 6st. 10lb., El Hakim, 6st. 10lb., Bashi Bazouk, 6st. 12lb., Wardermarske, 6st. 6lb., Lavinia, 6st. 2lb., The Zouave, 5st. 10lb., Hamlet, 5st. 7lb., Queen Bess, 5st. 6lb., December, 5st. 7lb., Gilliver, 4st. 10lb., and Sir Humphrey, 4st. 4lb., also went, not placed. And thus ended the campaign of 1857.

1858 was initiated on March 23 by a walk over, 9st. 1lb., for the Trial Stakes, at Northampton, followed the same afternoon by running second, at 9st. 10lb., to Wrestler, 6st. 10lb., for the Queen's Plate, Vandermulin, 9st. 10lb., (3), Master Bagot, 9st. 2lb. (4), Sobieski, 6st. 10lb. (5), Armiger, 9st. 10lb. Armiger was a distance behind, and Vandermulin broke down. The first race in the Newmarket Craven, the Craven Plate, fell to Fisherman, 8st. 12lb., Schismatic, 6st. 6lb. (2), Special License, 8st. 4lb. (3), Fly-by-Day, 6st. 4lb. (4), Gourd, 6st. 6lb. (bolted). 11 to 10 on Fisherman, 7 to 2 agst. Special License. Won by a head; a bad third. Gourd bolted at the bushes, swerved across Fisherman, and threw him out. On Wednesday, at the same meeting, he won the Plate R. M., at 9st. 8lb., beating Brother to Bird-on-the-wing, 8st. 6lb., in a canter, by a length and a half. 3 to 1 on Fisherman. Next day he walked over, 10st. 7lb., none disputing the Queen's Guineas. At York Spring, he ran third for the Flying Dutchman's Handicap, 9st. 1lb., won by Rosa Bonheur, 7st., Mons. Dobler, 7st. (2); a neck between first and second, a head between second and third; Physalis colt, 6st. 2lb. (4), three lengths off, Julia, 4st. 13lb. (5), Strathnaver, 7st. 11lb. next, Artillery, 7st. 7lb., Mongrel, 7st. 12lb., and Apathy, 7st. 6lb., nowhere. At Chester, Fisherman opened the meeting by winning the Grosvenor Stakes, at 9st. 1lb., beating Saunterer, 8st. 7lb., and Kelpie, 6st. 12lb. 13 to 8 on Saunterer, 3 to 1 against Kelpie, 4 to 1 against Fisherman. Won by a head; same between second and third. Next day, at the same meeting, Fisherman, 9st. 12lb., met Gemma di Vergy once more at 9st. 2lb., for the Queen's Plate, and won easily by half a length; and on Friday won the Steward's Cup, at 9st. 3lb., beating Hepatica, 6st. 10lb. (2), Commotion, 8st. 9lb. (3), Saunterer, 8st. 6lb. (4), Somerset, 7st. 4lb. (5), and Sweet William, 7st. 4lbs. (6). Won by a head. 3 to 1 each against Fisherman and Hepatica; 6 to 1 against Saunterer and Commotion; 7 to 1 against Sweet William. On the same afternoon he ran third for the Cheshire Stakes, 9st. 2lb., won by Queen of the East, 6st. 6lb., Mons. Dobler, 7st. 3lb. (2), General Bosquet, 6st. 2lb. (4); Haymaker and Lord Nelson beaten off. At Epsom, Fisherman carried off the Epsom Cup, at 9st., beating Saunterer, 8st. 7lb., Commotion, 8st. 7lb., and Blue Jacket, 8st. 7lb. 5 to 4 on Fisherman; 7 to 4 against Saunterer; 4 to 1 against Commotion. Won by twenty lengths. At Manchester, Fisherman netted the Queen's Guineas; carrying 9st. 12lb., he beat Bridecake, 7st. 2lb., in a canter, by six lengths; Ravenstonedale, 7st. 2lb., a long way behind. At Ascot, Fisherman, 9st. 7lb., ran second for the Gold Vase, won by Sedbury, 7st. 3lb.; Longrange, 7st. 3lb., (3), The Happy Land, 7st. 3lb. (4), Tunstall Maid, 6st. 12lb. (5), Cotswold, 9st. 7lb. (6), Scribbler, 6st. 13lb., (bolted). 11 to 10 on Fisherman; 5 to 1 against Sedbury; 6 to 1 against Tunstall Maid; 8 to 1 against Longrange. Won by a neck: three-quarters of a length between second and third: the others widely scattered. On Thursday, at the same meeting, Fisherman triumphed, at 9st., for the Gold Cup, a solatium for the less valuable Vase; Arsenal, 9st. (2), Gildermire, 8st. 5lb. (3), Warlock, 9st. (4), Sunbeam, 6st. 7lb. (5), Commotion, 8st. 5lb. (6), Princess Royal, 6st. 7lb. (7). 5 to 2

against Arsenal; 3 to 1 each against Warlock and Fisherman; 10 to 1 against Gildermire; 20 to 1 against Commotion. Won by a length and a half; two lengths between second and third: the rest with long intervals. Fisherman had not, however, done his day's work. He went for and won the Queen's Plate, at 9st. 12lb., beating Arcanum, 7st. 2lb. in a canter. 100 to 1 on Fisherman. At Stockbridge he ran second for the Steward's Plate, carrying 9st. 4lb.; Ignoramus, the winner, 8st. 4lb. Won by a neck; three lengths between second and third; and Fadladeen, 6st. 10lb. (3), The Grand Secret, 6st. 6lb. (4), Sedbury, 7st. 7lb., who did not pass the post. At Ipswich, he walked over for the Queen's Plate, and at Liverpool July, he began the proceedings by a like ceremony for the Croxteth Stakes; and the next day made a third w. o. for the Queen's Plate. At Nottingham, at 9st. 6lb., he won another 100 of Her Majesty's Guineas, disloyally beating Princess Royal, 7st. 7lb., by ten lengths. The very next day, having journeyed to Stamford, Borderer, 8st. 2lb., beat him (8st. 13lb.) by a head, for the Gold Cup. 7 to 2 on Fisherman. At Goodwood, he ran second, at 10st., to Saunterer, 9st., for the Goodwood Cup; Scheidam, 9st. (3), a dozen lengths behind; Ventre St. Gris, 6st. 7lb. (4), Ruination, 8st. 3lb. (5), Sedbury, 7st. 7lb. (6), Charleston, 8st. 7lb. (7), Arsenal, 9st. (8). The Wolverhampton Handicap was his next win at 9st. 2lb.; Lifeboat, 8st. (2), Princess Royal, 5st. 6lb. (3); Hamlet, 6st. 9lb., did not pass the post. Even on Fisherman; 2 to 1 against Lifeboat; 4 to 1 against Princess Royal; 10 to 1 against Hamlet. Won by three lengths: very bad third. Another Queen's Plate (9st. 4lb.), at the York August, was won from Ignoramus, 8st. 12lb. by two lengths. Next day, Fisherman ran third for the Great Ebor, carrying 9st. 9lb., the winner, Vedette, 8st. 7lb.; Tunstall Maid, 6st. (2); The Courier, 5st. (4). 5 to 2 against Vedette; 15 to 1 against Fisherman. Underhand, Borderer, Gemma di Vergy, (who broke down), El Hakim, Pretty Boy, Bird-in-the-Hand, Minnie, Kenerdy, and Cariboo went, but were not placed. At Egham, carrying 9st. 11lb., he beat Yorkshire Grey, 10st., and Oxonia filly, 8st. 2lb. Won by twenty lengths. 100 to 30 on Fisherman. A trip to Lichfield, and a walk over for the Queen's Plate there, brought him over to Derby, where the Chatsworth Plate fell to his lot at 10st. 2lb.; Misty Morn, 5st. 7lb. (2), Sly Fellow, 6st. 12lb. (3), Leucothea, 4st. 10lb., (4); Little Red Rover, 4st. 7lb., Hegira, 6st., Honeytree, 6st. 2lb., Simpleton, 5st., not placed. Won by a head. 3 to 1 against Simpleton, 4 to 1 each against Fisherman and Sly Fellow. At Warwick September he won the Warwick Cup, 9st. 8lb., beating Loyalty, 6st. 7lb., by 200 yards. 20 to 1 on Fisherman. He had now finished his wins, succumbing, at 8st. 12lb., with 4 to 1 on him, to Ignoramus, 8st. 5lb., for the Queen's Plate, at Doncaster; and running fourth, (9st 5lb.) to Vedette, 8st. 12lb., for "t' Coop" at the same meeting; Saunterer, 8st. 12lb. (2), Black Tommy, 8st. 4lb. (3), Tournament, 8st. 5lb. (5), Bro. to Bird-on-the-Wing, 8st. 2lb. (6); Zuyder Zee, 8st. 5lb., did not pass the post. 7 to 6 on Vedette, 5 to 1 against Saunterer, 7 to 1 against Fisherman, 11 to 1 against Black Tommy. His last spin for the season was at Bedford, where he was third and last, at 9st. 7lb., to Tournament, 9st. and Lifeboat, 7st. 7lb., (2). 6 to 4 on Fisherman: And thus closed the eventful year '58.

1859, the last turf year of this stout racehorse, was marked by twelve starts and but three wins. He came out in March at Northampton, at 9st. 3lb., but was not placed in the Trial Stakes, won by Lifeboat, 8st. 9lb., Shafto, 7st. (2), Zuyder Zee, 9st. 1lb. (3), King at Arms, 7st. (4), Donati, Marseillaise, Romsey, and Schism not placed. At the same meeting he ran second at 10st. to Lifeboat at 9st. 2lb. for the Queen's Plate; Shafto, 6st. 10lb., Thornhill, 9st. 2lb., Beethoven, 6st. 10lb., Vulcan, 10st., Stockham, 6st. 10lb. and Whimsical, 6st. 10lb. in the order named. Won by a neck, six lengths between second and third. Fisherman was not placed, at 9st., for the Chester Cup, won by Leamington, 8st. 2lb., Herne, 9st. 4lb. (2), Botany, 6st. 6lb. (3), Prioress, 7st. 4lb. (4), and 29 not placed. At the same meeting he was not placed, at 8st. 10lb., for the Stewards' Cup, won by Tunstall Maid, 6st. 12lb., Underhand, 8st. 7lb. (2), Master Bagot, 7st. 7lb. (3), Prioress, 7st. 4lb., (4). Fisherman first favourite at 5 to 2, 4 to 1 against Prioress, 5 to 1 against Tunstall Maid. At Salisbury the crushing cumulative weights again told: at 10st. 3lb. he was second for the Queen's Plate, to Bevis, 6st. 7lb., Sir Hercules, 6st. 7lb. (bolted), The Currier Mare, aged, 10st. 3lb. walked in. 5 to 4 against Fishermen, 2 to 1 against Bevis. In these ill-successes Fisherman was ridden by A. Cowley. Wells, his old pilot in 40 successes, was now put up, and at Epsom won the Epsom Cup, at 9st. beating North Lincoln, 7st. (2), and Archduchess, 6st. 9lb. (3). 5 to 2 on North Lincoln, 3 to 1 against Fisherman. Proceeding to Ascot, Fisherman on the Thursday carried off the Gold Cup (Cresswell riding), beating, at 9st. 2lb., Saunterer, 9st. (2); Beacon, 8st. 5lb., Nimrod, 6st. 10lb., Bevis, 6st. 10lb., North Lincoln, 6st. 10lb., and Defender, 6st. 12lb., not placed. 7 to 4 against Fisherman, 4 to 1 against North Lincoln or Beacon, and 8 to 1 each against Bevis, Saunterer, or Defender. Won by a length and a half. Only the first two passed the post. But the Gold Cup was not enough for a day: Fisherman went for the Queen's Plate, at 10st. 2lb. (Cresswell), and won it, beating Newcastle, 7st. 2lb. (2), Nimrod, 7st. 2lb. (3), Southampton, 7st. 2lb. (4). 5 to 2 on Fisherman. Won in a canter by a length and a half; a bad third. At Stockbridge he went third for the Steward's Plate, carrying 9st. 7lb., the winner, Nimrod, 6st. 10lb., Marionette, 6st. 6lb. (2), Scent, 6st. 7lb. (4). His two last appearances were at Goodwood and Lichfield. At the former he was not placed for the Bentinck Memorial Plate, 10st. 4lb. (Captain Little up), won by Starke, 9st., Compromise, 7st. 9lb. (2), Prioress, 9st. 4lb. (3), Rouble, 7st. 4lb. (4). In the York August Meeting, Fisherman was second for the Queen's Plate, at 9st. 7lb., won by Newcastle, 7st. 7lb., Punch, 7st. 7lb. (3), Helwith, 7st, 7lb. (4). 5 to 4 on Fisherman, 2 to 1 against Newcastle; won by half a length, bad third. He bid his farewell to the season at Lichfield, where he ran second, at 9st. 11lb., to Newcastle, 8st. 2lb., Astarte, 8st. 2lb. (3).

5 to 4 on Fisherman, who was beaten by a short head. Astarte beaten off.

Quinton and Wells rode Fisherman in his races of 1856, Carroll, Aldcroft, Foster, and George Hall had an occasional mount. In 1857, Wells never let him out of his hands, winning thirty races on him. George Hall then won half a dozen races in succession in 1858, giving place to Wells for the Ascot Gold Cup and Queen's Guineas, George Hall resuming his seat for a lot of walks over and Plates, except at Stamford, where Alfred Day lost with him to Borderer. Sam Rogers now bestrode the pigskin, and piloted Fisherman to the rest of his victories of '58. Cowley and Cresswell rode him in 1859, with Wells for his Epsom win.

SUMMARY.

In 1855, Fisherman started six times without winning.

In 1856, he started thirty-four times, and won twenty-three:—

	£
The Trial Stakes, at Nottingham, value clear	70
The Trial Stakes, at Warwick	120
The Trial Stakes, at Northampton	60
The St. Leger, at York Spring Meeting	120
The Biennial Stakes, at York	360
The Chesterfield Stakes, at Chester	325
A Plate at Chester	60
The Corporation Stakes, at Manchester	75
The Cup, at Bath	150
Her Majesty's Vase, at Ascot, with, in specie	200
The Cumberland Plate, at Carlisle	283
The Croxteth Stakes, at Liverpool	30
The Stanley Stakes, at Liverpool	165
The Queen's Plate, at Nottingham	105
A Sweepstakes, at Stamford	60
The Hopeful Stakes, at York	75
The Queen's Vase, at Plymouth	105
The Queen's Plate, at Weymouth	105
The Queen's Plate, at Doncaster	105
The Scarborough Stakes, at Doncaster	105
The Queen's Plate, at Bedford	105
A Plate, at Newmarket Second October Meeting	50
A Handicap, at Newmarket Houghton Meeting	550
	£3,383

In 1857, he started thirty-six times, and won twenty-three:—

The Trial Stakes, at Liverpool, value clear	60
The Queen's Plate, at Salisbury	105
The Trial Stakes, at Warwick	110
The Queen's Plate, at Northampton	105
The Queen's Plate, at Chester	105
The Steward's Plate, at Stockbridge	310
The Queen's Plate at Winchester	105
The Croxteth Stakes, at Liverpool	80
The Queen's Plate, at Liverpool	105
The Stakes at Wolverhampton	400
The Cleveland Cup, at Wolverhampton	110
The Berkshire Handicap, at Abingdon	255
The Queen's Plate, at Egham	105
The Royal Plate, at Hereford	300
The Queen's Plate at Warwick	105
The Cup, at Warwick	300
The Queen's Plate, at Lichfield	105
The Queen's Plate, at Weymouth	105
Prix de L'Empereur, at Chantilly	610
The Queen's Plate, at Bedford	105
Challenge for the Whip, at Newmarket	
The Steward's Cup, at Kelso	55
A Sweepstakes, Newmarket Houghton	230
	£3,870

In 1858, he started thirty-two times, and won twenty-one:—

The Trial Stakes, at Northampton	70
The Craven Plate, at Newmarket Craven Meeting	50
A Plate, at Newmarket	100
The Queen's Plate, at Newmarket	105
The Grosvenor Stakes, at Chester	95
The Queen's Plate, same meeting	105
The Stewards' Cup, same meeting	590
The Epsom Cup, at Epsom	195
The Queen's Plate, at Manchester	105
The Gold Cup, at Ascot	570
The Queen's Plate, same meeting	105
The Queen's Plate, at Ipswich	105
The Croxteth Stakes, at Liverpool	60
The Queen's Plate, same meeting	105
The Queen's Plate, at Nottingham	105
The Wolverhampton Handicap	355
The Queen's Plate, at York	105
The Queen's Plate, at Egham	105
The Queen's Plate, at Lichfield	105
The Chatsworth Plate, at Derby	139
The Warwick Cup, at Warwick	200
	£3,474

In 1859, he started twelve times, and won three:—

The Epsom Cup, at Epsom	160
The Gold Cup, at Ascot	630
The Queen's Plate, same day and place	105
	£895

Fisherman started one hundred and twenty times, and won seventy. Total winnings, £11,622.

In 1860, Fisherman went to stud, and was advertised at Mr. Gulliver's, Swallcliffe, Banbury, at 25 guineas.

This stout horse was subsequently sold to a gentleman of the name of Fisher, and sent out to Australia. After a prosperous voyage he arrived at Sydney, accompanied by Gildersmere, The Marchioness, and Juliet. He died at Sydney in 1868.

CHAPTER VII.

TURF CELEBRITIES OF RECENT YEARS.

RACERS:—MACARONI, LORD CLIFDEN, BLAIR ATHOL, GLADIATEUR, LORD LYON, HERMIT, ACHIEVEMENT, FAVONIUS, PRINCE CHARLIE, AND CREMORNE. SOVEREIGNS OF THE STUD: STOCKWELL, PARADIGM, AND BEADSMAN.

THE task of selecting a number of animals of our own time as representatives of the turf and the stud, with which to fill a limited space, is peculiarly invidious, as for every one that is selected two who seem to have special claims on the writer as well as on the reader are perforce left out in the cold. But we have good hopes that the selection now placed before the reader will be found, viewed from all sides, the most just possible, as we have allowed no private feeling to interfere with our judgment, but have selected each representative, on merits alone, as the foremost specimen of speed and staying power of the year, or as the animal which was not only as good as anything else, but which had the additional advantage of providing the sensation of the season.

Much we should have delighted in giving full particulars of those undoubtedly good horses, Thormanby, Kettledrum, Caractacus, and the speedy as well as game Caller Ou; of, later on, Lady Elizabeth, Blue Gown, Rosicrucian, The Earl, Formosa, etc.; and, still nearer the present time, of Pretender, Pero Gomez, Hannah, and the many other weight carrying celebrities, such as Jack Spigot, Paganini, Winslow, and, above all, the great Sterling. But space would not allow of full justice being done to all, and so from the long list of candidates we have selected those whose names appear at the head of this chapter, as being undoubtedly best qualified for foremost position in any beadroll of turf celebrities, with a view to enumerating the principal encounters in which they have been engaged, and giving remarks thereon. We will therefore commence with

MACARONI.

Macaroni, who divides the honours of 1863 with the famous Lord Clifden, is officially described as a bay horse, 15½ hands high, by Sweetmeat out of Jocose, by Pantaloon out of Banter, by Master Henry out of Boadicea by Alexander. Macaroni ran only once as a two-year old, at Newmarket Houghton, where, carrying 8st. 10lbs., he was beaten three-quarters of a length for a two-year-old sweepstakes over the Abingdon mile by Automaton, 8st. 10lbs. The betting was 6 to 4 on Automaton, these being the only two runners. As a three-year old, at the Newmarket Craven Meeting, Macaroni, carrying 8st. 5lbs., won a sweepstakes of £300 for three-year olds over the Rowley Mile, beating Senorita, 8st. 5lbs., Valentine, 8st. 5lbs., Giraffe colt, 8st. 10lbs., and Le Marechal, 8st. 10lbs. Betting, 11 to 2 against Macaroni. Won easily by three lengths. He then won the Two Thousand Guineas, for which 10 to 1 was laid against him, his opponents being Hospodar, who was a great favourite at 5 to 4, Saccharometer, who was next in demand, Blue Mantle, Rapid Rhone, King of the Vale, Count Cavour, and Clarior, the weights being 8st. 10lbs. each. Chaloner was upon Macaroni, who won by three-quarters of a length from Saccharometer after a punishing race, King of the Vale being third, a length off. The sensation finish in the Derby between Macaroni and Lord Clifden has been often described, and until the numbers went up all the people in the stand believed the favourite (Lord Clifden) had won. A writer at the time says:—"To describe the scene of suspense that ensued would be impossible, but in the stand the prevalent opinion was that Lord Clifden had won, and several heavy bets at long odds were laid that he had landed before the numbers were hoisted. Macaroni's friends were ominously silent, and Clifden's, noisily enthusiastic, were already proclaiming their triumph. Mr. Clark's orders from his box were watched with intense anxiety, and at last, amid a roar of surprise, No. 7 (Macaroni), No. 15 (Lord Clifden), and No. 3 (Clarior) were hoisted, and the terrific burst of voices from the crowd was mixed with astonishment, as they had been unable to see the favourite compound to his conqueror on the post. The number of Clarior was afterwards discovered to have been put up in error by the judge, and a notice was exhibited in the stand to the effect that No. 1 (Rapid Rhone) was the third horse." This error, as may be imagined, gave the friends of Lord Clifden fresh grounds on which to base their objections, and it was a long time before people settled down to regard Macaroni as really and truly the best horse in the race. Whether he was or not, however, he was quite good enough to win his owner £100,000, the sum credited to Mr. Naylor over the Derby of 1863. At Goodwood of the same year Macaroni, carrying 9st. 3lbs., won the Drawing Room Stakes (beating Escape, 8st. 7lbs., and The Gunner, 8st. 7lbs.), and the Doncaster Cup, Queen Bertha (who had won the Oaks and been second in the Leger to Lord Clifden) being second a length and a half off. Macaroni was not entered in the Leger, so the chance of seeing him fight out his battle with Lord Clifden, which would have been one of the greatest events of the turf record, was not given to the lovers of racing. Macaroni, who never ran as a four-year old, was steered in all his races by T. Chaloner.

LORD CLIFDEN.

Lord Clifden, one of the best animals of his time, whose sensational finish for the Derby with Macaroni and wonderful victory in the Leger will always be remembered, is a bay horse standing about seventeen hands, by Newminster out of The Slave, by Melbourne out of Volley. His first appearance

in public as a two-year old was in the Woodcote Stakes, at the Epsom Summer Meeting, when carrying 8st. 10lbs. (Fordham) he defeated The Orphan, 8st. 7lbs., and thirteen others. His next appearance was in the Champagne Stakes at Doncaster, when with 8st. 10lbs. (Fordham) he beat Armagnac, 8st. 10lbs., and eight others. At the same meeting, carrying 9st. 3lbs. (Fordham), he won a sweepstakes of 10 sovereigns each, T. Y. C., beating Bohemia, 8st. 7lbs., Queen Bertha, 8st. 7lbs., and four others. In 1863 he did not run till the Derby, which will be found recorded under the head of Macaroni, the winner. Many good judges even to this day consider that Judge Clark made a mistake in giving his decision, while others think that Fordham's invariable ill fortune in the Derby had much to do with the adverse result. For our own parts we think that the difference in the two horses was such that the judge could not have been mistaken, and Macaroni's fine rush just on the post undoubtedly gave him the foremost position so much coveted. At the same meeting Lord Clifden won the Great Surrey Foal Stakes, carrying 9st. 2lbs. including 6lbs. extra (Fordham), beating Jarnicoton by a head. At the Paris Summer Meeting, carrying 8st. 12lbs. (Chaloner), he was fifth in the Grand Prize of Paris, won by The Ranger, 7st. 12lbs. (J. Goater), and at the Doncaster September Meeting he won the St. Leger. As the description of this race is given in full in the "History of Horse Racing," we need not here enter into particulars, but will satisfy ourselves by remarking that it was a victory which stands alone and unrivalled; as Lord Clifden, who was on this occasion ridden by J. Osborne, lost fully a hundred yards start, fell gradually behind until a hundred and fifty yards separated him from the hindmost animal in the field, and then won after 100 to 1 had been laid against him. The race in the Leger having been considered sufficient for him, he was struck out of the Doncaster Cup (won by Macaroni), so the Derby running never received corroboration, nor was it proved untrue. What would have been the result can hardly be imagined, as though the performance of Lord Clifden in the Leger was far greater than that of Macaroni in the Cup, still the severe race must have told on the big horse, and so perhaps it was as well that his owner regarded the one great performance as sufficient. As a four-year old Lord Clifden was not successful, and notably his defeat in the Claret Stakes at Newmarket by Rapid Rhone will long be remembered. Carrying 8st. 10lbs. (J. Osborne) he was nowhere in the Ascot Gold Cup, won by Scottish Chief, three years, 7st. 5lbs. (H. Covey); and he walked over for the 100 sovereigns sweep for four-year olds at Goodwood.

BLAIR ATHOL.

Blair Athol, the most famous horse of modern times, the favourite of the public, the darling of his owner, the winner of a Derby the first time he ever appeared on the turf in public, the easy victor in a Leger, in which, as well as in the Derby, he had the best possible field behind him, and the highest priced stallion the world has ever seen, is officially described thus:—Blair Athol, by Stockwell, out of Blink Bonny, is a chestnut horse with a white face, the white extending to each eye and over his nostrils to his mouth, and he has also a white near hind heel. He stands as near sixteen hands as possible, his whole contour being handsome, powerful, and racing-like. Blair Athol has a neat, expressive head, indicative of a fine temper, which he undoubtedly possesses. His neck is long and muscular, with the windpipe well detached; his shoulders are deep, powerful, and well laid back; he has a deep girth, and is very thick through behind the elbows, which incline outwards and are not the least "pinned in." His loins and back are good enough for anything, and his quarters are long, strong, and muscular, with the haunch large and well let down towards the second thighs and hocks. His forearms are lengthy and muscular, his knees and hocks are powerful, clean, well-shaped, and free from every sign of disease and unsoundness. He has powerful suspensory ligaments and back sinews, and strong cannon bones from the knee to the fetlock joints. Below the fetlock joints Blair Athol is said, by authorities, to be a trifle imperfect in formation. The off foot is the least bit smaller than the near one, but it is sound, with a good sole, and entirely free from the imputation of shelliness. His near pastern is slightly twisted, which causes the toe of the foot to incline outwards, but the pastern bones are strong and the joints perfect. Blair Athol is a lengthy horse with a switch tail, the root of which stands well out from his croup, and streams gaily in the breeze. The peculiarities of his off foot and his near pastern he inherits from his dam, Blink Bonny, being foaled with them, and they have never in any way impeded him in his races, so far as is known. His size and the want of set about him as a two-year old prevented his being brought out when a youngster, and many have ascribed his unexampled success to this forethought on the part of his trainers. Blair Athol always had a magnificent action when galloping, and was as sound a horse when on the turf as he has since proved himself at the stud. His victory in the Derby, as well as that in the Leger, is descanted on in the "History of Horse Racing."

The peculiar part of Blair Athol's career is, that though no horse was ever more popular, and that though the best judges regard him as the finest animal of modern days, his time on the turf was exceptionally short, and the record of his performances occupies the least possible space. Making his first appearance in what may be almost called midseason, he retired for the stud at the end of the year. But there can be no doubt that he was a wonder. Caller Ou won the St. Leger of 1861 in the fastest time ever recorded, beating Kettledrum and other famous horses; but the baldfaced youngster could make her gallop during any part of his two-year old career, during which he was kept perfectly "dark," and during which he was quite unknown to the myriads who were to make the welkins of Epsom and Doncaster resound with his name in the following year. In fact, while he was in betting before the Derby there were plenty who assumed, half in joke half in earnest, that there was no such animal in existence. Blair

Athol, it seems, was at two years of age as good as the famous old mare over five or six furlongs, and no wonder those who knew that were so sanguine as to the colt's chance for the blue riband of the turf. But the blaze-faced chestnut's success was as much attributable to pluck and good temper as to speed, for he had never been away from the paddocks where he was foaled, except to his gallops on the wold, till he was taken to Epsom, where he had to meet General Peel, winner of the Two Thousand Guineas, and twenty-eight other starters for the Derby, including such animals as Scottish Chief (winner of the Ascot Cup), Ely (winner of the Goodwood Cup), and many other excellent animals who subsequently made their marks on the lists of successful racers. Blair Athol won his engagements at Ascot and Goodwood and took the St. Leger, it may be said quite easily. He was only beaten twice—once by The Miner, a very transparent fluke, in the Great Yorkshire Stakes, and before that by Vermuth, for the Grand Prize of Paris, a race which until the time of Cremorne seemed fatal to all our best horses. We do not like to have to make excuses for horses, but there can be no doubt that Blair Athol, when he ran in the Grand Prix, was by no means the horse who had won so decidedly at Epsom. He was put to the stud at four years old—rather too soon, we fancy, to be advantageous to his later progeny—and stood for his first season at Fairfield, where he had a full subscription list. Mr. Jackson's fondness for his pet grew into downright idolatry, and as he patted the neck of "Blair," as he called him, before the numerous visitors who came to see the celebrity, it was apparent that the fondness was reciprocal. Ladies from all parts of Yorkshire used to attend the famous stallion's levees, and there is a story told of Blair Athol's having been tempted in a humorous moment—he was as playful and as docile as a kitten—to eat the trimming of artificial oats out of a smart bonnet worn by one of the visitors. Quiet as a lamb and lazy as a prize hog, he refused to avail himself of the covered exercise ground built for him adjoining a spacious box, and instead of galloping and capering about, as it was expected he would when turned out in it, he used to stand in the middle of the building with his feet all together, and his nether lip hanging like that of a motherless foal. In short, he had such an easy time of it at Fairfield that he became sadly too fat for so young a horse, and it was predicted that from this cause he would not be so successful at the stud as had been anticipated. So perhaps it was as well for Blair Athol that failing health caused Mr. Jackson to sell him and the whole of the Fairfield stud by auction on the Saturday after the Doncaster Meeting of 1868. The prices realized on that occasion amounted to somewhere about 24,000 guineas, the most conspicuous item in which total was 5000 guineas for Blair Athol, then a comparatively untried stallion, and this at a time when the mania for high prices had somewhat worn itself out. After a short competition with some foreign and English breeders, Mr. Blenkiron secured him for Middle Park at the price named. During his stay at Middle Park "Blair" was very remunerative to his owner, as he served his full complement of forty mares a season at 100 guineas each, and when Mr. Blenkiron died Blair Athol had for his two masters earned no less a sum as a stallion than 32,000 guineas. He was also successful in his attempts to beget winners, as up to the time of the Great Middle Park sale Prince Charlie had won 3610 sovereigns as a two-year old, and had in the Two Thousand Guineas carried off the three-year old prize of 4805 sovereigns. What the "king of the roarers" has done since is matter of history, and is detailed elsewhere. Also up to the same time Madge Wildfire had placed 1332 sovereigns to "Blair's" credit, and Rose of Athol had secured 1749 sovereigns, besides many others which foreshadowed the grand total of £14,637 10*s.*, which at the end of 1872 was placed to his name as a stallion. No wonder then that at the Middle Park sale the competition was fierce and exciting for his possession, and when at last he was knocked down to the new Stud Company, for the largest sum ever known as a horse's price, 12,500 guineas, the date of the event, July 25, 1872, was very carefully entered by compilers of important turf statistics. During the present year (1873) Blair Athol's good fortune as a sire did not desert him, for by the returns just published his stock has won no less a sum than £18,362. With this we will take leave of the "best of the Stockwells."

GLADIATEUR.

Gladiateur, another of the monarchs of the turf, the mighty Frenchman, as he was called, whose triple victory in Guineas, Derby, and Leger rendered him immortal, was bred in France, and was by Le Monarque (winner of the Goodwood Cup in 1857) out of Miss Gladiator. Both the sire and dam of Gladiateur were bred in France. Gladiateur as a two-year old commenced his career by winning the Clearwell Stakes in the Second October Meeting of 1866, carrying 8st. 10lbs. (Arthur Edwards), beating Joker, 8st. 10lbs., Ostreger, 8st. 2lbs., Don Basilio, 8st. 10lbs., Verderer, 8st. 13lbs., Maid Marian, 8st. 11lbs., and seven others. At the same meeting, carrying 9st. 2lbs. (including 6lbs. extra), he ran a dead heat with Longdown in the Prendergast Stakes, won by Bedminster, 8st. 10lbs. At the Houghton Meeting, carrying 9st. 2lbs. (including 6lbs. extra), was nowhere for the Criterion, won by Chattanooga, 8st. 10lbs. As a three-year old his principal victories were the Two Thousand Guineas, 8st. 10lbs. (H. Grimshaw), beating Archimedes second, Liddington third, Zambesi, Tibia, Jack o'Lantern, Ariel, Rifle, Regalia, Pantaloon, Bedminster, Tilt, Breadalbane, Le Mandarin, Kangaroo, Cedric, Joker, and Lazaretto; the Derby, 8st. 10lbs. (H. Grimshaw), beating Christmas Carol second, Eltham third, Longdown, Kate Hampton, Todleben, Le Mandarin, Archimedes, Roderick Random, Zephyr, Breadalbane, Broomielaw, Wild Charlie, Oppressor, Kangaroo, Audax, Bedminster, Tilt, Nutfinder, Ariel, Rifle, Puebla, Brahma, King Charming, Olmar, Farewell, First Born, Friday, Joker, and Richmond; the Grand Prize of Paris, 8st. 9lbs. (H. Grimshaw), beating Vertugadin second, Tourmalet

third, Gontran, Todleben, and Le Mandarin; and the Leger, 8st. 10lbs. (H. Grimshaw), beating Regalia (winner of Oaks), second, Archimedes third, The Duke, Barbarossa, Klarinska, Heir at Law, Dux, Breadalbane, Zambesi, Walcot, Red Earl, Peeress, and Sister to Ascham. Over the Leger a slight unpleasantness arose, Mr. Graham, the owner of the second horse, demanding to have Gladiateur's mouth examined. Count Lagrange was much wroth at the insinuation, but though the stewards declined to order the examination to be made, the ordeal was insisted on by the Count, and the Frenchman passed satisfactorily of course. A writer at the time commented thus on the objection and on the Leger winner:—"The objection to Gladiateur, as I anticipated, ended in smoke, although there was an attempt on the part of some of the press to fan it into an open flame. Count Lagrange's offer to allow the horse's mouth to be examined was accepted by some experienced judges; and Mr. William Day, for one, who carefully examined the teeth of the Frenchman, pronounced him to be not only of the correct age, but backward in dental indications. . . . It may interest my readers to learn that Gladiateur has already won in stakes £26,422, as will be seen from the following table of his successes, which does not include the object of art given with the Grand Prize of Paris:—

Two Thousand,	£5,100
Derby,	6,825
Grand Prize of Paris,	5,983
Drawing-Room Stakes,	500
Bentinck Memorial,	314
St. Leger,	5,950
Doncaster Stakes,	770
Clearwell Stakes (two years),	980
	£26,422

These enormous amounts beat the winnings of the Flying Dutchman, Cotherstone, and West Australian. During his two and three year old career 'the Dutchman' landed £16,170, and West Australian as a three-year old netted £10,975. Gladiateur's Leger time (3 min. 21 sec.) was not first rate, as it was beaten by Caller Ou (3 min. 16 sec.), Lord Clifden and Blair Athol (3 min. 19½ sec.), and others." Another writer, discussing the topic of Mr. Graham's protest against Gladiateur, speaks of the remarks which were made about the objector:—"Some extremely ill-natured remarks have been made in reference to the owner of Regalia, by a certain class of writers who claim to be the exponents of public opinion, but whose productions can easily be detected as one-sided, and abounding with a display of toadyism never indulged in by really independent journals, which they are pleased to style the cheap press. I would ask these servile scribes of the Jockey Club whether, if the second in the St. Leger had been the property of a member of that body who stood to win a 'raker' on her, and really wanted a 'turn' in his fortunes, the objection would not have been considered a valid one? In one of these productions Mr. Graham's proceeding in exercising the right which the Jockey Club sanctioned in rule 65, is stigmatized as 'the stupid insolence of a London tradesman.' When we compare the social and pecuniary position of the owner of Regalia* with that of certain noble 'legs'—with which there can be no question the English turf is at present infested to a more than ordinary degree—it is lamentable that honest men like Mr. Graham should be thus spoken of. . . . It being conceded by many of the friends of Count Lagrange, and all the most experienced men who have seen Gladiateur, that these symptoms of being over, the prescribed age undoubtedly exist in the peculiarities of his frame, without the slightest reference to his performances, this circumstance alone is quite sufficient to furnish a valid reason for the owner of Regalia to require a satisfactory proof by the tooth test, which is the only evidence admissible in such cases. The strongest point of the argument advanced by the friends of the Count in favour of Gladiateur being of the proper age, is that the Maire of the district in which he was born personally examined him (according to the custom in France) before he registered his birth. But would this official be able to recognize Gladiateur after he won the St. Leger as the identical son of Monarque and Miss Gladiator that corresponds with the date of his registration in the book? Or could he swear that Miss Gladiator did not drop a live foal in 1861, when she is returned in the French stud-book as having miscarried? In reference to the statement in a contemporary that Gladiateur's mouth was examined by a practical man connected with a Great Northern stable, I can only say that in a conversation with Mr. John Scott during the Derby week, he perfectly agreed with me that Gladiateur had an appearance of being decidedly older than he was represented in the *Calendar*. In makings these remarks it must not be understood that I am insinuating that Gladiateur is a four-year old. My object is to show that some of the best judges in the land consider (from the horse's appearance) that there are reasons for Mr. Graham wishing to ascertain by the tooth-test whether the conqueror of Regalia is or is not a three-year old." From the foregoing extracts, selected from a large number of articles representing all shades of opinions, may be judged the excitement which was caused in England by Count Lagrange and his wonderful animal in 1865.

Gladiateur is a bay horse with a white star in his face, standing over sixteen hands, with immense bone; but although every muscle during his career in training stood out in bold relief from his bony-looking frame, he would be always considered by a common observer as a very plain-looking horse. There is an extraordinary amount of character about him, which perhaps accounts for his being considered older in 1865 than he really was. Then the expression of his head (the orbits over his eyes being as deep as in an aged horse), the general appearance of his frame, and his old-fashioned manners, were quite sufficient to make suspicious folk, already astonished at the way in which he galloped from all other three-year olds, believe him to be a second edition of Running Rein. Gladiateur did not start for the Goodwood Cup of

* Mr. Graham is a partner in one of the largest distillery firms in London.

1865 (won by Ely, 9st. 7lbs.), for which he had been heavily backed by his admirers, and a great unpleasantness took place when he came out to walk over for the Drawing-room Stakes. In the Cambridgeshire of the same year Gladiateur was asked to carry an impossible weight—9st. 12lbs.—and yet he started first favourite, to be nowhere, however, at the finish. As a four-year old Gladiateur, 8st. 10lbs. (H. Grimshaw), won the Ascot Gold Cup, beating Regalia and Breadalbane.

When, through the troubles connected with the Franco-Prussian war, Count Lagrange sold his stock at Albert Gate in September, 1870, Gladiateur was purchased by Mr. Blenkiron for 5800 guineas; and at the sale of the latter gentleman's breeding stud, the "great horse of France" fetched 7000 guineas. He has been by no means a success at the stud so far as his produce is concerned, for in 1872 his winnings as a sire amounted but to £1067 10s., as against Blair Athol's £14,637 10s.; and during the present year (1873) the disparity between the two as stallions has been still more marked, as the Frenchman has but £1202 against his name, the figures of the pale chestnut are £18,632. However this may be caused, it must be gratifying to those who were so utterly cast down at the successes on the turf of the mighty Frenchman. It must be borne in mind that Gladiateur is by no means the only celebrity who has failed to transmit his qualities, West Australian, one of the greatest horses as a racer of any time, being a most prominent instance in point. Why this is we must leave theorists and enthusiasts as to strains and mixtures to determine.

LORD LYON.

Lord Lyon, one of the three triple winners of Guineas, Derby, and Leger, is bound to find a place in this list, for though there are many who believe him to be a very fortunate horse, he must, judging by results—the safest possible way—be regarded as one of the representatives of latter days. His two great struggles with Savernake have been fully dilated on in another portion of this work, so we will here simply make an official description. Lord Lyon is a bay horse, by Stockwell out of Paradigm (bred by Colonel Pearson in 1852), by Paragone out of Ellen Horne, by Redshank out of Delhi by Plenipotentiary. His first race as a two-year old was in the Champagne Stakes at Doncaster September Meeting, for which, carrying 8st. 10lbs. (Osborne), he ran a dead heat with Redan, 8st. 10lbs. (J. Grimshaw), who afterwards walked over and divided the stakes. At the Newmarket First October Meeting he received half forfeit from Mineral in a match of 300 sovereigns over the T. Y. C. In the Second October, carrying 8st. 10lbs. (Custance), he won the Troy Stakes, beating Mr. Pitt, 8st. 6lbs., The Primate, 8st. 7lbs., and three others. In the Criterion at the Houghton Meeting, carrying 9st. 1lb. (Custance), he beat Young Monarque, 8st. 10lbs., Janitor, 9st. 1lb., and ten others. He commenced his three-year old career by winning the Two Thousand Guineas (Thomas), beating Monarch of the Glen, Knight of the Crescent, Rapid Rhone's dam colt, Mount Palatine, Jack in the Green, Apsley, Auguste, Student, Robin Hood, Janitor, Leybourne, Sealskin, Freedom, and Harefield. His next performance was at Epsom, where with 6 to 5 laid on him, and ridden by Custance, he won by a short head from the Bribery colt after a desperate race, Rustic being a bad third. The other runners were Warwick, Harefield, Knapsack, Redan, Blue Riband, Lecturer, Plutus, Knight of the Crescent, Freedom, Stabber, Janitor, Robin Hood, Duke of York, Vespasian, Strathconan, Abergeldie, Monarch of the Glen, The Primate, The Corsair, Laneret, Sealskin, Physalis colt, Tacitus, and The Czar. It was said that French lost this race for the Bribery colt by injudicious riding, but the result of the Leger, when Chaloner was on Lord Ailesbury's horse, proved that, whoever's fault the defeat was, it was not the rider's. At Ascot, in the Prince of Wales's Stakes, the Derby winner was very unexpectedly defeated. He carried 9st. 5lbs. (Custance), and with 75 to 40 laid on him succumbed to Rustic, 8st. 13lbs. (Fordham), by half a length. In the St. Leger he again managed to get home in front of Savernake, the same distance separating these true runners as in the Derby. The betting was 7 to 4 on Lord Lyon (Custance), and 9 to 2 against Savernake (Chaloner). Knight of the Crescent was a bad third, and the other runners were Westwitch, Strathconan, Harefield, Podargus, Maid of Masham colt, Emigrant, Caithness, and Sealskin. At the same meeting the friends of "the Lord" received a great blow, as in the Doncaster Cup, with 6 to 1 laid on him, and carrying 7st. 11lbs. (Chaloner), though his weight, including penalties, was only 7st. 7lbs., he was third; Rama, 7st. (Kenyon), three years, being the winner eight lengths in front of Ackworth, five years, 9st. 2lbs., who in turn beat the favourite by a head. In the Grand Duke Michael Stakes at the First October Lord Lyon, 9st. 3lbs. (Custance), was victorious, as he was (same weight and rider) in the Select Stakes at the Second October; but in the All-aged Stakes at the Houghton, 8st. 10lbs. (Custance), he was beaten easily by Friponnier, two years, 6st. 12lbs. At Ascot, in 1867, carrying 10st. (Chaloner), he won the Fourth New Biennial, beating Wildmoor, three years, 8st., and Harpenden, three years, 7st. 4lbs.

HERMIT.

Hermit, the winner of the most sensational Derby known, whose success was so unexpected that, though the quoted price against him was returned after the race as 1000 to 15, there would have been no difficulty in obtaining double or three times those odds before the flag fell, is a chestnut horse by Newminster out of Seclusion, and was bred in 1864 by Mr. Blenkiron, at whose annual sale of yearlings he was purchased by Mr. Chaplin for 1000 guineas. Hermit as a two-year old started six times and won four, his winnings amounting to £4110. He made his first appearance at the Newmarket First Spring Meeting in a sweepstakes of 200 sovereigns each (last half of R. M.), won by Cellina, 8st. 10lbs. (Edwards); and with 8st. 7lbs. (Custance), was second. At

Bath, carrying 8st. 10lbs., and ridden by H. Covey, he won the Fifteenth Biennial by a neck, beating Cellina, 8st. 7lbs., Seville, 8st. 4lbs., and eleven others. In the Woodcote Stakes, at Epsom Summer Meeting, carrying 8st. 10lbs. (Custance), he was second to Achievement, 8st. 7lbs. (Chaloner), Jeune Première, 8st. 7lbs., and five others being behind them. At Ascot he won the Ninth Biennial, carrying 8st. 10lbs. (Custance), by a neck, beating Dragon, 8st. 10lbs., Arundel, 8st. 10lbs., and thirteen others. At the Bibury Club (Stockbridge) Meeting he, carrying 8st. 10lbs. (Custance), won the Eighth Stockbridge Biennial by a neck, beating Vauban, 8st. 10lbs., Viridis, 8st. 5lbs., and thirteen others. Two days after at Stockbridge he won the Troy Stakes, carrying 8st. 10lbs. (Custance), beating Lady Hester, 8st. 4lbs., Julius, 8st. 10lbs., and eight others. As a three-year old he did not appear until the memorable Derby, when he won, it was said, £145,000 for Mr. Chaplin, £63,000 for Captain Machell, and almost completed the ruin of the Marquis of Hastings. The account of this is given in the "History of Horse Racing," so we need only remark that the weather was as remarkable as the race, which was run in a snowstorm. At Ascot, carrying 8st. 10lbs. (Custance), he won the Ninth Biennial Stakes, beating Julius, 8st. 10lbs., Dragon, 8st. 10lbs., and three others. The defeat of Hermit by Achievement in the St. Leger and Doncaster Cup need only be mentioned here as among the events marking the beginning of the end of the great plunging mania, of which 1867 was the principal and representative year. At the Second October Hermit, 9st. 1lb. (Custance), was beaten ten lengths in the 500 sovereigns sweep by Friponnier, 8st. 10lbs. (T. French). At the same meeting, in the Newmarket Derby, he was, carrying 9st. 4lbs. (Custance), second a length and a half behind Longchamps, 8st. 4lbs. (Chaloner); Mandrake, 8st. 1lb., being third three lengths off. Two others ran. In the Biennial at Newmarket Craven of 1868 Hermit, carrying 9st. 3lbs. (Custance), was beaten by Julius, 8st. 10lbs. (Daley), by half a length. At the First Spring he again met Julius, this time in a match for £2000, the Derby winner carrying 8st. 9lbs. (Custance), and his opponent 8st. 10lbs. (Daley), but, notwithstanding that Hermit was meeting his previous conqueror on 8lbs. better terms than in the Biennial, he was again beaten, this time very easily. In the Portland Plate, at the Doncaster September Meeting of the same year, Hermit started first favourite, carrying 9st. 4lbs. (Custance), but ran nowhere, Lady Zetland, three years, 6st. 11lbs. (Hammond), being the winner.

ACHIEVEMENT.

This, the most famous of modern mares, cannot be passed over in any list of turf celebrities that includes the period in which she flourished, one of the most eventful in the history of the turf, and so we place her here in company with both lovers and rivals. Achievement was bred by Colonel Pearson in 1864, and was by Stockwell out of Paradigm, by Paragone out of Ellen Horne. She was therefore own sister to Lord Lyon, whose victorious career preceded hers but by a year. As a two-year old Achievement won eleven times out of thirteen attempts, the total of her winnings amounting to £10,387; as a three-year old five races out of eight fell to her, amounting to £12,055; and as a four-year old she ran three times without winning. Her performances are summarized thus:—Newmarket Craven, won the Beacon Stakes; Ascot Spring, won the Grand Stand Plate; Epsom Summer, won the Woodcote Stakes; Ascot Summer, won the Fourteenth Triennial Stakes; same meeting, won the New Stakes; Newmarket, won the July Stakes; same meeting, won the Chesterfield Stakes; Goodwood, won the Lavant Stakes; Doncaster, won the Champagne Stakes; Newmarket First October, won the Hopeful Stakes. This was a run of ten victories in succession, and it was not until Newmarket Second October, when she was beaten by the impostor Plaudit, that she received any check to her career; and on the following day to her first defeat she was second, carrying the extreme penalty, in the Middle Park Plate, beaten three lengths by The Rake, Knight of the Garter being third. After this Achievement closed her two-year old career by winning the Criterion Stakes at the Houghton Meeting. As this latter victory proved that she was not beaten in the preceding meeting through want of form, her defeats by Plaudit and The Rake somewhat dimmed her reputation through the winter. Still the One Thousand Guineas and the Oaks were regarded as being at her mercy, but though she spread-eagled her field in the first, she went wrong in the second, for with 3 to 1 laid on her she only managed to run a dead heat for second place, Hippia being first a length in front. In the Prince of Wales' Stakes, at Ascot, Vauban (winner of the Two Thousand Guineas) beat her by ten lengths; but at the same meeting she won the Coronation Stakes by nine lengths, though in the Fourteenth Ascot Triennial Vauban again beat her. There was no doubt that all the early summer Achievement was dead amiss, and after a good rest she came out at the York August Meeting, looking in splendid condition, and fairly made "a sight" of Vauban in the Great Yorkshire Stakes, winning in a canter by three lengths. The race between her and Hermit for the Leger is matter of history, and the correctness of her victory over the Derby winner was proved in the Doncaster Cup; and both races showed at the same time that the running of Hermit and Achievement as best colt and best filly of the two-year olds of '66 was true by their positions of best colt and best filly of '67. The filly was, however, always better than the colt when both were fit and well. In the two years just mentioned Achievement won sixteen races out of twenty-one, the prizes amounting to £22,442. But as a four-year old her career was very unsuccessful. She was beaten in the Beaufort Cup at Bath by Julius; beaten by Mandrake in the Ascot Triennial; third to Knight of the Garter in the Stockbridge Cup, this being her last appearance on a race course. Achievement was not entered for the Derby of her time, but judging by the position she obtained in the Oaks, the result was unaffected by her absence. She was a brown, and stood nearly sixteen hands

high. Her neck and head were very blood-like, while her shoulders were perfection. Achievement died on the 10th April, 1872, of a ruptured bowel, just after having dropped a foal to Gladiateur, and only a few days after the death of her famous dam, Paradigm. As a two-year old Achievement was ridden in the best of her races by Custance, who also steered her to victory in the One Thousand Guineas, and was upon her in the Oaks. Chaloner, who won two races on her as a two-year old, was identified with later events, including the St. Leger, and the four-year old failures, and Kenyon was the jockey in the Doncaster Cup.

FAVONIUS.

Favonius, winner of the Derby in what will always be known as the Baron's year, is a chestnut horse of great power, by Parmesan out of Zephyr, standing over sixteen hands high. He never ran as a two-year old, but made his first apppearance at the Newmarket Craven Meeting in 1871, where, as the Zephyr colt, carrying 8st. 10lbs. (Morris), he was beaten by a head in the Thirteenth Biennial by Albert Victor, 8st. 10lbs. (Custance), Ravenshoe, 8st. 10lbs., being a length off third. Nine others ran. He did not appear again until the Derby, by which time he had been named Favonius, and with Tom French in the saddle he won by a length and a half from Albert Victor and King of the Forest, who ran a dead heat for second place. This was a very exciting race, as many believed that Baron Rothschild never would win a Derby, and Bothwell—who it seems now must have fluked home a winner in the Two Thousand Guineas, a length in front of Sterling, who has since proved himself to be one of the best horses ever known, and four lengths in front of King of the Forest—was highly fancied, 2 to 1 being taken about him, while the price of Albert Victor was 4 to 1, that of Favonius 9 to 1, and that of King of the Forest 100 to 7. There were seventeen runners in all. At Newmarket July, with 10 to 1 laid on, Favonius, 9st. 4lbs., Maidment up, won the Midsummer Stakes by ten lengths, beating Mowbray, 8st. 11lbs., and Headingly, 8st. 2lbs. At Goodwood his memorable Cup race took place. He, 8st. (Chaloner), and Mortemer, six years, 9st. 7lbs. (Fordham), were supposed to hold the prize between them, and the betting was evens on Mortemer, 5 to 4 against Favonius, 100 to 7 against Ripponden, three years, 7st. 7lbs., and 50 to 1 against Shannon, three years, 7st. 4lbs. There was another runner, Dutch Skater, five years, 9st.; but as he was started solely to make the pace for his stable companion, Mortemer, he was not included in the betting. Favonius and Mortemer made a waiting race of it, and the result was that Shannon (Hunt) beat both, the Derby winner being second half a length behind, and Mortemer being third the same distance off. In the Brighton Cup, with 6 to 4 laid on, and carrying 8st. 3lbs. (Maidment), Favonius cantered away from Manille, three years, 7st. 10lbs., Crusade, three years, 7st. 6lbs., and two others. Favonius was not in the St. Leger, which he could hardly have missed winning, though his absence made no difference to the stable, as Hannah (winner of the Oaks), another of the Baron's lot, ran off with it; but for the Cambridgeshire, despite his crushing weight for a handicap of 8st. 11lbs., he started second favourite, mainly because of the victory of Corisande, still another of the Baron's, in the Cesarewitch. This was the memorable race won by Sabinus, in which Sterling proved that his quality was like his name by running a dead heat for second place a head behind the winner, while carrying the same weight as that apportioned to the Derby victor, who was a bad seventh. Favonius's last appearance in public was in the same meeting, on the last day of which he, carrying 8st. 10lbs. (Peake), walked over for the sweepstakes of £200. As a four-year old Favonius, 9st. 3lbs. (inc. 7lbs. extra) (Maidment), won the Thirteenth Newmarket Biennial in a canter, beating Ravenshoe, 7st. 10lbs., Whaddon, 8st. 10lbs., and two others. In the First Spring, with 9st. 1lb. (Maidment), he beat Dutch Skater, six years, 9st. 1lb., for a £150 sweep (D. I.); but at Ascot, with 8st. 10lbs. (Maidment), he met with an unexpected defeat for the Gold Cup from Henry, four years, 8st. 10lbs. (Fordham), who beat him by a length and a half, Hannah, four years, 8st. 7lbs., being a bad third. There were two other runners. He succeeded, however, in taking the Goodwood Cup, carrying 9st. 3lbs. (Maidment), though Albert Victor, 8st. 10lbs., who was second ten lengths off, was most fancied. Verdure, four years, 8st. 7lbs., was a bad third, and there were two more starters. Favonius made his last start as a four-year old at Newmarket October, where, carrying 9st. 7lbs. (Maidment), he romped home from four others in a Queen's Plate, fifty lengths in front of anything. As a five-year old Favonius only ran once—in the Goodwood Cup, where, carrying 9st. 7lbs. (T. French), he was beaten anyhow by Flageolet, three years, 7st. 7lbs. (Huxtable), the crippled Cremorne walking in third a long way off. In this race Favonius showed none of the form for which he had previously been celebrated.

PRINCE CHARLIE.

Prince Charlie, the "king of the roarers"—which he is generally called from the fact that, notwithstanding his unfortunate defect, he has no equal and hardly a second over a six-furlong course, as during his four-year old career he has given away almost impossible weights to first-rate horses at their favourite distances and won without a struggle—is a chestnut colt by Blair Athol out of Eastern Princess, by Surplice out of Tomyris. He was bred by Mr. H. Jones of Apshall, but was nominated for all his two and three year old engagements by his trainer, Joseph Dawson, and about his nominations there was an informality arising from incorrect description, which led to some unpleasant remarks; and eventually it was declared that had Prince Charlie been objected to within the week of any of his victories he would have been disqualified. At the time this statement was published he had not won anything within the specified period, it being in the autumn of 1872; but the information then laid precluded his starting for the All-aged Stakes at Newmarket Houghton, won by Vulcan, 9st. 2lbs.

(Fordham), which the Prince could hardly have lost. Prince Charlie only ran twice as a two-year old, being a winner each time. He first appeared at Newmarket Second October, in the Middle Park Plate, when ridden by Hunt, 8st. 6lbs., he won by a head from Laburnum, 8st. 6lbs., Nuneham, 8st. 9lbs., and thirteen others. At Newmarket Houghton, 8st. 12lbs. (T. French), he won the Criterion Stakes, beating Nuneham, 8st. 12lbs., by a length, Cremorne, 9st. 1lb., and four others. As a three-year old he, ridden by Osborne, commenced proceedings by winning the Two Thousand Guineas by a neck from Cremorne, who was four lengths in front of Queen's Messenger. Eleven others ran. His next appearance was in the Derby, won by Cremorne, where he cut up badly, being seventh, and he was by many clever people objurgated most severely. At Ascot, carrying 9st. (T. French), he cantered off with the Fern Hill Stakes from two others; and at the same meeting, carrying 9st. (T. French), he beat Wenlock, three years, 8st. 5lbs., and Sterling, four years, 9st. 11lbs., easily in the All-aged Stakes. His next essay was in the Drawing Room Stakes at Goodwood, in which, carrying 9st. 1lb. (T. French), he beat Bethnal Green, 8st. 10lbs, and Bustard, 8st. 10lbs., cleverly. At the same meeting, in the Chesterfield Cup (handicap) he was a good third, carrying 8st. 7lbs. (T. French), Napolitain, three years, 6st. 10lbs. (Constable), being the winner by three-quarters of a length from Lucy Sutton, three years, 6st. 8lbs. He ran second in the Leger (again with French in the saddle), won by Wenlock (Maidment), and closed his three-year old career by beating Chopette, 8st. 7lbs., in the Don Stakes, the Prince having his favourite jockey up and carrying 8st. 10lbs. As a four-year old Prince Charlie appeared ten times, and won on every occasion. He commenced in the Newmarket Craven, by carrying 9st. 9lbs. (T. French), and beating Vulcan, aged, 10st. 1lb., in a selling stakes. Then (T. French) he walked over for a sweepstakes of 100 sovereigns, at the Newmarket First Spring. At the Second Spring, carrying 9st. 4lbs. (T. French), he beat Chopette, four years, 9st. 1lb., and Vulcan, aged, 9st. 4lbs., easily. At Ascot, carrying 9st. 12lbs. (T. French), he won the Queen's Stand Plate in a common canter, beating Blenheim, five years, 9st. 11lbs., and three others. At the same meeting, with 9st. 11lbs. (T. French), he beat Drummond, four years, 9st. 11lbs., in the All-aged Stakes as he liked. At Windsor, with 10st. 6lbs. (T. French), he won the Royal Cup easily, beating Mornington (winner of City and Suburban and Great Metropolitan), five years, 9st. 10lbs., and another. At Newmarket July, with 10st. (T. French), he won the Cheveley Stakes by a head from Blenheim, five years, 9st., and four others. At Huntingdon, with 8st. 6lbs. (T. French), he beat Lord Gough, four years, 7st., and another in the Cup Stakes as he liked. In the Second October Meeting, carrying 9st. 2lbs., but no longer with the services of poor Tom French, who had died since the Prince's last victory, and who was on this occasion represented by Cannon, he beat Blenheim, five years, 9st. 2lbs., and Laburnum, four years, 9st. 2lbs., cleverly; and closed the year by, with 10st. 6lbs. (Cannon), beating Oxonian, aged, 9st. 6lbs., in the Bickerstaffe Cup at Liverpool.

CREMORNE.

Cremorne, the last of our representative Derby winners, who until he was put *hors de combat* by a curb during the season of 1873 was a marvel—a speedy horse and an undoubted stayer—is a bay horse, standing about 15 hands 3 inches, by Parmesan out of Rigolboche, and was bred by his owner, the popular Mr. Savile. Cremorne is very stoutly bred on both sides, and he has always "shown his breeding." As a two-year old he ran eleven times and was only beaten twice, the first time by Onslow, to whom he finished second in the Prince of Wales's Stakes at York, and the second in the Criterion, Prince Charlie being first, Nuneham second, and Cremorne third. His victorious essays were made in the following races:—The Newmarket Two-year Old Plate, the Woodcote Stakes, the First Year of the Fourteenth Biennial and Nineteenth Triennial at Ascot, the Hurstbourne Stakes at Stockbridge, the Chesterfield Stakes at Newmarket July, the First Year of the Sixteenth North of England Biennial at York August, the Champagne Stakes, and a sweepstakes of ten sovereigns each at Doncaster. In all of these races Cremorne met the best animals of the year, and showed himself decidedly superior to the majority of his antagonists. As a three-year old Cremorne commenced by running second to Prince Charlie for the Two Thousand Guineas. At the same meeting he walked over for the Newmarket Stakes, and then won the Derby, beating Brother to Flurry, Queen's Messenger, and twenty others. He then accomplished the hitherto impossible task for an English bred Derby winner of taking the Grand Prix de Paris, beating Barbillon, Reine (winner of the Oaks), and six others. At Ascot he beat three opponents for the Fourteenth Biennial, and at the same meeting walked over for the Nineteenth Triennial. At York August he walked over for the Sixteenth Biennial; and at the same meeting, carrying 9st. 3lbs., won the Great Yorkshire Stakes in fine style, beating King Lud, 8st. 10lbs., and two others. Cremorne was not in the Great Doncaster St. Leger, in which he would have met nothing to make him gallop; but in the Newmarket St. Leger he, carrying 9st. 3lbs., was beaten a neck by Laburnum (Parry), 8st. 3lbs. Two others ran. In the Newmarket Derby, at the Second October Meeting, Cremorne, 9st. 4lbs., beat three opponents in fine style, and then retired for the winter. In none of these races, except the Two Thousand Guineas, was Cremorne beaten at even weights, and then only by Prince Charlie, at a distance which suited the latter admirably. Cremorne commenced his four-year old career by running second in the City and Suburban Handicap with 9st. 2lbs. Mornington, the winner, who was only three-quarters of a length in front, carried 7st. 13lbs. (Mordan), for five years, and next day, carrying 8st. 5lbs. (Cannon), won the Great Metropolitan Stakes, so Cremorne's second was an undoubtedly great piece of running. At Ascot he walked over for the Nineteenth Triennial Stakes; on the

next day, carrying 8st. 10lbs., he won the Gold Cup easily by eight lengths from Flageolet, three years, 7st. 5lbs., Revigny, four years, 8st. 10lbs., and four other celebrities; and on the concluding day of the meeting, carrying 9st. 5lbs., he beat Vanderdecken, 9st., by fifteen lengths for the Alexandra Plate. Unfortunately, after this Cremorne sprang a curb, and in the Goodwood Cup, won by Flageolet, three years, 7st. 7lbs., he was only started to win some bets about his going to the post. Certainly no other reason can be given for running so grand an animal, when he had, through disease, no earthly chance of winning. In all the races throughout his career Cremorne was steered by the fortunate Maidment.

This ends our list of celebrated racers, and, as fitting company for such a lot of wonders, we present the reader with the histories of the three sovereigns of the stud who have done so much for the present breed of horses, and whose careers are for ever closed.

STOCKWELL.

Stockwell, the prince of stallions, as he has been most worthily called, was not only a first-class racehorse, but the most successful sire of modern times. By his death the turf as well as his owner received a great blow, and it will in all probability be a long time before another stallion supplies his place; for his record is not only extremely successful, but of great length. Stockwell died at Hooton Park on Thursday, May 5, 1870, and the following is a summary of his performances and career:—Stockwell was bred by the late Mr. Theobald, and was by The Baron (winner of the St. Leger in 1845) out of Pocahontas, by Glencoe out of Marpessa, by Muley out of Clare, by Marmion. He was bought as a yearling by the late Marquis of Exeter for 180 guineas, with certain contingencies, and was sent to Newmarket to be trained by Harlock, being at the time a rather large and coarse-looking colt. He ran twice in public as a two-year old, being second in the Prendergast Stakes to Maidstone, who beat him by a head; whilst Ambrose, who also belonged to Lord Exeter, and was sold just about the time of Stockwell's death for £5, was third; and in the Criterion, which was won by The Hind, he was a bad fourth, Ambrose this time finishing second and reversing the previous running. In both his two-year old races Stockwell was ridden by Charles Marlow. He ran only once in public as a three-year old before the Two Thousand, when he was beaten by Alcoran in a sweepstakes of 100 sovereigns at the Newmarket Craven Meeting. He then won the Two Thousand very cleverly by half a length, ridden by Norman, who was always a favourite jockey with Lord Exeter. Home-brewed was second and Filius third, and among the unplaced was Daniel O'Rourke, afterwards the sensation Derby winner of that year (1852). About a fortnight before Epsom Stockwell went amiss, which accounts for his running so badly in the Derby, where the Irishman, with Frank Butler in the saddle, was so much at home in the mud—it was an awful day—that he left most of his opponents standing still. After this Stockwell walked over for a sweepstakes of 300 sovereigns at Newmarket, and then won the Racing Stakes at Goodwood by a length, beating Maidstone and two others. His next race was the St. Leger, where he was again ridden by Norman, the field consisting of only six, and he won in a canter by ten lengths. Harbinger was second and Daniel O'Rourke third; whilst Songstress, winner of the Oaks, finished fifth, lame. Stockwell won the Grand Duke Michael Stakes and Newmarket St. Leger subsequently, and after walking over in a match with Lord Ribblesdale's Nabob he retired to winter quarters; having, as even his enemies were bound to admit, had a very good time during the year. In 1853 he came out for the Emperor's Plate at Ascot, but was beaten by a head after one of the severest finishes on record, his conqueror being Teddington, who was conceding the subject of this memoir 9lbs. for the year, and behind the pair were several good horses, including Kingston, who was unplaced. In the following year he opposed Kingston for the Whip at Newmarket, and what promised to be a most interesting race ended by Kingston's breaking down at half distance, leaving Stockwell to win at his leisure. Stockwell never appeared in public after this, but in 1855 he stood at Burghley and covered thirty mares at thirty guineas each. Amongst his first foals were several winners, the most distinguished of them being Audrey, who as a five-year old won the Cesarewitch in 1861, carrying 8st. 5lbs., the biggest weight ever carried successfully in that race. He was more successful next year, as amongst his foals were St. Albans (winner of St. Leger and Chester Cup), Thunderbolt, Suburban, and other celebrities of their time. In 1858 his foals included Asteroid, Aurelian, Caller Ou (winner of the St. Leger in the fastest time on record), and Bas Bleu (dam of Blue Gown); whilst in 1859 there appeared to his credit the Marquis (winner of the Two Thousand Guineas and St. Leger and second in the Derby), Caterer, Argonaut, and several other winners. Lord Londesborough purchased Stockwell from the Marquis of Exeter in 1856, and the great stock-getter remained four years at Kirkby Farm, near Tadcaster. However, on June 12, 1860, the Grimston stud was broken up, owing to the death of Lord Londesborough, and a general dispersal took place under the hammer of Mr. Richard Tattersall. Stockwell was bought by Mr. Naylor for the Rawcliffe stud, of which he was at that time one of the principal proprietors, for 4500 guineas, whilst West Australian, the first and at the time the only triple winner of Guineas, Derby, and Leger, was purchased by the Count de Morny for 3000 guineas; and it is somewhat of a coincidence that these two stallions, of nearly the same age and sold the same day at Grimston for such—as were then considered—very large prices, should have both died in the same week of almost similar diseases, "the Australian having breathed his last at Meridon in France, on Monday the 2nd of May, 1870, while Stockwell, as we have already recorded, died on the Thursday following. During his stay at Rawcliffe Stockwell's success

still attended him, as amongst his foals of 1861 was Blair Athol, and in 1862 his lot included Regalia (winner of the Oaks), The Duke, Ostreger, Breadalbane, and Broomielaw. At the end of the season of 1862 Mr. Naylor took Stockwell off the hands of the Rawcliffe Company at the same price as he had given for him in their interests, and the stallion afterwards remained at Hooton, where his fee varied from seventy-five guineas to 200 guineas. His success was maintained without interruption almost till his death, for a couple of years before which his stock did not do so well; still within his last seven years he got Lord Lyon and Achievement, Savernake, Repulse, Actæa, Rustic, Athena, and several others who greatly distinguished themselves on the turf; and it is only necessary to mention that the public money won by his stock within the five years prior to his decease amounted to the enormous sum of £173,028, to show what a loss was sustained by his death. A lasting proof is also given of the unimpaired vigour of his powers up to the finish, by the fact that in the list of winning stallions of the two past years (1872 and 1873), the dead Stockwell has been credited with £12,234 and £13,650 10s. respectively. Stockwell was a dark chestnut, with a blaze on his face, and both hind heels and fetlocks white, standing 16 hands 3 inches, having a large but intelligent head, with a Roman nose and small ears, a rather coarse neck, well-shaped shoulders, level back, with great depth at the heart, where he measured 6 feet 9¾ inches, good loins, and powerful quarters. He was short from his knees and hocks to the ground, with plenty of bone, his appearance being not so much in favour of blood as indicating immense power and substance. Stockwell was taken ill on the Tuesday with inflammation of the bowels, a most fatal disease among stallions, and one to which they seem peculiarly liable, and died on the Thursday. He was buried in lime at Hooton Park, with a view to having the skeleton prepared at some future day. Stockwell's name must soon disappear from the list of winning sires, and unless it is to his son Blair Athol, who began almost too early to last many years, we know not where to look for a successor to the "prince of stallions."

PARADIGM.

In this list of turf celebrities special honour must be paid the brood mare Paradigm, who, as a producer of blood stock, must be regarded as amongst the most famous, if not actually at the head of her time, for from her have descended animals whose names will live while the turf or its memory exists. Paradigm, who was bred by Colonel Pearson in 1852, was by Paragone out of Ellen Horne, by Redshank out of Delhi, by Plenipotentiary out of Pawn Junior. In her veins, therefore, were mixed some of the most valuable strains of blood. Paragone was by Touchstone out of Hoyden. In England he made no great mark at the stud, and was sold in 1852 to the Germans, where his success as a sire was tolerably great, but nothing extraordinary. Ellen Horne is best known as the dam of Kate, The Ancient Briton, and Defender, though she produced some others who paid their way. Paradigm, like many a successful brood mare before her, did little to distinguish herself on the racecourse, possibly because she had the smallest imaginable opportunity of exhibiting whatever ability she may have possessed, as her only appearance on the turf as a two-year old was at Goodwood in 1854, where, although defeated on each occasion that she started, she can hardly be said to have been disgraced, being beaten only a head by Lord of the Isles in the Lavant Stakes, when amongst the unplaced performers were such undoubtedly good animals as Claret and Kingston. In the same week she broke down when running for a Bentinck Memorial Stakes, won by Gretna, and was never afterwards heard of in connection with active turf business. Kingston was the first lover Paradigm had, and by that speedy sire she had in 1856 King at Arms, and in 1857 Man at Arms. These well-known though rather unfortunate brothers soon made the reputation of their mamma, as King at Arms ran eleven times as a two-year old, and if not very lucky in getting his head into the right place at the finish, he could certainly claim to have run well and to have been defeated in excellent company. He was second to Merryman in the Woodcote Stakes at Epsom, and on Thursday in the same week he divided North Lincoln and Rainbow in the Two-year Old Stakes. He was second again to Cantine in the Chesterfield Stakes at Newmarket July, and third to Cavendish in the Convivial at York. At Egham, a week later, he was again second, this time to Wild Rose, for the King John Stakes, Newcastle, Gallus, Flitch, and other good horses being behind them; and the winning mark against his name was not obtained until the First October Meeting, when, with Sam Rogers up, he won the Rutland Stakes in a canter. In the same autumn he met an old opponent, the grey Rainbow, for the Bedford Stakes, and beat him easily; then he ran third to North Lincoln and Promised Land for the Criterion, and finished the year running fourth to Northampton for the Second Class Nursery in the Houghton week. In 1859 he won four times, his greatest triumph being the Royal Hunt Cup at Ascot, which, after a dead heat with Schism, he carried off from an immense number of competitors. Some other small successes fell to his lot, and at last he was sold to go to the Mauritius. Naturally his good form drew public attention to others of the same family, and great things were expected of Man at Arms, who was, however, like his elder brother, also of the unfortunate kind, although as a three-year old he managed to land a coup for his stable in the Houghton Handicap, and strange to say took the same stake in the following year. He was afterwards put to the stud. In 1858 Paradigm had Rouge Dragon by Windhound, another colt of great private reputation, and a divider of the Goodwood Nursery with Captain Fortibus, and in 1859 she had a filly called Panoply by Kingston, of no account. In 1860 came another young Kingston, a colt, and without doubt the best of the family so far, though afflicted with a shifty, uncertain temper. This was Blue Mantle, who achieved a sensational reputation by his three runaway

victories at Ascot in 1862. He was pegged back, however, in the memorable struggle for the July and Chesterfield Stakes, and it is likely enough that in these severe encounters he got "stalled," and that the defeats had much to do with his subsequent shifty running, in despite of which he only just escaped being placed in the Derby of Macaroni. Paradigm was barren to Hobbie Noble in 1861 (the only time she was ever put to him), and in 1862 she had Gardevisure by Vedette, a filly that displayed even less stamina than her predecessors up to the date of her winning the Cambridgeshire; and there can be no doubt that the most critical of the critics was rarely astonished when Gardevisure was seen climbing the severe hill successfully. But it was in 1863 and 1864 that Paradigm made herself famous with Lord Lyon and Achievement, both by Stockwell, and by means of these two she was lifted into the foremost position among brood mares. The fortunate meeting of mares by Touchstone and sons of Touchstone with Stockwell was never so clearly demonstrated as in her case. To be the dam of such animals as Lord Lyon and Achievement, the first one of the three triple winners of Guineas, Derby, and Leger, and the second one of the acknowledged finest mares of any day, was in itself immortality. With the birth of Achievement ended Paradigm's career as a breeder of first-rate horses. She had Hatchment and Noyre Tauren by Vedette, but this latter, though highly tried in private, seems in public to have been as bad as any of the others were good. Nor did two other ventures with Stockwell turn out fortunate, Chevisaunce and Cognisance being the unsatisfactory issue of the latest trials. In 1867 Paradigm had a dead foal to King Tom. In 1869 she visited Blair Athol and had issue a filly foal. The next attempt produced another daughter which died, and in 1872 she was barren to the great Middle Park stallion. She now suffered so much from foot disease that it was found necessary to shoot her, and she was shot accordingly on March 23, 1872.

BEADSMAN.

Beadsman, not only a fine racer and Derby winner, but one of the most fashionable sires of his time, was bred by Sir Joseph Hawley, and was by Weatherbit out of Mendicant (winner of the Oaks in 1846), by Touchstone out of Lady Moore Carew, by Tramp out of Kite, by Bustard. Sir Joseph bought Mendicant from Mr. Gully at the Ascot Meeting of 1847 for £2500, and when twelve years old she produced Beadsman, who, when he retired from racing, was a dark brown colt about 15 hands 3 inches, having rather heavy shoulders, but great depth at the heart, with good back and loins, though somewhat light below the knee. Beadsman was as a yearling sent to Danebury to be trained by John Day, and as a two-year old ran twice at Goodwood without success. Early in 1858 Sir Joseph Hawley engaged the late George Manning as his private trainer. Beadsman, who had been spending the winter at Leybourne, was put under his charge immediately, and as a three-year old won the Derby and three other races, besides running a dead heat with Eclipse for the remaining event in which he started, the Newmarket Stakes. In consequence of one of his legs failing him Beadsman's appearance on the turf closed with his three-year old season, and he was put to the stud in 1860, being then five years old, and there he gained greater celebrity than he had done as a race horse, notwithstanding his Derby victory. At Leybourne Grange, where he first stood, he was fairly successful, but in the following season he was removed to Messrs. Barrow's at Newmarket; where, however, he did not stay long, but returned to Leybourne, where he remained until 1867, when the successes of Rosicrucian, Blue Gown, and Green Sleeve as two-year olds caused such a demand for his services that his covering fee was raised to 100 guineas. He was then sent to Lord Portsmouth's at Hurstbourne Park, whence he returned to his old quarters in 1870, where he remained till his death. In the space of six years £46,252 in stakes was won by nine of his stock. His descendants include Blue Gown, Rosicrucian, The Palmer, Green Sleeve, Pero Gomez, Morna, and other turf celebrities. Those which we have named all belong to Sir Joseph Hawley, and were trained by Porter at Kingsclere. Beadsman on the death of Stockwell came greatly into demand, and had he lived he would almost undoubtedly have taken the place of "the prince of stallions," as in 1871 there was a tremendous demand for his yearlings, which fetched exceptionally high prices. Beadsman's death, which took place at Leybourne Grange on July 5, 1872, was most unexpected, as on the day previous to the attack which carried him off he was as well as he had appeared at any previous period. A post-mortem examination revealed a most extraordinary entanglement of the small intestines, a portion of which had protruded through the mesentery, and thereby produced a strangulation of that portion of the bowels, and a complete stoppage, which caused acute inflammation, such as no treatment could have allayed. The first animal of note got by Beadsman was The Palmer, whose rivalry with Hermit is one of the legends of the turf. Almoner sustained his reputation in the year of his death, and at the close of the present year £2473 was placed to the credit of his name for nine winners.

THE LAWS OF HORSE-RACING, BETTING &c.

REGULATIONS OF TATTERSALL'S AND THE NEWMARKET ROOMS: ADJUDGED CASES: LENGTHS OF COURSES: WINNERS OF THE GREAT RACES, ETC.

Rules concerning Horse-racing in General.

1. No race meeting shall commence before the week which includes the 25th of March, nor continue beyond the week which includes the 22nd of November, unless the week including the 25th of March shall be Passion Week, in which case race meetings may be held in the week preceding.

2. Race horses take their ages from the 1st of January.

3. *Catch Weights.*—Catch weights are each party to appoint a person to ride without weighing.

4. *Feather.*—A Feather weight shall be considered 5st. 7lb., and the usual declaration must be made when the jockey carries more than that weight.

5. *Maiden Horses.*—A maiden horse or mare is one that has never won a plate or sweepstakes in any country.

6. *Plates.*—A plate is any prize given to be run for, without any stake being made by the owners of the horses to go to the winner.

For a plate no person can run, either in his own name or in that of any other person, two horses of which he is wholly or in part owner, unless permitted to do so by a special clause in the conditions.

7. *Sweepstakes.*—Where a stake is deposited by the owners of the horses, which is to go to the winner, such race is a sweepstakes; and if an additional sum of money, cup, piece of plate, or other reward, be offered to the winner, the race is still a sweepstakes, though such addition should be denominated a plate by the donor.

Three subscribers make a sweepstakes; and if a stake has the required number of subscribers at the expiration of the time of closing, and the number is afterwards reduced by death (or, in the case of a produce stake, by failure of produce), the race is not void as long as there are two horses left, the property of different persons; and if the number is reduced to two it is still a sweepstakes.

When the public money added to a sweepstakes is less than 50 sovs. all forfeits and entrance money shall go to the winner, or some other horse engaged in the race.

8. No plate or sweepstakes shall be run for of less value than 50 sovs., including the winner's own stake, excepting in cases of prizes left by will. This rule not to prevent the walking over for a less sum.

9. *Post Match or Sweepstakes.*—For a post match or sweepstakes each subscriber names two or more horses of the proper age, but can only run one, unless a greater number is allowed by the conditions of the race.

10. *Omissions, how supplied—of Weight.*—When any match or sweepstakes shall be made, and no weight mentioned, the horses shall carry 8st. 10lb. each, and if any weight is given the highest weight shall be 8st. 10lb.

11. *Of Courses.*—When any match or sweepstakes shall be made, and no course mentioned, the course shall be that which is usually run by horses of the same age as those engaged, viz:—

	If at Newmarket
If yearlings, two furlongs	Y.C.
If two years old, six furlongs	T.Y.C.
If three years old, one mile	R.M.
If four years old, two miles	D.I.
If five years old or upwards, four miles	B.C.

And if the horses should be of different ages, the course shall be fixed by the age of the youngest.

12. *Of Day.*—If no day is mentioned for a race it shall be run on the last day of the meeting, unless otherwise agreed by all the subscribers.

As to Nominations.

13. *Description Necessary.*—In all nominations for sweepstakes and plates, the horse or mare entered must be clearly identified. The name of the sire and dam must be given, and if the dam has no name in the Racing Calendar or Stud Book, such further pedigree and description must be added as will distinguish the horse intended to be named from any other of a similar pedigree. If the dam was covered by more than one stallion, the names of all of them must be mentioned.

14. *When the Name is sufficient.*—If a horse has once been entered with his name and pedigree in a race published in the Racing Calendar, it will be sufficient afterwards to mention him by his name only, even though he has never started; and in entering a horse for the first time by his name in several races closing at the same time, it will be sufficient to give his pedigree in one of these nominations, and his name only in the others.

If the name of a horse which has run be changed, it is necessary, in entering the said horse, to give his old as well as his new name in every nomination until the change has been duly registered in the *Book* Calendar; and if his name be changed again, all his names must be repeated for the like period; but if a horse's name be changed before he has run in public, it shall be sufficient to give his new name in the first entry made after such change.

15. *When the Age must be mentioned.*—In naming for a race in which horses of different ages are admitted, the age of the horse named must be mentioned.

No yearlings can run for public stakes.

No two years old shall run in any handicap before the 1st of October, and then only with horses of the same age.

No two years old shall run more than six furlongs for any plate or sweepstakes.

No three years old or upwards shall run a shorter distance than five furlongs for any plate or sweepstakes.

16. *Nomination of Foreign Horses.*—No horse foaled out of the United Kingdom shall run for any race until his owner has produced a certificate of some racing club of the country where the horse was foaled, or from the mayor or other public officer of the district, stating the age, pedigree, and colour of the horse, and the marks by which it is distinguished; and also a certificate of the horse's age, signed by a Veterinary Surgeon, being a Member of the Royal College of Veterinary Surgeons, or holding the Highland and Agricultural Society's Diploma. Such person to be approved of by the Stewards, and the said certificates to be lodged at Messrs. Weatherby's office in London.

No horse, though foaled in the United Kingdom, which has been exported before running in any public race, and is afterwards brought into this country to run, shall be qualified to start until the owner or person in charge of the horse has produced a certificate of his age, signed as above.

The production of these certificates shall not preclude the Stewards from ordering an examination of the horse's mouth by a Veterinary Surgeon appointed by themselves, as provided in Rule 69, if they shall see reason for so doing.

17. *Incorrect or Insufficient Description a Disqualification.*—If any horse, &c., shall be named or entered without being identified as before directed, he shall not be allowed to start in the race, but his owner shall be liable to pay the forfeit, or if a play or pay race, the whole stake.

18. *Fraudulent Entry a Perpetual Disqualification.*—If a horse should fraudulently run, or be entered to run for any race by a false description, such horse is thenceforth disqualified for running in any race; and the owner shall be compelled to return any sum of money won in plates, matches, or sweepstakes (whether handicap or not) which the said horse may have won. When a horse has been struck out of an engagement by the person legally entitled to do so, if the horse be permitted to start by mistake for the said engagement, he shall not be entitled to receive the prize though he come in first; and if he have been allowed to start in consequence of fraud or misrepresentation on the part of the owner or other person having charge of the horse, that person shall be warned off Newmarket Heath, and the horse shall be disqualified from running for any public race thereafter.

19. *Qualification Dates from Time of Closing.*—In naming or entering for any race where there shall be any particular conditions required as a qualification to start, it shall be sufficient if the horse were qualified at the expiration of the time allowed for naming or entering, and he shall not be disqualified by anything which may happen after the expiration of that time, unless so specified in the article, or unless he becomes disqualified under the rules relating to defaulters.

If a brood mare engaged in a produce stake drops her foal before the 1st of January the nomination is void, and if she have a dead foal or be barren the nomination is void.

20. *Nominations not to be Changed after Closing.*—No person who has once subscribed to a stake shall be allowed to withdraw his name, and no nomination shall be altered in any respect after the time of closing without the consent of all the parties in the race.

No post entries shall be allowed.

21. *Exception to preceding Rule.*—When a person takes a nomination for a stake in which the forfeit is to be declared by a particular time, and does not declare forfeit by the time fixed in the article, he shall thenceforth be considered to have taken the engagement on himself, and his name shall be substituted for that of the original subscriber.

22. *Use of Fictitious Names.*—Every person who wishes to engage his horses in any other name than his own must assume some one other name, which must be registered annually at Messrs. Weatherby's office. The annual fee for the registration of assumed names 10 gs., and when the person registering is a member of the Jockey Club, 50 gs., a percentage on the sums so collected to be applied to the Bentinck Benevolent Fund, and the remainder to the Racing Fund of the Club.

The person registering the assumed name shall be considered in all respects as the owner of the horse entered in it, and in the event of the forfeit not being paid, his real name shall be published in the Forfeit List. No person shall register as an assumed name that of any person who runs his horses in his own name, or an assumed name previously adopted. Any horse running in any other name than that of his owner shall be disqualified, unless the name is registered as above.

This rule not to prevent any person who has subscribed to a stake from giving his nomination, provided the real or registered name of the owner appear in the entry.

23. *Nominations not required to be made on Sunday.*—When the day fixed for the closing or naming for any stake, or for declaring forfeit or produce, shall fall on Sunday, subscriptions, nominations, or declarations for such stake may be received on the following day, provided that there is an interval of one clear day between the day of closing, naming, or declaring, and the day of running.

In case the day fixed for naming for any stake, for which nominations are received by Messrs. Weatherby, shall fall during a Newmarket race week, nominations may be made to them there, whether so expressed in the advertisement of the stakes or not.

24. *Void by Death.*—All nominations are void by the death of the subscriber.

25. *Allowances to Produce of Untried Horses or Mares.*—In every sweepstakes in which there shall be an allowance of weight to the produce of untried horses or mares, it shall extend to horses or mares whose produce never won a registered prize in any country, but such allowance shall be claimed by the subscriber before the expiration of the time of naming; and if not so claimed, no allowance shall be made.

Respecting Stakes and Forfeits.

26. *Stakes to be paid before Starting.*—All stakes shall be made before starting, in cash, bank bills, or bankers' notes payable on demand, and be paid into the hands of the person appointed by the Stewards to receive the same; and in default thereof by any person, he shall pay the whole stake as a loser, whether his horse came in first or not, unless such person shall have previously obtained the consent of the party or parties with whom he is engaged, to his not staking.

And Forfeit in certain cases.—When any person has more than one nomination in a stake, he shall not be allowed to start any horse for it unless the forfeits be paid for every horse which does not start, belonging to him, or standing in his name, or in the same name as the horse which runs, as well as the stakes for those which do.

27. Entrances to Plates, and to Sweepstakes where there is an entrance to go to the fund, are payable at the time of nomination; but if payment is not then insisted upon, they may be claimed afterwards under Rule 28, and published in the Forfeit List like unpaid forfeits.

28. *Arrears of Owner and Namer to be paid before Starting.*—No person shall start a horse for any race, either in his own name or in that

of any other person, unless both the owner and namer of such horse shall have paid all former stakes and forfeits. And this rule shall extend to forfeits due elsewhere than at the place of running, provided a notice of such forfeits being due shall have been published in the Forfeit List, or have been delivered to the Stakeholder or Clerk of the Course by 10 o'clock in the evening preceding the day of running.

29. *Arrears due for a Horse to be paid before he can Start.*—No horse shall start for any race unless all former stakes and forfeits due for that horse shall be paid before starting, provided notice has been given as above.

30. *These Rules extend to Ireland.*—These rules relative to arrears of stakes and forfeits extend to forfeits due at the Curragh and other established meetings in Ireland.

31.—No person convicted of any fraudulent practices on the turf, and no person that has been reported by the Committee of the Subscription Rooms at Newmarket or at Messrs. Tattersall's, as being a defaulter in bets, shall be permitted to name, enter, or run, either in his own name, or in that of any other person, any horse of which he is either wholly or in part owner, for any race whatever.

The Jockey Club will not enforce the penalties imposed by this Rule for default in bets made after July 8th, 1868, unless the complaint shall have been lodged with the Committee of the Subscription Betting Rooms at Tattersall's, or at Newmarket, within three months of the bets being due.

The Forfeit List.

32. *To be published in Racing Calendar.*—A list of unpaid forfeits, with the name of the subscriber to the stake, and the name or description of the horse, with the name or sufficient description of the stake, and the amount of the forfeit, shall be advertised in the Sheet Racing Calendar after the Newmarket July and Houghton Meetings every year.

Forfeits once published in the Forfeit List must be paid direct to Messrs. Weatherby, and cannot be struck out till this is done.

33. *By whom Lists of Forfeits are to be sent for publication.*—The person appointed to receive stakes is to send to Messrs. Weatherby a list of unpaid forfeits as soon after the race as conveniently may be, in order that the same may be placed upon the Forfeit List; and if he shall omit to make such last-mentioned return within a reasonable time, it may be made by the respective winners of the races for which the forfeits are due. These returns in all cases to be made in writing, and signed by the parties making them.

34. *Persons appearing in Forfeit List not entitled to enter.*—No person whose name shall appear in the published Forfeit List shall be entitled to enter or run a horse for any plate, sweepstakes, or subscription, either in his own name or in the name of any other person, until he shall have paid up all the forfeits in respect of which his name appears in the list.

35. *Horses appearing in the Forfeit List not qualified to be entered.*—No horse which appears in the published Forfeit List shall be qualified to be entered, or to run for any race whatever, until the forfeits mentioned in the said list as due for such horse shall have been paid; and should any such horse be discovered to have run and come in first, he shall be liable to be objected to at any time within six calendar months.

36. *Suspected Nominations may be struck out.*—In order to prevent persons who are defaulters from evading these laws and continuing to engage horses by the use of fictitious names, the Stewards shall have the power of calling upon a nominator to produce satisfactory testimony that the horse named is not the property, either wholly or in part, of any person whose name appears in the advertised list of defaulters; and if the nominator shall fail to do so, the Stewards may cause the nomination to be erased.

37. *Liability for Engagements of Horses sold.*—When a horse is sold with his engagements, or any part of them, the seller has not the power of striking the horse out of the engagements with which he is sold; but as the original subscriber remains liable to the respective winners for the amount of the forfeits in each of these engagements, he may, if compelled to pay them by the purchaser's default, place the forfeit on the Forfeit List in the usual manner, as due from the purchaser to himself; and until this forfeit is repaid, both the purchaser and the horse remain under the same disabilities as if the purchaser had been the original subscriber.

In all cases of sale by private treaty, the written acknowledgment of both parties that the horse was sold with the engagement is necessary to entitle either buyer or seller to the benefit of this rule; but when the horse is sold by public auction, the advertised conditions of the sale are sufficient evidence, and if he has been claimed as the winner of a race of which it was a condition that the winner was to be sold with his engagements, this also is sufficient.

38. When a person has a horse engaged in the name of another person, and is entitled by purchase or otherwise to start the horse for such engagement, but is prevented by any of the preceding laws from starting his horse without previously paying up forfeits to which he is not otherwise liable, he may, if he pay these forfeits, start his horse and have the forfeits with the names of the horses for which they are due placed on the Forfeit List in the usual manner as due to himself.

Weighing.

39. The name of every horse intended to start must be notified to the Clerk of the Scales, and his number be exhibited one quarter of an hour before the race; and if any alteration be made in the numbers after they have been exhibited, the Stewards may call upon the owner or trainer for an explanation. If this be not satisfactory, the owner, or trainer, or jockey, may be fined at the discretion of the Stewards, in any sum not exceeding £50, and the horse shall not be allowed to start, nor the jockey to ride again until the fine is paid.

40. *To weigh before and after the race.*—Jockeys are required to weigh at the usual place of weighing before the race, under a penalty not exceeding £10, unless excused by the Stewards for some special reason, when the fact must be notified to the Clerk of the Scales; and every rider is, immediately after the race, to ride his horse to the usual place of weighing, then and there to alight, and not before, and he is forbidden to touch anything beyond his own equipments after the race is over, until he has been weighed and passed by the Clerk of the Scales, under the penalty of disqualification, unless he can allege extraordinary circumstances, the legality of which must be decided by the Stewards; and if a jockey riding a beaten horse does not return to weigh, he shall be fined a sum of money not less than £10 or exceeding £25; and if it can be proved that the owner or trainer connived at this violation of the law, they shall be fined £25 each, and the horse shall be disqualified to run in public until all the fines are paid. If the jockey dismount before the proper time, or be short of weight, his horse is disqualified, unless he be disabled by an accident to himself or horse which should render him incapable of riding back, when he may walk or be carried to the scale.

It is optional for the jockey to weigh with his bridle, and the Clerk of the Scales will allow 1 lb. for a curb or double bridle, but no weight is allowed for a snaffle bridle unless it is put into the scale before the horse is led away, and no whip or substitute for a whip shall be allowed in the scales.

If a horse run in a hood it must be put into the scale and included in the jockey's weight.

41. *Over-weight.*—Each jockey shall be allowed 2lb. above the weight specified for his horse to carry and no more, unless a declaration has been made to the Clerk of the Scales of the extra weight the jockey is about to carry one half hour before the time fixed for the said race, and the extra weight shall be appended to the horse's number when it is put up. In default of such declaration the horse carrying more than 2lb. over his

specified weight shall be placed as the last horse in the race, the jockey shall be fined £5 for his neglect, and shall not be allowed to ride until the said fine be paid; and the weight each horse actually carried, if more than 2lbs. above his weight, shall be published in the first list printed after the race, and also in the Racing Calendar.

42. *Raising Weights in Handicaps.*—In all handicaps when the highest weight accepting is under 8st. 12lbs., it is to be raised to that weight, and the others in proportion.

43. *No horse to carry less than 5st. 7lbs.*—No horse shall carry less than 5st. 7lbs. for any race, and horses which have run in violation of this Rule shall not be allowed to run at any place where these Rules are in force.

At a meeting of the Grand National Hunt Committee, held at Newmarket, it was resolved, That on and after January 1st, 1874, there should be no allowance of weight to half-bred horses.

Starting.

44. *Horses going to the Post to be considered Starters.*—When the riders of the horses brought out to run for any race are called upon by the person appointed to start them to take their places for that purpose, every horse which comes up to the post shall be liable to his whole stake.

45. *Power of the Starter.*—The starter has authority to order the jockeys to draw up in a line as far behind the starting-post as he may think necessary; and any jockey disobeying the orders of the Starter, or taking any unfair advantage, shall be punished by fine or suspension, according to the nature and degree of his offence, at the discretion of the Stewards.

No jockey can be suspended beyond the meeting at which the offence is committed, unless the case has been heard by the three Stewards of the Jockey Club, and in the absence of any of the Stewards a Member or Members of the Jockey Club shall be deputed to act for the Steward or Stewards absent.

The punishment inflicted shall not be declared till after the last race of the day on which it is awarded.

A sentence duly passed upon a jockey cannot be remitted by the Stewards without the authority of a General Meeting of the Jockey Club.

The Starter is prohibited from making a running start; the horses must walk up and be started from a walk; and if the Starter from negligence or inattention allows a start to take place on the wrong side of the Starting-post, he shall be fined a sum of money not exceeding £50, and the start shall be declared null and void.

46. *Foul Riding.*—If in running for any race one horse shall jostle or cross another, such horse is disqualified for winning the race, whether such jostle or cross happened by the swerving of the horse or by the foul and careless riding of the jockey or otherwise; and where one horse crosses the track of another it is deemed a disqualification, unless he be two clear lengths or more before the horse whose track he crosses; and if such cross or jostle shall be proved to have happened through the foul riding of the jockey, he shall be subject to such punishment as the Stewards may think fit to inflict.

47. Horses running on the wrong side of a post, and not turning back, are disqualified.

Second Horse.

48. *Money for Second Horse.*—When it is a condition of a stake or plate that the owner of the second horse shall receive a certain sum of money out of the stakes, or out of the plate, and the race is walked over for, or no second horse is placed, the winning horse is entitled to the whole prize. If the money advertised to be given to the second horse is a separate donation from the Race-fund or other source, and the race is walked over for, or no second horse is placed, the money is not given at all.

When the entrance money for a plate is advertised to be given to the owner of the second horse, and the plate is walked over for, or no second horse is placed, the entrance money is to be returned.

Dead Heats.

49. *When to be run over again.*—If for any plate or sweepstakes, not to be run in heats, the first two or more horses shall come in so near together that the Judge shall not be able to decide which won, those horses shall run for such prize over again, after the last race on the same day; the other horses which started are deemed losers, and are entitled to their respective places, as if the race had been finally determined the first time.

50. *Effect of Dividing after a Dead Heat.*—When horses run a dead heat for a sweepstakes or plate, and the parties agree to divide the stakes, such horses shall be liable to carry extra weight as winners of that race, and if there be any money for the second horse they divide that also.

51. *Dead Heat for Second Place.*—When horses run a dead heat for the second place, they divide any money that may be payable to the second horse; and if there be any money for the third, they divide that also; and if any of these horses run for a race in which there is a penalty for having received a certain amount of money as second horse, they shall be considered as having received only the amount of their respective shares.

When a dead heat is declared for the second place in any race, and the winner is disqualified too late for the race to be run again on the same day, the horses that ran the dead heat shall divide the race without either of them being called upon to walk over, and if any horse was placed fourth he shall receive any money there may have been for the third.

Heats.

52. When a race is run in heats, a horse, to win the prize, must be the actual winner of two heats, unless no horse appear against him, when one walk over is sufficient.

53. In running of heats, if it cannot be decided which horse is first, the heat goes for nothing, and they may all start again, except it be between two horses that had each won a heat.

54. When two horses have each won a heat, they only must start for a third, and the preference between them will be determined by it.

55. When a plate is won by two heats, the preference of the horses is determined by the places they get in the second heat.

56. Horses drawn before the plate is won are distanced.

57. No distance in the third heat.

58. No person shall start more than one horse of which he is the owner, either wholly or in part, and either in his own name or that of any other person, for any race for which heats are run.

Selling Races.

59. *How the Winner is to be Claimed.*—When it is made a condition of any plate or sweepstakes that the winner shall be sold for any given

sum, the owner of the second horse being first entitled, &c., no other person than one who ran a horse in the race shall be entitled to claim. The claim must be made to the Judge, the Clerk of the Scales, the Clerk of the Course, or one of the Stewards present, within a quarter of an hour after the race. The horse claimed shall not be delivered till he is paid for, and he must be paid for by ten o'clock at night on the day of the race, otherwise the party claiming shall not be entitled to demand the horse at any future period; but nevertheless, the owner of the winning horse may insist upon the claimant taking and paying for the horse claimed; but if the horse should subsequently be disqualified, the claimant or purchaser shall have the option of keeping it at the price of a beaten horse, or returning it immediately.

60. *Sales by Auction.*—When it is a condition of a selling race that the winner shall be put up to auction after the race, the half of any surplus which may thereby be obtained over and above the price for which the horse was entered to be sold shall be paid to the owner of the second horse, and this shall not invalidate the privilege of the second horse as to the prior claim of any beaten horse under Rule 61. If at any country meeting the winner of a selling race shall by the terms prescribed be sold by auction, and the moiety of the surplus be not paid to the owner of the second horse, the said winner shall be disqualified for being entered or for running in any race where the Newmarket rules of racing are in force.

61. *Claim of Beaten Horses.*—Any horse running for a selling stake or plate is liable to be claimed by the owner of any other horse in the race for the price for which he is entered to be sold, and the amount of the stake—the owner of the second horse to be first entitled to claim, and the others in the order in which their horses are placed, and the winner to have the last claim.

62. No person can claim more than one horse in the same race.

63. If two or more persons, equally entitled, wish to claim they shall draw lots for the priority.

Extra Weight and Allowances.

64. When it is a condition of any race that horses should carry extra weight for winning a certain number of prizes during the year, such winnings shall date from the 1st of January preceding, shall extend to the time of starting unless otherwise specified, and shall apply to all established races in any country.

No penalty shall be inflicted for running second in any race, save and except that horses, which have received 100 sovs. for being placed, may be debarred by the conditions of any particular race from receiving maiden allowances. No allowance shall be made for having been beaten a certain number of times.

65. *Not accumulative.*—Extra weights and allowances are not accumulative, unless so specified in the conditions.

66. *Do not apply to Matches, Hurdle Races, or Private Handicaps.*—Horses do not carry extra weight for winning a match, and are not entitled to allowance for having being beaten in a match.

The winner of a private handicap race shall be exempted from the penalty of carrying extra weights in all public handicaps, the terms of which impose on winners of handicaps certain penalties for winning after a specified date.

Note.—By a private handicap is meant one in which the weights are agreed upon among the parties to it, and which has not been publicly advertised previous to the engagement being made.

Winners of hurdle races are not considered winners in flat racing.

67. A horse walking over, or receiving forfeit except for a match, is deemed a winner.

68. In estimating the value of any prize no deduction shall be made, except of any sum or sums required by the conditions to be paid out of the stakes to the owners of any other horse or horses in the race. The entrance for a plate not to be deducted; and every prize, not in specie, shall be estimated at its advertised value in sovereigns, and if such value is not designated it shall be taken at the cost price.

Objections to Qualification.

69. *Examination of Mouth.*—When the age or qualification of a horse is objected to, either before or after running for any race, the Stewards, or those whom they may appoint, shall have power to order an examination of the horse's mouth by competent persons, and to call for all such evidence as they may require, and their decision shall be final, unless they shall sanction the removal of the question in dispute into a Court of Law.

Any person requiring a horse's mouth to be examined must pay the expenses of such examination, unless the horse is proved to be of the wrong age, in which case such expense shall be paid by the owner of the said horse.

70. *When Complaints must be made.*—All complaints of foul riding, or of horses not running the proper course, or of any other irregularities occurring in the race, must be made either by the owner, jockey, or groom of the horse, to one of the Stewards, to the Judge of the race, to the Clerk of the Course, or the Clerk of the Scales, within a quarter of an hour after the race.

As it is expedient that there should be a statute of limitations with respect to the time of lodging objections against winning horses, no complaints can be entertained after the conclusion of the Race Meeting, save and except charges of fraudulent entry, or of running horses under a false description, which may be investigated at any period within one year from the date of the offence.

71. *Objections to Qualification—when to be made.*—When the qualification of any horse is objected to by ten o'clock in the morning of the day of starting, the owner must produce a certificate, or other proper document, to the Steward or Clerk of the Course, or to the Keeper of the Match-book if the case happen at Newmarket, before the race is run, to prove the qualification of the horse; and if he shall start his horse without so doing, the prize shall be withheld for a period to be fixed upon by the Stewards, at the expiration of which time, if the qualification be not proved to the satisfaction of the Stewards, he shall not be entitled to the prize, though his horse shall have come in first, but it shall be given to the owner of the second horse. When the qualification of a horse is objected to after that time, the person making the objection must prove the disqualification.

72. *Presents to Judge, Starter, or Handicapper, not allowed.*—If it can be proved against any person that he has offered money before or after a race to any Judge, Starter, or Handicapper, or promised any part of the stake or prize, or any share or part of a bet, he shall be warned off the Course at Newmarket, and other places where these rules are in force; and any Judge, Starter, or Handicapper who shall, before or after a race, demand or receive money of any person, shall be warned off the Course at Newmarket, and other places where these rules are in force.

73. The Judge and the Starter cannot employ substitutes without the consent of the Stewards or their substitutes. A contested race cannot be decided if the Judge has vacated his box, unless a Steward, or an official person duly authorized, occupy it. A stranger cannot start the horses without the consent of the Stewards or their substitutes; in the event of

a violation of this rule, the heat is nullified and the race must be run over again without going to the scales.

74. Neither the programme nor the result of any flat race meeting in Great Britain shall be published in the Official Racing Calendar, unless the said meeting is advertised to be subject to the established rules of racing as settled by the Jockey Club.

Any horse running for a flat race on any course where the programme is not previously published in the Official Calendar, shall be disqualified from entering or running at any meeting where the established rules of racing are in force.

THE CUP AND WHIP.

The Cup.—The Cup may be challenged for on the Tuesday or Wednesday in the July Meeting in each year, to be run for over the B.C. on Thursday in the Houghton Meeting following by horses, &c., the property of Members of the Jockey Club or of the Rooms at Newmarket; four years old carrying 8st. 7lbs., five years old 9st. 1lb., six years old and aged, 9st. 4lbs. Each person at the time of challenging is to subscribe his name to a paper to be hung up in the Coffee-room at Newmarket, and deliver to the Keeper of the Match-book the name or description of the horse, &c., sealed up, which shall be kept till six o'clock on the Saturday evening of that week; and if not accepted, or only one challenger, to be returned unopened; but if accepted, or if more than one challenger, to be then opened and declared a match or sweepstakes of 200 sovs. each, play or pay. If the challenge be not accepted the Cup to be delivered to the Keeper of the Match-book in the Meeting ensuing the challenge, for the person who may become entitled to the same.

The Whip.—The Whip may be challenged for twice in each year, viz., on the Tuesday after the July Meeting, when the acceptance must be signified or the Whip resigned on the Tuesday following, or challenged for on Monday or Tuesday in the Second October Meeting, when the acceptance must be signified or the Whip resigned before the end of the same meeting. If challenged for and accepted in July, to be run for on the Tuesday in the Second October Meeting following; and if in the October, on the Thursday in the First Spring Meeting following, B.C. weight, 10st., and to stake 200 sovs. each, play or pay.

RULES AND ORDERS OF THE JOCKEY CLUB.

Respecting the Stewards.

1. MODE OF ANNUAL ELECTION.—The three Stewards of the Jockey Club shall be continued in their office till the next annual financial meeting (which takes place in the Craven) when the senior Steward shall vacate, after settling the accounts, made up to the 31st of December preceding, and shall then name a member of the Jockey Club to succeed him, subject to the approbation of the members of the Jockey Club then present, and at every subsequent financial meeting the senior Steward shall, in like manner, retire and propose his successor.

2. IN CASE OF DEATH OR RESIGNATION.—If any of the Stewards shall die or resign, the remaining Stewards may appoint a member of the Club to succeed the deceased or declining Steward, but such nomination shall be notified to the Club at the first general meeting, and if the appointment meets their approval, the said member shall remain in office until the expiration of his predecessor's time.

3. SUBSTITUTE FOR ABSENT STEWARDS.—When only one Steward is present, and neither of the absent Stewards shall have appointed a substitute, the member of the Jockey Club present who has last served the office shall serve *ex officio*.

4. THE STEWARDS HAVE POWER TO APPOINT OFFICERS.—The three Stewards shall have the power of appointing all the public officers and the servants of the Club; the Keeper of the Match-book to receive the stakes and collect the entrance-money, and all other funds belonging to the Jockey Club; and the Stewards shall produce an account of the funds and disbursements of the Club at the annual financial meeting, and they shall be responsible to the Club for the correctness of the annual accounts, and for all the money collected as belonging to the Jockey Club.

5. TO FIX TIME OF STARTING.—The Stewards shall fix the hour of starting for each race at or before nine o'clock in the evening preceding the day of running, and notice of the time of starting is to be fixed up in the Coffee-room immediately afterwards.

6. TO MANAGE THE COURSE AND EXERCISE-GROUND.—The Stewards have full power to make such regulations as they may think proper in regard to the Course and Exercising-grounds.

7. TO POSTPONE RACES.—The Stewards of the Jockey Club have the power, in cases of urgent necessity, of putting off the races from day to day until a Sunday intervenes.

8. TO SETTLE DISPUTES AT NEWMARKET.—All disputes relating to Newmarket shall be referred to the Stewards; if only two Stewards be present they shall fix upon a third person, being a member of the Club, in lieu of the absent Steward; but the Stewards, if they think fit, may call in any other members of the Jockey Club to their assistance, or may refer the case to a general meeting, if the importance or difficulty of the matter in dispute shall appear to them to require it. The witnesses examined shall be required to sign their evidence, and if either party desires to have a short-hand writer engaged to take down the evidence, the Stewards may (if they think proper) engage a writer at the expense of the person making the request.

9. MAY DECIDE CASES REFERRED TO THEM FROM OTHER PLACES.—If any dispute arising elsewhere shall be referred to the Stewards of the Jockey Club, and they shall think fit to take it into consideration, the matter must relate to horse-racing, and be sent to the Stewards of the Meeting where the matter in question occurred.

10. NOT TO DECIDE BETTING CASES.—The Jockey Club and the Stewards thereof take no cognizance of any disputes or claims with respect to bets.

11. MAY WARN OFF THE COURSE.—The Stewards have a discretionary power to warn any person off the race-course at Newmarket, or any premises belonging to the Jockey Club, and in case of such notice being disregarded, to take legal proceedings against the offenders.

12. ACT AT EPSOM AND ASCOT.—The Stewards of the Jockey Club are, *ex officio*, Stewards of Epsom and Ascot.

Respecting the Admission of New Members.

13. For the Jockey Club.—Ballots for the Jockey Club may take place in any of the Newmarket meetings. A candidate must be proposed and seconded by two members in a meeting previous to the ballot, or in case the ballot takes place in the Craven Meeting, notice of his being a candidate shall be given in the Sheet Calendar published next preceding that meeting, and also put up in the Coffee-room on the Monday in that meeting; and notice to be given in writing, and put up in the Coffee-room, on what day the ballot will take place, at least one day before the time of balloting. Nine members (at the least) shall ballot, and two black balls shall exclude.

Members of the Jockey Club being abroad for two or more whole years from the 1st of January, shall not be liable for their subscription during their absence.

14. For the New Rooms.—The ballot for members of the New Rooms may be in any of the six established Meetings at Newmarket. Each candidate must be proposed by a member of the Jockey Club, and his Christian and surname, and usual place of abode, with the name of the member proposing him, put up in the Dining and Card-rooms at Newmarket (or in such other place as the Stewards shall appoint) on the day preceding the ballot. The ballot shall be in the morning, between the hours of eleven and one; or in the afternoon, between the hours of four and six. Members of the Jockey Club only shall be allowed to ballot. Nine members (at least) shall ballot, and two black balls shall exclude. If eighteen members ballot, there must be three black balls to exclude.

15. A member of the Jockey Club, or of any of the Clubs in St. James's-street, known by the names of White's, Brooke's, and Boodle's, may be admitted a member of the New Rooms without ballot, by applying to Mr. Weatherby, keeper of the Match-book, and paying the same sum for his admission, and the same subscription, as are required of members chosen by ballot.

16. For the Coffee-Room.—The ballot for members of the Coffee-room shall be in the Coffee-room at Newmarket (or at such other place as the Stewards shall appoint) on any day in the present six established meetings, between the hours of eleven and one o'clock in the morning. Each candidate must be proposed by a member of the Jockey Club, and his Christian and surname, and usual place of abode, with the name of the member proposing him, be put up in the Coffee-room the day before the ballot. Members of the Jockey Club only can ballot. Nine members (at least) must ballot, and two black balls shall exclude.

17. Arrears of Subscription.—A person, though chosen, shall not be considered as a member of any of these Clubs until he shall have paid the usual sums for the admission and subscription of a new member. And the name of every member whose subscription shall be in arrear for one year shall be placed over the chimney-piece in the New Rooms and in the Coffee-room at Newmarket, in the Craven Meeting in each year. And if such arrear be not paid at the end of the following Spring Meeting, he shall cease to be a member, and shall not be again admitted as a member until his arrears be paid, and until he be again chosen by ballot.

18. The subscription to the New Rooms and Coffee-room, and all other charges, except the subscription to the Jockey Club, are paid half-yearly; the July Meeting to be included in either half-year.

19. Temporary Admission of Non-Members.—Any member of White's, Brooke's, and Boodle's (not being a member of the New Rooms) may be admitted to the New Rooms and Coffee-room for any one meeting, by applying to Mr. Weatherby, keeper of the Match-book, without any other charge than the payment of 2*l*. In the event of such person attending any other meeting in the course of the same year, he is to be considered as a member of the New Rooms, and liable to all the usual charges.

20. Election of Foreigners.—If any foreigner should be proposed at any time as a candidate for the New Rooms or Coffee-room, an immediate ballot may take place for such election, and all foreigners who are elected are liable only to the household expenses.

21. Admission to the Stands.—Gentlemen not members of the New Rooms or Coffee-room may be admitted to the Stands on Newmarket Heath on payment of a life subscription of 10*l*., provided that they are elected by ballot in the same manner as members of the Coffee-room, and that the number so admitted shall not exceed fifty.

Trials.

22. How to Engage the Ground.—The day, with respect to the engaging of the ground for trials, shall be divided into three periods; that is, previously to eight o'clock in the morning, from one to half-past three in the afternoon, and after half-past three in the afternoon, from the first day of the Craven Meeting to the end of the Houghton Meeting: during the rest of the year the first period extends to nine o'clock in the morning. No trainer shall have the ground for trying horses more than one morning and one portion of the afternoon in the same week; and trainers having less than ten horses shall be allowed to have the ground only for one period of time. A trainer not having more than five horses in training can only have his name down once at the same time; a trainer not having more than ten horses only twice; and a trainer with more than ten only three times.

Notice for engaging the ground shall, at least one day before the day it is used, be entered in a book to be kept for that purpose at the keeper of the Match-book's Office in Newmarket. And no notice or warning shall be deemed sufficient unless given as before directed.

Watching Trials.—If any person shall be detected in watching a trial, or shall be proved to have employed any person to watch a trial, he shall be served with a notice to keep off the heath; and if in the employment of any member of the Club, or of any groom or rider employed by any member of the Club, he shall be dismissed from his service, and not again employed.

The Cup and Whip.

23. The Cup.—The Cup may be challenged for on the Monday or Tuesday in the First Spring Meeting in each year; to be run for over the B. C., on Tuesday, in the First October Meeting following, by horses, &c., the property of Members of the Jockey Club; four year olds carrying 8st. 7lb., five year olds, 9st. 11lb., six year olds and aged, 9st. 4lb. Each person, at the time of challenging, is to subscribe his name to a paper to be hung up in the Coffee-room, at Newmarket, and deliver to the Keeper of the Match-book the name or description of the horse, &c., sealed up, which shall be kept till six o'clock on the Saturday evening of that week, and, if not accepted, or only one challenger, to be returned unopened; but if accepted, or if more than one challenger, to be then opened and declared a match, or sweepstakes of 200 sovs. each, play or pay. If the challenge be not accepted, the Cup to be delivered to the Keeper of the Match-book in the meeting ensuing the challenge, for the person who may become entitled to the same.

24. The Whip.—The Whip may be challenged for on the Monday or Tuesday in the First Spring, or on Monday or Tuesday in the Second October Meeting in each year, and the acceptance must be signified, or the Whip resigned, before the end of the same Meeting. If challenged for and accepted in the Spring, to be run for on the Tuesday in the Second October Meeting following; and if in the October, on the Thursday in the First Spring Meeting following B. C.; weight 10st. and to stake 200 sovs. each, play or pay.

Charges at Newmarket.

25. Discount on Forfeits.—Five pounds per cent. shall be allowed on all forfeits under 100*l*. declared to the keeper of the Match-book, at or before ten o'clock the evening before running; and if the forfeit amount to 100*l*. and upwards, 10*l*. per cent. shall be allowed. All forfeits shall be paid before twelve o'clock at night of the day fixed for the race, and on those forfeits which shall not be so paid, the deduction for the timely declaration of such forfeit shall not be allowed.

No horse shall be considered as struck out of his engagement, unless the owner, or some person authorised by him, shall give notice to the keeper of the Match-book, or to his clerk, or to one of the Stewards present.

26. One per cent. Plates.—The stake-holder shall deduct 1*l.* per cent. upon all sums won at Newmarket in sweepstakes and matches, where the clear sum to be received by the winner, over and above his own stake, shall amount to 100*l.* or more, (unless the winner shall object to allowing such deduction to be made) and the money so raised shall be disposed of in the following manner, viz.:

Two handicap plates of 100*l.* each, for three, four, five, six years old, and aged horses shall be annually given to be run for; one in the Second October Meeting, A.F., and the other in the Houghton Meeting, from the D.I. And if any horse-keeper shall object to contribute to the above fund, he will not be allowed to start a horse for either of those plates.

27. The Stake-holder.—The stake-holder at Newmarket is allowed to retain, out of the stakes in his hands, the following fees for his trouble, viz.:

For every match, one pound.

For every plate, one pound.

For every subscription or sweepstakes, where the whole stake exceeds 100*l.* and does not amount to 1000*l.*, two pounds.

For every sweepstakes where the whole stake amounts to 1000*l.* or upwards, five pounds.

[The charges for stake-holding at Ascot and Goodwood are the same as at Newmarket, with the exception of handicaps, for which the charge is one per cent.]

28. Fees for Nominations.—The keeper of the Match-book is entitled to charge a fee of 2s. 6d. on all nominations at Newmarket, if published in the Racing Calendar before running, but not on the entries which are made at Newmarket during the week of running.

29. Weighing Fees.—The weighing fee for plates and stakes is 10s. each horse, and 10s. extra for the winner; the former is to be paid to the keeper of the Match-book at the same time with the stakes, and for plates at the time of entry.

The keeper of the Match-book shall charge the proprietors of such horses as receive forfeit, and shall be excused from appearing, with the same fees for weights and scales as if they had come over the Course.

No weighing fee is charged for matches.

30. Heath Tax.—Towards defraying the expense of repairing the Course and Exercise-ground, one guinea annually shall be paid in respect of every horse that shall be trained or exercised, or that shall run any private trial or public race thereon. And the same shall be paid by the stable-keeper or servant having the care of such horse, and be charged by him to the owner of such horse. The Stewards shall make such orders as they think fit relative to the returns to be made by the stable-keepers or servants of the horses under their care, and if any such stable-keeper or servant shall fail to make a true return according to this order, he will be surcharged one guinea for each horse omitted in his list.

N. B.—At present all trainers are required to send in on the 1st of February a list of the horses which have been under their charge from the 1st of January, and on the 1st of every succeeding month a list of any additional horses that have been under their care since the preceding return.

31. Entrance to Plates.—The entrance to a plate at Newmarket should not exceed three sovereigns.

32. Plates walked over for.—When a plate given from the funds of the Jockey Club is walked over for, only half the amount is paid.

33. Payments to the Judge.—The winner of the 2000 gs. stakes shall pay 10*l.* to the Judge, of the Cesarewitch and Cambridgeshire stakes, 30*l.* each, of the Derby at Epsom 50*l.*, and of the Oaks, 30*l.*, in addition to his salary for judging other races at Epsom and Newmarket.

Relating to other matters not before specified.

34. Starting.—Every groom shall have his horse at the post, ready to start, at the time appointed by the Stewards; and every jockey is to be there, ready to start, at the same time. Every groom or jockey making default herein shall forfeit 5*l.*, to be paid to the keeper of the Match-book, and by him accounted for to the Stewards.

The person appointed to start the horses shall mark in his list the time when the horses in each race actually started; and if there have been any false starts, the first of them shall be considered as the time of starting for that race, and he shall make a report thereof to the keeper of the Match-book in the afternoon of the day the races are run. And if any delay shall have taken place, he shall state by whom, or by what cause, the delay was occasioned. He shall regulate his watch by the Coffee-room clock, which shall be considered as the true time for this purpose.

35. Races for Gentlemen Riders.—No races for gentlemen riders are allowed at Newmarket during the regular meeting without the sanction of the Stewards. and, that accorded, such races must be the first or last of the day.

36. Any member of a Racing Club riding in with the leading horses in a race shall be fined to the amount of 25*l.*, and all other persons to the amount of 5*l.*

37. Raising weights in Handicaps.—Rule 39, concerning Horse-racing in general, extends at Newmarket to the highest weight left in at ten o'clock the preceding evening in handicaps for plates and stakes where there is no declaration of forfeit, and where the weights are fixed the night before running.

38. If any trainer shall engage a man or boy actually serving in the stable without consent of his last employer, or shall harbour or employ any man or boy who has run away, and, after due warning having been published in the Racing Calendar, shall continue to retain such boy in his service, he shall not be allowed to train or run horses at Newmarket, or at other meetings where the Newmarket Rules are enforced.

No rule, or alteration of a rule of the Jockey Club, takes effect until it has been published in the Racing Calendar, unless specially ordered to the contrary at the time the said rule or alteration is adopted; and no new rule of the Jockey Club can be passed, and no rule be rescinded, without previous notice being given in the Sheet Racing Calendar, nor at any meeting at which less than nine members are present.

At a General Meeting of the Jockey Club, held at the New Rooms, Newmarket, on Wednesday in the July Meeting (1860), it was resolved—

"*That the Weights for the Derby, the Doncaster St. Leger, the* 2000 *gs., and Newmarket Stakes shall be—colts,* 8*st.* 10*lb., and fillies,* 8*st.* 5*lb.; and that in the Oaks and* 1000 *gs. Stakes the fillies shall carry* 8*st.* 10*lb. each.*"

At a General Meeting of the Club, held at Newmarket, on Wednesday in the Houghton Meeting (1860), it was resolved unanimously—

"That if it can be proved against any person that he has offered money before or after a race to any Judge, Starter, or Handicapper, or promised any part of the stake or prize, or any share or part of a bet, he shall be warned off the Course at Newmarket and other places where the Jockey Club Rules are in force."

The Chairman informed the Meeting that the Stewards had received a communication from the subscribers to the Town Race Fund, to the effect that they hoped to be able to give 200*l.* to be run for in 1861, besides the usual additions to the Newcastle Handicap and the Cambridgeshire Stakes; and that they were desirous of making this increase the means of extending the First October Meeting to four days, if approved by the Club.

Resolved unanimously—

"That the First October Meeting (1861) shall last four days; and that the 200 sovs. be added to a handicap on the last day, A. F."

All additions to, and alterations of, the Rules of Racing and of the Jockey Club adopted this year (1860), are incorporated in their proper place in the Rules, as given above.

RULES ON BETTING.

[In revising and newly arranging their Rules the Jockey Club have omitted all reference to Betting, of which they take no cognizance. For the convenience of those readers who are interested in the subject, we subjoin a copy of the Rules, as arranged by the Committee of the Subscription-rooms at Tattersall's and Newmarket.]

Rules on Betting.

1. In all bets there must be a possibility to win when the bet is made; "you cannot win when you cannot lose."

2. The interests of the bets are inseparable with the interest of the stakes, except when the winning horse is disqualified owing to a default in making stakes.

3. All double bets must be considered "play or pay."

4. Confirmed bets cannot be "off" except by mutual consent or by incidents hereafter mentioned, viz.—Firstly: Either of the Bettors may demand stakes to be made fourteen days before the race is run, upon proving to the Committee of the Rooms that he has just cause for so doing. *If ordered*, the bets must be covered on the comparing day, or sufficient security offered, and a person refusing to cover shall be expelled the Subscription Rooms at Tattersall's and Newmarket. Secondly: If a Bettor be absent on the day of running, and there is a just cause to presume that he intends to evade his engagements, a public declaration of the bet must be made in the Ring, a copy of which is to be posted up at the usual place one hour before the race is appointed to be run, and, in the event of no person of known respectability becoming responsible for the same, a written notice must be given to the Clerk of the Course, or to the Clerk of the Stakes, before the race is run, declaring the bet void.

5. All bets on matches and private sweepstakes depending between any two horses shall be void if those horses become the property of the same person, or of his avowed confederate, subsequently to the bets being made.

6. All bets between particular horses shall be void if neither of them win, unless agreed by the parties to the contrary.

7. If any bet shall be made from signal or indication after the race has been determined, such bets shall be considered fraudulent and void.

8. The person who lays the odds has a right to choose a horse in the field; when a person has chosen a horse, the field is what starts against him.

9. If odds are laid without mentioning the horse before the race is over, the bet must be determined by the state of the odds at the time of making it.

10. If a match or sweepstakes be made for any particular day in any race week, and the parties agree to change the day to any other in the same week, all bets must stand; but if the parties agree to run the race in a different week, or to make the slightest difference in the terms of the engagement, all bets made before the alteration are void.

11. Bets made on horses winning any number of races within the year shall be understood as meaning between the 1st January and 31st December.

12. If a bet is made between two horses in a match or sweepstakes with a forfeit affixed, say £100, h. ft., and both horses start, either party may declare forfeit, and the person making such a declaration would pay £50 if the other horse won, but would receive nothing in the event of his horse winning the race.

13. Bets are determined though the horse does not start, when the words "absolutely run or pay," or "play or pay," are made use of in betting.

14. Money given to have a bet laid shall not be returned, though the race be not run.

15. When the riders of any horses brought out to run for any race are called upon by the starter to take their places, all bets respecting such horses shall be "play or pay."

16. When horses run a dead heat for a plate or sweepstakes, and the owners agree to divide, all bets between such horses, or between either of them and the field, must be settled by the money betted being put together and divided between the parties in the *same proportion* as the stakes. If a bet be made on one of the horses that ran the dead heat against a beaten horse, he who backed the horse that ran the dead heat wins half his bet if his horse received half the prize; if the dead heat be the first event of a double bet, the bet is void unless one horse received above a moiety, which would constitute him a winner in a double event.

17. The following races shall be considered "play or pay:"—The Derby and Oaks, at Epsom; the St. Leger, at Doncaster; the Two Thousand Guineas, the One Thousand Guineas, the Cesarewitch, and Cambridgeshire, at Newmarket; the Ascot, Goodwood, and Doncaster Cups; and all Handicaps above £200 value, with two forfeits, the minor of which shall not be less than £5. And the Committees of Tattersall's and of the betting-room at Newmarket will take no cognizance of any disputes respecting "play or pay" bets on any other races, or of any bets made upon handicap races before the weights for such races are published.

18. If a declared defaulter does not satisfy the claims of his creditors within twelve months, he shall not be entitled to receive any debts which may be due to him for the race for which he was in default; but if his debts are paid within the prescribed time, viz., "one year" the Committee will support his just claims to receive payment from his debtors.

19. The stewards of races have no authority *ex officio* to take cognizance of any disputes or claims with respect to bets.

ADJUDGED CASES ON RACING.

CASE I.—*False Start for the Leger.*

DONCASTER, 1819.—St. Leger Stakes.

Antonio	1
Wrangler	2
Archibald	3

In consequence of a representation to the Stewards that several horses at the starting-post had not gone off with the rest, the above was in the first instance declared a false start—subject however to a reference; and a fresh race was run as follows:—

Sir Walter	1
Wrangler	2
Archibald	3

But the whole question was subsequently referred to the Stewards of the Jockey Club, who having examined Mr. Lockwood, the person appointed by the Stewards at Doncaster to start and judge the race, decided that the race should have been adjudged to Antonio, and consequently that the Doncaster Stewards should not have allowed a second race.

Signed (per order)

October, 1819. E. W.

CASE II.—*Disputed False Start.*

For a race in the Houghton Meeting at Newmarket, 1829, a filly turned round at starting, and was left behind. The start being disputed, the race was run over again, subject to an examination by the Stewards, with the circumstances of the first start. When this enquiry took place, it was satisfactorily proved that the starter gave the word "off," and did not call to the riders to come back. It was therefore determined that the first race was decisive.

CASE III.—*False Start at Newmarket.*

For a race in the Houghton Meeting at Newmarket, 1829, a filly turned round at starting, and was left behind. The start being disputed, the race was run over again, subject to an examination by the Stewards into the circumstances of the first start. When this enquiry took place, it was satisfactorily proved that the starter gave the word "Off," and did not call to the riders to come back; it was therefore determined that the first race was decisive. Suffolk Punch won the first race, Aranda won the second.

CASE IV.—*A Horse illegally allowed to start for a Fourth Heat.*

HOLDERNESS HUNT, 1838. The Scurry Stakes.

Mischief	0	0	0	1	1
Mr. Merryman	0	0	1	2	2
Slyfellow	1	2	0	3	3
Gargarine	2	1	dis.		

Gargarine came in first the third heat; but a cross having been proved against him, it was given to Mr. Merryman, who ran second; and as Gargarine had won the second heat and was subsequently disqualified, that heat was considered null and void; but according to the twelfth rule no other horses but Mr. Merryman and Slyfellow were qualified to start for a fourth heat; and Mischief illegally won the plate.

CASE V.—*A Horse Winning a Sweepstakes Twenty-three Guineas each Three Subscribers, can run for a Plate for Horses which never won Fifty Pounds.*

Whether a horse having won a sweepstakes of £23 each, three subscribers, is qualified to run for a £50 plate, expressed to be for horses that never won plate, match, or sweepstakes of that value.

[It was decided that it was the practice in estimating winnings to consider the clear sum gained only, and consequently to exempt the stake of the proprietor; the horse, therefore, which had won a sweepstakes of 46 gs. only—viz., two stakes of 23 gs. each, was not thereby disqualified for the £50 plate above mentioned.]

CASE VI.—*Second Money not to go to Winning Horse.*

The winner of a plate whose horse had distanced all the others, applied for the stakes or entrance-money which was advertised to be paid to the second best horse that won a clear heat. One of the distanced horses had won the first heat.

It was decided that the winning horse cannot be deemed the second horse, and therefore was not entitled to the stakes; and all the others being distanced, no other person could claim them.

CASE VII.—*No Second Horse, no Second Money.*

Blandford, 1822, for the Gold Cup, by subscribers of 10 sovs. each. It was a condition that the surplus should be paid to the owner of the second horse in specie. Brownlock walked over for the Cup, so that there was no second horse. The opinion of the Stewards of the Jockey Club was requested, as to who was entitled to the surplus. They gave it as their opinion that, there being no second horse, the surplus must be divided among the original subscribers to the Cup.

At Chelmsford, 1789, a Cup and Sweepstakes, £10 each, for horses, &c., that had never won.

Mr. Godfrey's Judgment	1
Mr. O'Kelly's Hunter	2
Mr. Tindall's Prince William	3

The prize was claimed by Mr. O'Kelly, on the ground that Judgment had received stakes for being second in the plate at Chelmsford the preceding year.

"The Stewards of the Jockey Club are of opinion that Judgment was not disqualified, and that the term winner applies only to the horse that beats all the rest.

Signed (per order) "EDWARD WEATHERBY."

CASE VIII.—*Three Year Olds Running for Four Year Old Stakes, &c.*

The King's Plate at Lewes, 1769, for six year old horses, 12st., four-mile heats, was won by Mr. Wildman's ch h Eclipse, 5 yrs., beating Kingston, 6 yrs.

The Duke of Rutland's Bonny Black, 4 yrs., won the Cup at Black Hambleton for five year old mares.

October, 1826, one-third subscription £25, for five year olds, to carry 8st. 8lb.; six, 9st.; and aged, 9st. 3lb. Lord Wharncliffe's El Dorado, 5 yrs., beat Lord Egremont's gr c Stumps, 4 yrs.

BEDFORD RACES, 1849.—Mr. Edward's Bedford, 3 yrs., won the Hunters' Stakes, carrying four year old weight.

CASE IX.—*A Horse not entitled Winning a Heat without objection, cures the defect.*

A, B and C run for a subscription the best of heats. A wins the first heat, B the second. C's rider, after saving his distance the second heat, dismounts between the distance-post and the end; but remounts, rides past the ending-post, and weighs as usual; starts, and wins the third heat, and

weighs, without any objection being made. A being second the third heat, in a short time afterwards demands the subscription, not knowing till then that C's rider had dismounted, and refuses to start for the fourth heat, which B and C run for, and C wins.

It was decided that, no objection having been made to C's starting for the third heat, he was entitled to the prize.

CASE X.—*Horse not Penalised if qualified at Time of Entering.*

The opinion of the Stewards of the Jockey Club was requested by the Stewards of Rochester and Chatham races, on the following case:

For the Chatham plate, the winner of a stake or plate in 1825, was to carry 7lbs. extra, and the question was, whether a filly who had won a plate subsequently to the entering for the Chatham plate, but previously to the running for it, was to carry 7lbs. extra. The Stewards of the Jockey Club gave it as their opinion, that she was not obliged to carry 7lbs. extra; and they stated that they were aware that conflicting opinions had been given on this question; but on mature consideration, they thought the better rule was, that a horse being duly qualified at the expiration of the time of naming or entering for a stake or plate, should not be affected, as to that stake or plate, by any subsequent event.

This decision has been confirmed by an opinion given on a similar case, transmitted to the Stewards of the Jockey Club, in 1832, from the Royal Caledonian Hunt Meeting.

CASE XI.—*Horse Taken Away; Jockey Short of Weight; Bridle not Allowed.*

BUXTON, 1825.—A Plate of £60.

Guy Faux	1 1
Miss Forester	2 2
Arachne	dis.

Arachne came in first for both heats; but her rider weighing after the first heat without his bridle was a trifle short of weight, and the filly had been incautiously led away. An objection was made, and she was allowed to start for the second heat, under protest, subject to a subsequent decision. It was adjudged that she was distanced.

An identical case happened at Doncaster, 1809, when the Duke of Hamilton's Petronius having won the third heat of the £100 plate for three and four year olds, was incautiously led away from the weighing-stand,—the jockey was a trifle short of weight, and the bridle was not allowed to be added.

CASE XII.—*Jockey Dropping Stirrup-leather after Passing Winning-post.*

A jockey of a winning horse, after passing the winning-post, loses his stirrup-leather and iron, which falls to the ground; it was handed to him by a person on the course before going to the scales to weigh. Query: Does the act of receiving the stirrup-leather and iron, and carrying the same to the scales, disqualify the horse rode by that jockey, although it was proved that he was the proper weight without the said stirrup-leather and iron?

"The Stewards of the Jockey Club are of opinion that the horse is not disqualified under the circumstances above stated.

"1837. (per order) "Signed E. WEATHERBY."

Grey colt Mercury, Curragh, September.

CASE XIII.—*In Making Stakes the Trainer considered as the Agent.*

West Kent Stakes—Chatham, 1842, the first day; Mr. Dockeray's f Dispatch wins a £50 plate; the second day Mr. Duppa (whose horses are trained by Mr. Dockeray) names Lyster for the West Kent Stakes. No race takes place, but Lyster walks over for the forfeits. Mr. Duppa not having paid his stake for Lyster, it is objected that Lyster is not entitled to receive the forfeits.

Mr. Dockeray contends that as the managers of the races held £50 of his money—viz., the winnings of Dispatch, he was entitled to consider that a sufficient payment of Mr. Duppa's stake.

It was decided that as Mr. Dockeray was the trainer of Mr. Duppa's horse Lyster, and thereby virtually his servant and agent, and as the managers of the races were in possession of a sufficient sum of money belonging to Mr. Dockeray to cover Lyster's stake, it was quite sufficient to meet the objection, and that Lyster was entitled to receive.

CASE XIV.—*Horse not considered a Winner if the Stake does not appear in the Official Calendar.*

TUNBRIDGE WELLS, 1838.—The Stewards' Stakes of £3 each, with £40 added; a winner in 1838 to carry 3lb.; twice, 5lb. extra.

Mr. Cassidy's f Maid of Hertford . .	2	1	2	1
Captain Pearson's g Munchausen . .	4	3	1	2
Mr. Shelly's Magnolia	1	2	3	3
Mr. Bacon's Elizabeth	3	4	4	0

An objection was made against Maid of Hertford, that she only carried 3lb. extra instead of 5lb., she having won a plate at Norwich, and the Hertfordshire Stakes, a handicap, at Hertford. Mr. Cassidy, in reply, stated that she had not won a plate at a public meeting, the Norwich Races being on the terms of private races; and secondly, that the Hertfordshire Stakes being a handicap, he conceived that handicaps and matches were always excused.

The Stewards of the Jockey Club decided in favour of the Maid of Hertford only carrying one extra penalty, in consequence of the Norwich Races not being advertised in the official *Racing Calendar*, coupled with the fact that the Norwich Plate was an illegal race, being under the value of £50; but the second plea was not tenable, inasmuch as winners of matches and handicaps are never excused from carrying extra weights unless so particularly specified.

CASE XV.—*Dead Heat—when to be run off.*

Two horses ran a dead heat at Newmarket, and the owners requested permission of the Stewards to run the race over again between two of the other races of the day. The Stewards directed that Rule 43 was imperative, and that the horses which had run the dead heat must run again half an hour before the last race of the day.

CASE XVI.—*Whether a Compromise was Forfeited by the Horse Omitting to Walk Over.*

Lord Grosvenor's Rosamond and Mr. Foley's Mistake were matched on the Tuesday for 200, h ft. On Monday Lord Grosvenor agreed with Mr. Fox on the part of Mr. Foley to pay the forfeit of the match on certain conditions, to which Mr. Fox agreed, and accepted the forfeit. Mistake did not walk over the course for the forfeit of the match on Tuesday.

Query: Is Lord Grosvenor obliged to pay the forfeit?

Referred to the Duke of Grafton, Lord Bolingbroke, and Sir C. Bunbury, Stewards; with the Duke of Ancaster, named by Lord Grosvenor, and Lord Farnham, by Mr. Fox, for their decision; who were of opinion that the agreement made between Lord Grosvenor and Mr. Fox on the Monday ought to stand.

CASE XVII.—*Jostling and Striking.*

[*The Duke of Grafton and Lord Grosvenor's decision on the match between Tuscan and Dilettanti.*]—It appeared in evidence that the rider of Tuscan, who came in first, jostled and crossed Dilettanti, whose rider struck him.

Judgment: "We are of opinion that Lord Claremont would have been entitled to the match if his rider had not lost all claim to it by striking Mr. Walker's rider before he passed the ending-post. We therefore think that both sides having forfeited, the match ought to be void."—October, 1778.

CASE XVIII.—*A Cross at Newmarket.*

NEWMARKET, 1831.—The Claret Stakes, 200, h ft.; the owner of the second horse to save his stake.

Amphiaraus	1

Captain Arthur, Augustus, Cetus, and Little Red Rover also started, but were not placed. St. Nicholas also started and came in first, but a cross having been complained of and established, he was disqualified, and the race was adjudged to Amphiaraus, the second horse; and no other horse being placed a question arose whose owner could claim to withdraw his stake.

CASE XIX.—*Crossing at York.*

For the County Cup at York, 1848.

Dough, 3 yrs, 6st. 11lb.	1
Miss Sarah, 6 yrs, 8st. 5lb.	2
Rowena, aged, 7st. 7lb.	3
Lecomte, 3 yrs, 7st. 5lb.	4

The horses came in as above, but on coming to scale, Flatman, the rider of Miss Sarah, complained that the rider of Dough crossed him. The rider of Rowena complained that both jockeys had crossed him.

This case was heard by the Stewards of York, who decided that Rowena was entitled to the race.

Remark: The most extraordinary decision in the annals of racing. It was admitted that Dough crossed and jostled Miss Sarah, driving her across the natural track which Rowena would have taken. So Miss Sarah was doubly punished; first she was ill treated by Dough, and then disqualified by the Stewards because she was driven out of her place without the slightest blame being attached to her jockey.

CASE XX.—*A Horse Scratched out of his Engagements to pay the Whole Stake.*

In the Bedford Stakes at Newmarket, October, 1847, Lord Spencer struck The Empress out of this race a short time before the races commenced; but the trainer not being aware of this circumstance started her.

A question arose as to whether Lord Spencer was liable to pay the whole stake, or only the forfeit.

The Stewards decided that he must pay the whole stake.

Admiral Rous remarks hereon: "With all due submission, I assert that this decision was in direct violation of racing law. Empress having been struck out was virtually defunct. If she had come in first, she would not have received the stakes: and if she had been backed at the post, the bets would have been null and void; she was therefore to be considered as an intruder, and liable to be fined £5 for galloping with the leading horses in a race."

CASE XXI.—*Misdescription Fatal.*

After the Goodwood Stakes, 1838, the owner of St. Luke, the second horse, objected to Loutherbourgh, as having been improperly entered, and described as a colt by Mameluke, his dam, foaled in 1828, by Smolensko, out of Miss Chance, by Trinidad, under which description he had run for a plate at Goodwood in the preceding year. It appeared that this colt had been described and entered in three two year old stakes as by Camel, out of Fanny, by Phantom, dam by Skim; and secondly, as Fanny, sister to Fashion, and had been disqualified from winning, owing to the misrepresentation. It appeared in evidence that he was properly described in the Goodwood Plate; and that if no objection was made to his age, the seventeenth rule could not be applied to the case, as the horse had started before.

The two year old stake won by Fanny was given up to the Duke of Richmond's Conciliation upwards of seven years after the event transpired, owing to the proof of Fanny being improperly named.

CASE XXII.—*Incorrect Nomination.*

The opinions of the stewards of the Jockey Club were asked on the following case, which had been decided by the Irish Jockey Club:—

The Earl of M. had declared the produce of Pasta covered by Drone, as a bay filly, then named Zelmyra. In the following month of January the name had been misprinted into Zulima, and Lord M. having another filly called Zulima, he wrote to name Zelmyra for the Steward's Stakes, as Zelmyra, sister to Argirio.

In 1839, Zelmyra, by Drone, out of Pasta, started for the Anglesea and another stake, but did not win. On Saturday, in the same meeting, she ran for the Stewards' Stakes, also as Zelmyra, but with sister to Argirio added. She was objected to, as Argirio was by Roller or Drone, out of Pasta; and the objection was confirmed.

A similar case occurred at Newmarket. A filly by Whalebone, out of Moses's dam, was entered as a sister to Moses, and disqualified, as Moses was got by Whalebone or Seymour.

CASE XXIII.—*Declining to receive Evidence on Mismomination.*

The following nomination was made for a Produce Sweepstakes at Ascot:—

"Lord Tavistock's sister to Benedick, covered by Middleton." There being two sisters to Benedick, the nomination was incomplete, according to the seventeenth rule. Lord Tavistock ascertained that the other sister to Benedick was sent abroad some time before the stake closed, and submitted that the circumstance sufficiently identified his nomination.

The Stewards of the Jockey Club declined to go into evidence of this nature, and decided that the nomination was invalid.

We append Admiral Rous's comment with our full assent:—"This is a very injudicious selection of an adjudged case. There was no reason why the Stewards should have declined receiving evidence, because it might have been proved that the sister to Benedick sent abroad was actually dead at the time the stake closed."

CASE XXIV.—*Similar Case—Evidence Received.*

A question was submitted to the Stewards of the Jockey Club in the Craven Meeting, 1840, as to the qualification of the Duke of Portland's Beiram colt to start for the £200 Stakes on Friday in that meeting, for which stakes he was entered as a b. c. by Beiram, dam by Reveller, out of Veil. Veil had produced two fillies by Reveller, one foaled in 1831, which was the dam of the Beiram colt; the other in 1832.

It was proved to the satisfaction of the Stewards that the latter mare was not living when the Beiram colt was born, and they therefore decided that the nomination was valid.

CASE XXV.—*Whether a Horse was Entered in Time, according to the Articles.*

HUNTINGDON, 1838.—It was advertised that "all horses, &c., named for the Cup Stakes, Sweepstakes, or plates, must be shown and entered before the clerk of the course on the Saturday, August 11th, preceding, at the Crown Inn, Huntingdon. Horses, &c., having run in the previous week at any meeting seventy miles from Huntingdon, are not required to be shown."

Romania, having run at Goodwood on Thursday, August 2nd, did not show at the time appointed, and ran for the Cup Stakes. Query: was Romania entitled to start, nine days having elapsed between her race at Goodwood and the day of entrance?

It was decided that Romania was entitled, she having run at Goodwood on the previous week to the day of entrance at Huntingdon.

Another objection was made to the horse Bravo starting for the plate, as he had not been shown on the preceding Saturday; but it appearing he was post-entered, it was decided he was eligible, post-entrance placing the horse on a different footing.

CASE XXVI.—*Two Horses Running for a Plate belonging to the Same Owner.*

At Canterbury Races, 1829, for the £100 given by the noblemen and gentlemen, Mr. Pearce's Guildford won the two first heats; but Mr. Mattam,

the owner of Moor Buzzard, claimed the plate, alleging that Guilford was disqualified, his owner having run two horses for a prize for which heats were run.

It was contended, on the part of Mr. Pearce—first, that this was not a plate; secondly, that no objection was made till after the jockeys were weighed and the horse led away.

The Stewards of the Jockey Club were of opinion that Moor Buzzard was entitled to the prize.

[The owner of Guilford was liable by Act of Parliament to the penalty of losing his horse, in addition to losing his plate.]—*Rous*, p. 96.

CASE XXVII.—*A Horse Disqualified for not having Made Stakes.*
WORKINGTON, 1830.—Sweepstakes £5 each, with £50 added; the second horse to receive £15.

Mr. Hodgson's George IV., 3 yrs . .	5	1	1
Mr. Jewell's b c by Frolic, 4 yrs . .	1	4	4
Mr. Simpson's Young Duchess, 6 yrs .	2	3	2
Mr. Thompson's b m by Toddy, aged .	4	2	3
Mr. Williamson's Push-forward, 3 yrs .	3	5	dr.

Three objections were made to the plate being paid to Mr. Hodgson—first, that Mr. Hodgson and Mr. Williamson were confederates, and therefore not entitled to start two horses in a race for which heats were run; secondly, that George the Fourth was more than three years old; thirdly, that Mr. Hodgson had not paid the stakes and entrance money according to the conditions of the race,—which fact was admitted in the statement sent to the Stewards of the Jockey Club.

The Stewards of the Jockey Club decided on the third objection that Mr. Hodgson was not entitled to the prize; and that no other horse having won two heats, the race was null and void; and that no person could claim the sweepstakes and the £50, or the £15 for second horse. The first two objections being questions of fact, the Stewards declined to take them into consideration.

The Stewards of the Jockey Club disqualified Mr. Ashmole's Smallhopes for the Ascot Cup, 1811, for having failed to make stakes. Janette, who was second, received the cup; Turtle the 20 gs. as second horse; and the bets were settled as if Smallhopes had been the winner.

LENGTHS OF COURSES.

ABERGAVENNY—Is one mile round, perfectly flat, with the exception of a slight hill half-way round of very gradual ascent and descent, with a good run in. The T.Y.C. is rather more than five furlongs.

ABINGDON—Is an oval, perfectly flat, and in length one mile and a quarter. The T.Y.C. is a measured three-quarters of a mile (portion of the oval) and having one turn or sweep on entering the straight run in.

AIRDRIE—Is an oval Course of about 7 furlongs in circumference, with about 250 yards of a straight run home. There is a slight fall along the west side, and a rise along the east immediately before the run home.

ASCOT HEATH—Is a circular Course, short of 2 miles by 66 yards; the first half of it is nearly on the descent, and the last half, which is called the Old Mile, is up hill the greater part of the way. The Swinley Course is the last mile and a half of the above. The New Mile is straight, and up hill all the way. The T.Y.C. is the last 5 furlongs and 136 yards of the New Mile.

AYR—Is a round flat Course of one mile and 330 yards, with a straight run in of a quarter of a mile.

BATH—is nearly an oval of one mile and a half, with a straight run in. The T.Y.C. is a straight half mile.

BEDFORD—Is a circular Course, with nearly a quarter of a mile straight run in; it is a mile and a half and 46 yards, a dead flat, and good turf. The T.Y.C. is the last half-mile.

BEVERLEY—Is an oval or rather egg-shaped Course of one mile, 3 furlongs, and 90 yards, with a straight run in of nearly half a mile. There is a gradual rise for the last quarter of a mile, but of late years the hill has been considerably cut away, so that it now forms a very excellent Course. The Kingston Course is about three-quarters of a mile, nearly straight; and the T.Y.C. is 4 furlongs, 105½ yards.

BOSTON—Is an oblong, perfectly level, 1192 yards round, with a straight run in of 300 yards.

BRIDGEND—Is situated on Ogmire Down, and is somewhat in the form of the figure 6. The circle is level; the straight run in slightly rising to the Stand. The T.Y.C. is 6 furlongs, and nearly straight. There are Courses of a mile, a mile and a half, and two miles. The soil is sandy.

BRIGHTON—The Old Course, on which the cup and stakes are run, forms a figure like three sides of a square, with very easy turns, and is one mile and three-quarters and 265 yards in length; the first quarter of a mile is level, with a slight dip at the end of it, the next half-mile is on the ascent, and from the Mile-post a descent until about one-third of a mile from the finish, where there is a sharp hill up to the Winning-post. The New Course is one mile and three-quarters and 144 yards, and is formed by starting from the Winning-chair, and running out about three-quarters of a mile from home to the right, round an elbow, and turning into the Old Course again, about mid-way between the T.Y.C. and the Mile-post. All the other Courses are now described according to their distances, as one mile, three-quarters of a mile, &c.

CAMBRIDGE—Is a circular Course of about a mile round. The T.Y.C. is three-quarters of a mile. The Course is quite flat, and the turns not at all sharp.

CANTERBURY—Is nearly a two-mile Course, with two or three hills, but not steep; a beautiful run in, and excellent turf. The Queen's plate Course is 1 mile, 7 furlongs, and 103 yards; the horses start at the Stand and run the back way to the distance, turning to the right on the top turn, and have a straight run in of nearly a mile. The Straight Mile is from the top turn in, and is 7 furlongs, 83 yards. The T.Y.C. is the last six furlongs of the Straight Mile. The Round Mile is 1 mile, 20 yards, starting at the Stand, running out at the Queen's plate Course nearly to the road, turning to the left, and entering it again on Oaks Hill, the last 750 yards being straight. The Mile and a Half Course is 1 mile, 4 furlongs, 10 yards, starting at the Stand, running out the Queen's plate Course to the dip, turning to the left, and entering the Straight Mile, about 1000 yards from home. The turns are all good, and all the Courses finish on the Straight Mile.

CARDIFF—Is nearly an oval Course of one mile and 52 yards, with a straight run in of a quarter of a mile, perfectly flat, over well-drained land, and the whole can be seen from the Stand.

CARLISLE.—The Course is oval, one mile and 90 yards round. The T.Y.C. is called "from the Style turn," and is about 6 furlongs; a straight run home of about 700 yards, with a gradual ascent after passing the Chair for about 200 or 250 yards.

CATTERICK BRIDGE.—The Course is an oval of one mile and 60 yards, almost flat; from the Catterick turn in is a little short of half a mile.

CHATHAM—Is one mile and one furlong. There is a straight run in of a quarter of a mile and 24 rods, which is flat; the opposite side of the Course, which is on lower ground, is also flat. The Course is in one field, and the horses are seen from the Judge's chair all the way round.

CHELMSFORD—Is a round or oval Course, short of 2 miles by about 30 yards, but made up 2 miles by starting between the Distance-post and the Winning-chair. The last quarter of a mile is a gradual rise. The Brentwood stakes Course, which is half a mile, and the Three-quarters of a Mile Course, are straight, as also the One-mile Course. The Course is now widened at the lower turn.

CHESTER—Is a flat circular Course of one mile and 44 yards. The T.Y.C. is three-quarters of a mile. From the Castle-pole, once round and in, is rather more than a mile and a quarter. Cup Course is about two miles and a quarter. The Grosvenor Course is about a mile and a quarter.

CHESTERFIELD—Is nearly circular, and about a mile and three-quarters round; the run in is about a quarter of a mile, straight, and rather on the ascent. The T.Y.C. is the last half-mile.

COVENTRY—Is an irregular oval of 1 mile, 1 furlong, 140 yards. The T.Y.C. is the last half-mile. Coventry Handicap Course is one mile and a half and 60 yards. The Hurdle Race Course is twice round, starting below the Winning-post. The run in is 520 yards straight. There is a gentle ascent at the T.Y.C.

CROXTON PARK.—The New Course is pear-shaped, 22 yards short of 2 miles; the run in is flat and perfectly straight for 840 yards. The Granby Course is about a mile and a half.

DERBY—Is an oval Course of 1 mile and 2 furlongs, perfectly flat, with easy turns. There is also a straight half-mile, which is the T.Y.C.

DONCASTER—Is a circular and nearly flat Course of about one mile, 7 furlongs, and 70 yards. The shorter Courses are portions of this circle. The T.Y.C is 7 furlongs, 214 yards. Red house in is 5 furlongs, 152 yards. The St. Leger Course is about one mile, 6 furlongs, and 132 yards. The Cup Course is 2 miles, 5 furlongs, 14 yards. The Fitzwilliam Course is one mile. The Hopeful Course is 5 furlongs. The Two-mile Course is two miles, 15 yards.

DEVON—Is a circular Course of about 5 furlongs.

DOWNHAM—Is nearly an oval Course of one mile.

DURHAM—Is an oval Course of nearly one mile of good sound old grass land. The T.Y.C. is three-quarters of a mile, flat, except a short dip in the middle. In running round there is an ascent up to the T.Y.C. starting-post.

EDINBURGH—Is nearly oval, measuring one mile and a quarter and 46 yards, with a nearly straight run in of half a mile, rising slightly from the distance. The T.Y.C, is the last half-mile.

EGHAM—On the Runnymede, is an oval Course, short of 2 miles by 60 yards, and nearly flat. The T.Y.C. is three-quarters of a mile.

EPSOM.—The Old Course, now seldom used, is 2 miles, of an irregular circular form, the first mile up hill. The late Derby Course is exactly a mile and a half, and somewhat in the form of a horse-shoe: the first three-quarters of a mile may be considered as straight running, the bend in the Course being very trifling, and the width very great; the next quarter of a mile is in a gradual turn; and the last half-mile straight. The first half-mile is on the ascent, the next third of a mile level, and the remainder is on the descent till within the distance, when the ground again rises. For the New Derby Course (first used in 1858) the horses start in front of the late Sir G. Heathcote's stables, and run into the Old Derby Course at the mile-post—this first half-mile is also on the ascent. The New T.Y.C. is 6 furlongs, and runs into the Old Course above the roads at the Walton turn; the old T.Y.C. or Woodcote Course is 6 furlongs also. The Metropolitan Course is 2 miles and a quarter; for this race the horses start at the Winning-chair and run the back way of the Derby Course as far as the road, when they turn to the right and go round the hill, coming into the Derby Course again about a mile from home. The Craven Course is one mile and a quarter. The half-mile Course is straight, and exactly half a mile.

GOODWOOD.—The Orange Course.—The horses start at the Orange-post on the Queen's plate Course, and run the Maidstone Course, a little short of three miles.

The Cup Course.—The horses start at the Cup-post, go out to the westward of the Clump, and return to the eastward of the Clump, two miles and a half.

T.Y.C.—Is the straight three-quarters of a mile, upon which all T.Y.C. races are to be run unless specified to the contrary.

Half a mile.—Is the last half mile of T.Y.C.

The Queen's Plate Course.—The horses start at the Charlton Down to the north-west of the Stand, run over to the east of the Clump, go to the outside circle of the hill, and return to the east of the Clump, about three miles and five furlongs.

One mile.—The horses to start at the mile-post, and run home to the westward of the Clump.

Once round.—The horses to start at the Winning-post, go out to the westward of the Clump, and return the same way.

One mile and a half—one mile and three-quarters—and two miles are to be run upon the Cup Course.

One mile and a quarter—upon the Craven Course.

HAMPTON—Is a flat oval Course, one mile and a half round. The New T.Y.C. is a few yards over half a mile, and is straight. The Surrey and Middlesex Stakes Course, and the Queen's Plate Course, two miles, start at the T.Y.C. go once round and in. The mile—three-quarters—and five furlongs Courses are portions of the same.

HARPENDEN—Is a two-mile Course. There are Courses of a mile and a mile and a distance. The T.Y.C. is five furlongs, and quite straight; the Course is about 25 yards wide.

HARTLEPOOL—Is an oval Course, flat, and one mile round, with a straight run in of two and a-half furlongs The T.Y.C. is six furlongs.

HEREFORD—Is an oval Course, perfectly flat, with easy turns, and a good width. It is a mile and a quarter round, with a straight run in of not more than a mile, situate about a quarter of a mile from the city.

THE HOO—Is about one mile and a-half round, the last half-mile straight.

HOYLAKE.—The New Course made by the Liverpool Hunt Club, is situate on the common, at Hoylake, in Cheshire, about seven miles from Birkenhead; it is pear-shaped, rather over a mile, almost flat, with a straight run in of a quarter of a mile, and with a slight gradual rise. The Course is railed round on both sides, and the turf is excellent.

HUNGERFORD—Is more than a mile round, and within a mile of the railway station.

HUNTINGDON—Is a round or oval Course, flat, short of two miles by a distance, with a straight run in of nearly half a mile.

IPSWICH—Is somewhat in the form of the capital letter D, made up two miles by starting at the Distance-post; the straight side, which is wider than the rest, and on which are both the Winning and Distance-post, is about three-quarters of a mile in length.

KELSO—Is an oval Course of exactly a mile and a quarter, with a straight run in of about half a mile up a slight ascent. There is a stone marking each quarter of a mile, so the shorter and longer Courses are exactly of stated distances. From the Stand, or anywhere inside the Course, to which people are admitted by tickets, the horses can be seen distinctly all the way round.

KNIGHTON—Is an oval Course of one mile. In the first half-mile there is an ascent for a short distance, succeeded by a gradual fall. The last half-mile is nearly level, with a straight run in of about 200 yards.

KNUTSFORD—Is an oval Course of one mile, with a straight run in of about 500 yards, and is nearly flat. The T.Y.C. is about five furlongs.

LANARK.—The Course is one mile, nearly circular, and quite level, with a straight run in of two furlongs and a half.

LEICESTER—Is rather oval in shape, a mile and 12 yards, nearly level, the straight run in is 540 yards in length, and flat. The T.Y.C. is half of the oval. It is half a mile from the town, on the London road. The Course has lately been considerably extended by taking in the adjacent field, by which the dip is avoided; the turf has been relaid, and the whole much widened, especially at the turns.

LENHAM—Is a circular Course of 6 furlongs, 110 yards, with a straight run in of 350 yards.

LEWES.—The Course is in the shape of a horse-shoe, at the extreme point of which is the Starting-post for two miles, the first half being a strong incline, then level for about three-quarters of a mile, afterwards dipping to the T.Y.C.; the latter, being rather more than half a mile from home, has a strong ascent for a considerable distance from the Starting-post, then level for two hundred yards, again a strong incline to opposite the Stand, finishing on the level. The New Course is about two miles and a-half, starting at the Stand. The mile—mile and a-half, &c., are parts of the Two-mile Course.

LICHFIELD—Is an oval of two miles, starting at the Distance-post, the first quarter of the Mile Course is down hill, and then a little give-and-take until the last quarter of the mile, which is nearly all up hill, and straight. The T.Y.C. is about half a mile, with one turn.

LINCOLN—Is a circular Course of one mile, 6 furlongs, and 23 yards. The top side of the Course, furthest from the Stand, has a strong hill for rather more than a quarter of a mile. The remaining parts of the Course are level, with a straight run in of nearly half a mile, perfectly flat. The T.Y.C. is nearly three-quarters of a mile. At the Spring Meeting the T.Y.C. is the straight half-mile. The remaining Courses are portions of the circle, and are the exact distances described.

LIVERPOOL—Is an oval course of a mile and a half; one side is gently declining, the other rising from the Canal side, where is the Starting-post for the Cup Course and the T.Y.C. There is a straight run in of about 1000 yards

LUDLOW—Is nearly circular, with very little rise or fall, except at the Butt turn, and not quite a mile and half round.

MALTON—Is an oval Course of a mile and a half round, nearly flat, and free from objectionable turns, with a straight run in of half a mile, over which the two-yrs. old races are usually run. There is also a T.Y.C. of three-quarters of a mile, now but little used. The Course is situate on the summit of Langton Wold, and is remarkable for its beautiful and picturesque scenery.

MANCHESTER (New Course)—Is a triangular Course of one mile and 20 yards, perfectly flat, excepting the straight run in of 700 yards, which has been laid to form a gentle ascent to the Winning-post. The T.Y.C is three-quarters of a mile. It is a large tract of meadow land called Castle Irwell Park, having a gravel bottom, with an alluvial deposit of soil at the top about four feet deep, which renders the turf excellent and the ground soon dry after rain. It is situated in an amphitheatre, being more than three-fourths surrounded by the river Irwell, the opposite sloping banks of which are covered with villas and gardens. Distance about two miles from Manchester.

MANSFIELD—Is a long oval Course of one mile and a quarter. The T.Y.C. is a straight half-mile.

MARLBOROUGH—Is a round Course of rather more than a mile; the last half-mile is up a slight hill.

MONMOUTH—Is a circular Course situated under the walls of the town, of a little more than six furlongs round, and is quite flat. The turns are all easy and the turf excellent.

MUSSELBURGH—Is in extent one mile, a quarter, and 46 yards, with nearly a straight run in of half a mile.

NEWCASTLE-UPON-TYNE—Is composed of four unequal sides, and nearly approaching to a triangle; the distance round or the North Derby Course (measured 20 feet from the inside of the ditch) is one mile, 6 furlongs, and 82 yards. The T.Y.C. is 6 furlongs, and the mile, two miles, and longer Courses are exactly of the stated distances. The Newcastle turn in is nearly one mile. There are hills in different parts, a straight running on the west side of 400 yards, on the south side of 543 yards, on the east side of 743 yards, and on the north, to the Winning-post, of 480 yards.

NEWMARKET.—N.B. 1760 yards are a mile; 240 yards are a distance; 220 yards are a furlong.

	Miles	Furlgs.	Yds.
The Beacon Course is	4	1	173
Round Course	3	4	139
Summer Course (last two miles of R.C.)	2	0	0
Last Three Miles of B.C.	3	0	74
Ditch in (from the Running-gap to the end of B.C.)	2	0	119
The last Mile and a Distance of B.C.	1	0	240
Ancaster Mile (last mile, straight)	1	0	18
Criterion, Rutland, and Granby Course (from the turn of the Lands in)	0	5	182
Audley End Course (from the starting-post of the T.Y.C. to the end of the B.C.)	1	7	56
Across the flat.	1	2	73
Rowley Mile (last mile of A.F.)	1	0	17
Ditch Mile (first mile of A.F.)	0	7	210
Abingdon Mile (on the Flat)	0	7	212
First half of Ab. M.	0	3	215
Last half of Ab. M.	0	3	217
Two Middle Miles of B.C.	1	7	158
Last Mile and a Half of T.M.M.	1	4	29
Two Yrs. old Course (on the Flat)	0	5	140
New Two Yrs. old Course (on the B.M.)	0	5	136
Last Half-mile of New T.Y.C.	0	4	0
Yearling Course (on the Flat)	0	2	52
New Yearling Course (from Starting-post of last half of Ab.M. to Winning-post of D.M.	0	2	138
Bunbury Mile (a straight mile, finishing at the end of R.C.)	0	7	196
Chesterfield Course (last half of B.M.)	0	3	212
Bretby Stakes Course (last three-quarters of R.M.)	0	6	0
Cesarewitch Course (from the Starting-post of T.M.M. to the end of the Flat)	2	2	28
Cambridgeshire Course (last mile and a distance, straight)	1	0	240
Suffolk Stakes Course (last mile and a half of R.C.)	1	4	2
Bedford Stakes Course (last five furlongs of A.F.)	0	5	0
From Starting-post of last half of Ab.M. to T.Y.C. Winning-post	0	1	143½
From Old Betting-post on Criterion Course to the end of B.C.	0	3	53

NEWTON—Is a triangular Course of about a mile and a quarter, with a strong hill, and straight flat run in of nearly half a mile. The Golborne, or Two-yrs. old Course, is the straight half-mile.

NORTHALLERTON—Is a triangular-shaped Course, of one mile round, having easy turns, with a straight run in, which is slightly on the rise. The T.Y.C. is three-quarters of a mile. The Course is situate close to the town, and there is a substantial Stand, from which the whole of the running may be seen.

NORTHAMPTON—Is an oval Course, one mile and a half and 180 yards round, with a hill half-way, and a straight run in of half a mile, which is the Two-yrs. old Course. The New Spencer Plate Course has been formed out of a paddock containing about five acres, and was purchased

by the Grand Stand Proprietors at a large outlay; it is perfectly straight, and enters the old Course at the Two-mile starting-posts and is about five furlongs in lengths. The paddock is used to walk the horses in when waiting for their respective races, and is entered by a private gateway. The Althorp Park Stakes Course is the last half-mile of the Spencer Plate Course. There is a good width up the ropes, and the turns are easy.

North Staffordshire (Stoke-upon-Trent)—Is nearly an oval Course of one mile and 20 yards, with a straight run in of upwards of a quarter of a mile. The T.Y.C. is three-quarters of a mile.

Nottingham—Is a long oval Course of one mile, one furlong, and 207 yards, with two straight sides of half a mile each. The turns at each end of the oval are extremely easy, with a slight incline. The Half-mile Course is quite level and straight. The T.Y.C. is six furlongs. The Course is situated at the foot of a hilly ridge of land, which commands a good view of the races from the start to the finish.

Odiham—Is of an oval shape, and about one mile and a quarter round. The T.Y.C. is about six furlongs. The Course is about a mile and a quarter from the town.

Oxford.—The Course is on Port Meadow, which is an area of 500 acres, half a mile from the city, and is a perfect level. The Two-mile Course is in the form of the figure of nine reversed, three-quarters of a mile being quite straight. The Mile Course is the loop of the same figure. The Three-quarters of a Mile Course is perfectly straight, and of great width. The T.Y.C. is a portion of the same straight Course.

Paisley.—Nearly square, with a little rising ground, one mile, 25 yards. The T.Y.C. is 6 furlongs.

Perth—Is over the North Inch. It is a right-handed Course, and almost entirely a dead flat, nearly oval, and not quite a mile and a third round.

Plymouth—Is nearly an oval, about one mile and a half, with a straight run in of about half a mile. The T.Y.C. is rather less than half a mile straight.

Pontefract.—The Course is in Pontefract Park, a magnificent piece of ground, containing upward of 300 acres, and in close proximity to the town. The Course is an oval one, free from objectionable turns, of excellent turf, of great width in every part, and two miles, 156 yards round. The last half-mile is slightly on the ascent. The Two yrs. old Course is three-quarters of a mile. There is a handsome and commodious Grand Stand, to which the British Telegraph Company's wires extend.

Radcliffe.—The Course is one mile round, oval, and nearly flat, 18 yards wide in the narrowest part, and entirely free from objectionable turns, with a straight run in of nearly 800 yards. The T.Y.C. is three-quarters of a mile. It is situate on the estate of the Earl of Wilton, and within twelve minutes' ride of Manchester by railway.

Reading—Is flat, 70 yards short of two miles, in shape nearly resembling a figure of 9, with a straight run in of 5 furlongs.

Richmond—Is an oval Course, measuring one mile and a half and 164 yards; there is a straight run in of half a mile. From the Grey stone it measures half a mile and 200 yards of straight running, rather against the hill, and finishing on the level, from the lime-kiln gate, three-quarters of a mile and 100 yards. There is a substantial stone-built Stand, from which the whole course is visible except about 100 yards.

Ripon—Is a course of two long sides, with oval turnings perfectly flat, and upwards of a mile round, with a straight run in of nearly half a mile. The T.Y.C. is nearly three-quarters of a mile. A Stand has lately been erected, from which the whole of the running can be seen. The Course is situate on the banks of the river Yore, about half a mile from the town.

Salisbury.—The Mile Course is straight and flat, with the exception of a rise for the first 50 yards. The T.Y.C. is the last three-quarters of this straight Course. For the Two-mile Course the horses start beyond the Winning-chair, run past the chair and the Stand, and diverge to the left from the straight Course, which they re-enter at the T.Y.C. starting post. The Queen's Plate Course is three miles.

Shrewsbury—Is rather an oval Course, of one mile and 185 yards, with a straight run in of nearly half a mile, and a little hill between the last turn and the distance. The New T.Y.C. is half a mile and 220 yards.

Southminster.—The Course is called the Lloyd's Stake Course, and is nearly round; twice round is about a mile and a quarter.

Stamford—Is a round or rather oval Course, with a straight run in of nearly half a mile; there are no sharp turns. This Course is flat, but there is a new straight mile, the first half of which is rather up hill till it joins the round Course, at the Easton turn. The Cup course, three times round, is exactly four miles. The Burghley Stakes Course is two miles, one quarter, and 146 yards, starting at the New mile Starting-post and going once round. The T.Y.C. is 5 furlongs. The St. Leger Course is about a mile and a quarter, starting at the Stamford corner of the course and running in. The Ketton Stakes Course is about a mile and three-quarters, starting at the Easton corner of the Course and going once round.

Stirling.—An oblong of one mile, 3 furlongs, 140 yards. The T.Y.C. is 4 furlongs, and the run in about 400 yards straight. There is a hill immediately before the run in, and another in a gradual turn after passing the Winning-post.

Stockbridge—Is nearly a round Course, somewhat hilly, the last three-quarters of a mile straight for the run in; and there is also a straight mile.

Stockton.—The Race Course is about a quarter of a mile from the town, on Mandale Bottoms; it is perfectly level, oblong in shape, the turf peaty and excellent, and one mile and 6 furlongs and 110 yards in length. The T.Y.C. is six furlongs, and nearly straight. This Course is remarkable for the fine prospect it commands of the Cleveland Mineral Hills.

Stourbridge—Is nearly an oval, something short of a mile; the first part from the Winning-chair is on a descent, then a flat for about 300 yards, up to a slight short hill opposite the Winning-chair; then a straight flat to the last turn; about the last quarter of a mile a good straight run in, with a gradual rise to the finish. It has a gravel bottom, which renders the turf excellent and the ground soon dry after rain.

Tenbury—Is about a mile and a quarter, with a little descent to the far side, then a gradual rise to the length, which is nearly 600 yards, straight and flat. The T.Y.C. is the last half-mile.

Thirsk.—The Course is elliptical and flat, 20 yards wide, and one mile, one furlong, 50 yards in length. The T.Y.C. is 4 furlongs, 132 yards, straight all the way from end to end. The turns are easy and unobjectionable, and the ground well levelled all round.

Totnes—Is an oval, three-quarters of a mile round, quite flat, with a straight run in of a quarter of a mile.

Walsall.—The Course is close to the town, and is oval, one mile less 20 yards. In the first part there is a stiff hill of about 300 yards, and about the same distance at the top is quite flat, after which it gently declines, with a straight run in, quite flat, for nearly half a mile.

Warwick—Is nearly circular, and the distance once round is one mile, six furlongs, and 60 yards. There is a strong hill about half a mile from the Starting-post. The Leamington Stakes Course is two miles and 44 yards. The T.Y.C. is a few yards short of 7 furlongs.

Wenlock.—The Course is an oval, about 100 yards short of a mile round, with a straight run in of 500 yards; after passing the Winning chair there is a down-hill turn, then flat along the bottom, with an up-hill turn home. The Course has lately been considerably widened and improved.

Weston-Zoyland—Is a dead flat, one mile in length, and is situated about three miles south-east of Bridgewater.

Weymouth—Is a round Course of one mile, quite flat, and excellent running ground, with a straight run in of about 500 yards.

WHITEHAVEN.—Is an oblong Course, a few yards short of a mile, with a straight run in of about 500 yards.

WINCHESTER.—The Course is two miles round, starting at the Winning-chair. There is a straight run in of about three-quarters of a mile, the first part of which is a strong hill.

WITHERNSEA.—The Course is situate on Mallam Carrs, about two miles from Withernsea, and is about one mile round, with a straight run in of about 400 yards. The T.Y.C. is about three-quarters of a mile, and is a portion of the Mile Course.

WOLVERHAMPTON.—The Course is of an oval shape, a mile and a quarter, the run is straight, and the T.Y.C. is a straight half-mile.

WORCESTER.—Is a dead flat, and of irregular shape. The Half-mile Course and the Five-furlongs Course are straight. The mile-and-quarter Course is a figure of 6, the first and last half-mile being straight. The Two Mile Course is a figure of 8, the last half mile straight.

WREXHAM.—The Course is circular, one mile round, with good give-and-take ground. The last quarter of a mile straight, with a slight rise. It is close to the railway, and is firm and good going. The T.Y.C. is a few yards more than half a mile.

YARMOUTH.—The Course once round is one mile, two furlongs, and 200 yards, perfectly level, and on a sandy soil. The T.Y.C. is 5 furlongs, 80 yards straight. The other Courses are portions of the whole round.

YORK.—The Race Course is about a mile from the city, on a place called Knavesmire; it is quite flat, rather oval in shape, and about two miles in length. The T.Y.C. is 5 furlongs and 44 yards. The Great Yorkshire Stakes Course is one mile and three-quarters. The Old and New Two-mile Courses are exactly two miles.

Jos. Jackson

Green



ST. GATIEN.

RAN A DEAD HEAT FOR THE DERBY, 1884. WINNER OF THE GOLD VASE AT ASCOT, 1884. AND THE TWO YEAR OLD PLATE AT MANCHESTER, 1883.

By Rotherhill — St. Editha. — Trained by R. Sherwood. — Ridden by C. Wood.

WINNERS OF THE GREAT RACES.

THE DERBY.

Year.	Owner.	Winner.	Subs.	Strs.	Jockey.
1780	Sir C. Bunbury ..	Diomed, by Florizel	36	9	S. Arnull.
1781	Mr. O'Kelly.....	Y. Eclipse, by Eclipse.....	35	15	Hindley.
1782	Lord Egremont ..	Assassin, by Sweetbriar....	35	13	S. Arnull.
1783	Mr. Parker.....	Saltram, by Eclipse.....	34	16	Hindley.
1784	Mr. O'Kelly.....	Serjeant, by Eclipse.....	30	11	J. Arnull.
1785	Lord Claremont..	Aimwell, by Marc Antony..	29	10	Hindley.
1786	Mr. Panton.....	Noble, by Highflyer	29	15	J. White.
1787	Lord Derby.....	Sir P. Teazle, by Highflyer	33	17	S. Arnull.
1788	Prince of Wales..	Sir Thomas, by Pontac	30	11	W. South.
1789	Duke of Bedford..	Skyscraper, by Highflyer...	30	11	Chifney, sn.
1790	Lord Grosvenor..	Rhadamanthus, by Justice..	32	10	J. Arnull.
1791	Duke of Bedford..	Eager, by Florizel	32	9	Stephenson.
1792	Lord Grosvenor..	John Bull, by Fortitude....	32	7	Buckle.
1793	Sir F. Poole.....	Waxy, by PotSos.....	50	13	Clift.
1794	Lord Grosvenor..	Daedalus, by Justice	49	4	Buckle.
1795	Sir F. Standish ..	Spread Eagle, by Volunteer	45	11	Wheatley.
1796	Sir F. Standish ..	Didelot, by Trumpeter.....	45	11	J. Arnull.
1797	Duke of Bedford..	c. s. to Pharamond, by Fidget	37	7	J. Singleton.
1798	Mr. Cookson.....	Sir Harry, by Sir Peter....	37	10	S. Arnull.
1799	Sir F. Standish ..	Archduke, by Sir Peter....	33	11	J. Arnull.
1800	Mr. Wilson	bChampion, by PotSos.....	33	13	Clift.
1801	Sir C. Bunbury ..	cEleanor, by Whiskey.....	31	1	Saunders.
1802	Duke of Grafton..	Tyrant, by PotSos	30	9	Buckle.
1803	Sir H. Williamson	Ditto, by Sir Peter.....	35	6	Clift.
1804	Lord Egremont ..	Hannibal, by Driver.....	33	8	W. Arnull.
1805	Lord Egremont ..	Card. Beaufort, by Gohanna	39	15	Fitzpatrick.
1806	Lord Foley.....	Paris, by Sir Peter.....	39	12	Shepherd.
1807	Lord Egremont ..	Election, by Gohanna.....	38	13	J. Arnull.
1808	Sir H. Williamson	Pan, by St. George	38	10	Collinson.
1809	Duke of Grafton..	Pope, by Waxy.....	45	10	Goodison.
1810	Duke of Grafton..	Whalebone, by Waxy.....	45	11	Clift.
1811	Sir J. Shelley....	Phantom, by Walton.....	48	16	Buckle.
1812	Mr. Ladbroke....	Octavius, by Orville	47	14	W. Arnull.
1813	Sir C. Bunbury ..	aSmolensko, by Sorcerer....	51	12	Goodison.
1814	Lord Stawell	Blucher, by Waxy	51	14	W. Arnull.
1815	Duke of Grafton..	Whisker, by Waxy	51	13	Goodison.
1816	Duke of York....	Prince Leopold, by Hedley.	51	11	Wheatley.
1817	Mr. Payne.....	Azor, by Selim	56	13	Robinson.
1818	Mr. Thornhill....	Sam, by Scud	56	16	S. Chifney.
1819	Duke of Portland.	Tiresias, by Soothsayer....	54	16	Clift.
1820	Mr. Thornhill....	Sailor, by Scud	52	15	S. Chifney.
1821	Mr. Hunter.....	Gustavus, by Election.....	54	13	S. Day.
1822	Duke of York....	Moses, by Seym. or Wh'lebn.	53	12	Goodison.
1823	Mr. Udny.....	Emilius, by Orville	60	11	Buckle.
1824	Sir J. Shelley....	Cedric, by Phantom	58	17	Robinson.
1825	Lord Jersey.....	Middleton, by Phantom....	58	18	Robinson.
1826	Lord Egremont ..	Lapdog, by Whalebone....	57	19	Dockeray.
1827	Lord Jersey.....	Mameluke, by Partisan	89	23	Robinson.
1828	Duke of Rutland..	aCadland, by Andrew	89	15	Robinson.
1829	Mr. Gratwicke...	Frederick, by Little John..	89	17	Forth.
1830	Mr. Chifney.....	Prism, by Emilius	89	23	S. Day.
1831	Lord Lowther	Spaniel, by Whalebone....	105	23	Wheatley.
1832	Mr. Ridsdale.....	St. Giles, by Tramp.....	101	22	Scott.
1833	Mr. Sadler.....	Dangerous, by Tramp.....	124	25	Chapple.
1834	Mr. Batson.....	Plenipotentiary, by Emilius	123	23	Conolly.
1835	Mr. Bowes	Mundig, by Catton.....	128	14	Scott.
1836	Lord Jersey.....	aBay Middleton, by Sultan..	128	21	Robinson.
1837	Lord Berners	Phosphorus, by Lamplighter	131	17	G. Edwards.
1838	Sir G. Heathcote.	Amato, by Velocipede	134	23	Chapple.
1839	Mr. W. Ridsdale..	Bloomsbury, by Mulatto....	143	21	Templeman.
1840	Mr. Robertson	Little Wonder, by Muley ..	144	17	Macdonald.
1841	Mr. Rawlinson ...	Coronation, by Sir Hercules	154	29	Conolly.
1842	Colonel Anson....	Attila, by Colwick	180	24	Scott.
1843	Mr. Bowes	aCotherstone, by Touchstone	155	23	Scott.
1844	Colonel Peel	Orlando, by Touchstone ..	153	29	Flatman.
1845	Mr. Gratwicke...	Merry Monarch, by Slane..	137	31	F. Bell.
1846	Mr. Gully	Pyrrhus the First, by Epirus	193	27	S. Day.
1847	Mr. Pedley.....	Cossack, by H. Platoff.....	188	32	Templeman.
1848	Lord Clifden.....	cSurplice, by Touchstone....	215	17	Templeman.
1849	Lord Eglinton....	cF. Dutchman, by Middleton	237	26	Marlow.
1850	Lord Zetland	cVoltigeur, by Voltaire.....	204	24	J. Marson.
1851	Sir J. Hawley....	Teddington, by Orlando....	192	33	J. Marson.
1852	Mr. Bowes	D. O'Rourke, by Birdcatcher	181	27	F. Butler.
1853	Mr. Bowes	acAustralian, by Melbourne.	195	28	F. Butler.
1854	Mr. Gully.....	Andover, by Bay Middleton	217	27	A. Day.
1855	Mr. Popham	Wild Dayrell, by Ion.....	191	12	Sherwood.
1856	Admiral Harcourt	Ellington, by F. Dutchman.	213	24	Aldcroft.
1857	Mr. W. I' Anson.	bBlink Bonny, by Melbourne	202	30	Charlton.
1858	Sir J. Hawley....	Beadsman, by Weatherbit ..	200	23	Wells.
1859	Sir J. Hawley....	Musjid, by Newminster....	246	30	Wells.
1860	Mr. Merry's.....	Thormanby, by Melbourne.	225	30	Custance.
1861	Colonel Towneley	Kettledrum, by Rataplan...	240	18	Bullock.

THE DERBY (*Continued*).

Year.	Owner.	Winner.	Subs.	Strs.	Jockey.
1862	Mr. Snewing	Caractacus, by Kingston ...	233	34	J. Parsons.
1863	Mr. R. C. Naylor.	aMacaroni, by Sweetmeat ...	255	31	Challoner.
1864	Mr. W. I'Anson ..	cBlair Athol, by Stockwell..	234	30	J. Snowden.
1865	Ct. F. de Lagrange	cGladiateur, by Monarque...	249	29	Grimshaw.
1866	Mr. Sutton	acLord Lyon, by Stockwell..	274	26	Custance.
1867	Mr. Chaplin.....	Hermit, by Newminster....	256	30	Daley.
1868	Sir J. Hawley....	Blue Gown, by Beadsman..	262	18	Wells.
1869	Mr. J. Johnstone.	aPretender, by Adventurer..	247	22	J. Osborne.
1870	Lord Falmouth...	Kingcraft, by King Tom....	252	15	T. French.
1871	Baron Rothschild.	Favonius, by Parmesan....	209	17	T. French.
1872	Mr. H. Savile....	Cremorne, by Parmesan....	191	23	Maidment.
1873	Mr. Merry.....	Doncaster, by Stockwell ...	201	12	Webb.
1874	Mr. Cartwright ..	G. Frederick, by Marsyas..	212	20	Custance.
1875	Prince Batthyany.	Galopin, by Vedette.....	199	18	Morris.
1876	Mr. A. Baltazzi ..	Kisber by Buccaneer.....	226	15	Maidment.
1877	Lord Falmouth...	cSilvio, by Blair Athol.....	245	17	F. Archer.
1878	Mr. Crawford....	Sefton, by Speculum	231	22	Constable.
1879	M. Acton.....	Sir Bevys, by Favonius....	280	23	Fordham.
1880	D. of Westminster	Bend Or, by Doncaster.....	257	19	F. Archer.
1881	Mr. Lorillard	cIroquois, by Leamington...	242	15	F. Archer.
1882	D. of Westminster	aShotover, by Hermit.....	197	14	T. Cannon.
1883	Sir F. Johnstone.	St. Blaise, by Hermit.....	215	11	C. Wood.
1884	Mr. J. Hammond, Sir J. Willoughby	St. Gatien, Harvester, dead heat.....	189	15	C. Wood. S. Loates.
1885	Lord Hastings...	cMelton, by Master Kildare..	189	12	F. Archer.

THE OAKS.

Year.	Owner.	Winner.	Subs.	Strs.	Jockey.
1779	Ld. Derby.....	Bridget, by Herod.....	17	12	Goodison.
1780	Mr. Douglas.....	Teetotum, by Match 'em ...	17	11	—
1781	Ld. Grosvenor	Faith, by Herod	16	6	—
1782	Ld. Grosvenor ...	Ceres, by Sweet William ..	22	12	Chifney, sen.
1783	Ld. Grosvenor ...	Md. of the Oaks, by Herod..	22	10	Chifney, sen.
1784	Mr. Burton.....	Stella, by Plunder	21	10	C. Hindley.
1785	Ld. Clermont....	Trifle, by Justice.....	24	8	J. Bird.
1786	Sir F. Standish...	Perdita filly, by Tandem...	24	13	J. Edwards
1787	Mr. Vernon.....	Annette, by Eclipse	24	8	Fitzpatrick.
1788	Ld. Egremont....	Nightshade, by PotSos.....	18	7	Fitzpatrick.
1789	Ld. Egremont....	Tag, by Trentham	18	7	Chifney, sen.
1790	D. of Bedford....	Hyppolita, by Mercury....	18	12	Chifney, sen.
1791	D. of Bedford	Portia, by Volunteer	38	9	J. Singleton.
1792	Ld. Clermont	Violante, by Highflyer	38	11	C. Hindley.
1793	D. of Bedford	Cœlia, by Volunteer	37	10	J. Singleton.
1794	Ld. Derby.....	Hermione, by Sir Peter	31	8	S. Arnull.
1795	Ld. Egremont....	Platina, by Mercury	42	11	Fitzpatrick.
1796	Sir F. Standish...	Parasote, by Sir Peter	42	13	J. Arnull.
1797	Ld. Grosvenor ..	Niké, by Alexander.....	31	5	Buckle.
1798	Mr. Durand.....	Bellissima, by Phenomenon	31	7	Buckle.
1799	Ld. Grosvenor ...	Bellina, by Rockingham,...	24	4	Buckle.
1800	Ld. Egremont....	Ephemera, by Woodpecker	24	8	Fitzpatrick.
1801	Sir C. Bunbury...	cEleanor, by Whiskey	18	6	Saunders.
1802	Mr. Wastell.....	Scotia, by Delpini	17	6	Buckle.
1803	Sir T. Gascoigne..	Theophania, by Delpini....	24	7	Buckle.
1804	D. of Grafton	Pelisse, by Whiskey	23	8	Clift.
1805	Ld. Grosvenor....	Meteora, by Meteor.....	27	8	Buckle.
1806	Mr. Craven.....	Bronze, by Buzzard.....	27	12	Edwards.
1807	Gen. Grosvenor ..	Briseis, by Beningbrough ..	31	13	S. Chifney
1808	D. of Grafton	Morel, by Sorcerer.....	31	10	Clift.
1809	Gen. Gower.....	Md. of Orleans, by Sorcerer	33	11	J. Moss.
1810	Sir W. Gerard....	Oriana, by Beningbrough ..	33	11	W. Peirse.
1811	D. of Rutland	Sorcery, by Sorcerer	40	12	Chifney.
1812	Mr. Hewett.....	Manuella, by Dick Andrews	40	12	W. Peirse.
1813	D. of Grafton	Music, by Waxy.....	44	9	Goodison.
1814	D. of Rutland....	Medora, by Selim.....	44	9	Barnard.
1815	D. of Grafton	Minuet, by Waxy.....	48	11	T. Goodison.
1816	Gen. Gower.....	Landscape, by Rubens.....	48	11	S. Chifney.
1817	Mr. Watson.....	bNeva, by Cervantes.....	47	11	Buckle.
1818	Mr. Udny.....	bCorinne, by Waxy.....	47	10	Buckle.
1819	Mr. Thornhill....	Shoveller, by Scud.....	39	10	S. Chifney.
1820	Ld. Egremont....	Caroline, by Whalebone ..	39	13	H. Edwards.
1821	Ld. Exeter	Augusta, by Woful.....	43	7	J. Robinson.
1822	D. of Grafton	aPastille, by Rubens.....	42	10	H. Edwards.
1823	D. of Grafton	bZinc, by Woful.....	43	10	Buckle.
1824	Ld. Jersey.....	bCobweb, by Phantom.....	41	15	J. Robinson.

Those horses marked (*a*) also won the Two Thousand, (*b*) the Oaks, and (*c*) the St. Leger.

THE OAKS (*Continued*).

Year.	Owner.	Winner.	Subs.	Strs.	Jockey.
1825	Gen. Grosvenor..	Wings, by The Flyer.....	50	10	S. Chifney.
1826	Mr. Forth.....	Lilias, by Interpreter.....	49	15	Lye.
1827	D. of Richmond..	Gulnare, by Smolensko....	79	19	F. Boyce.
1828	D. of Grafton	Turquoise, by Selim.....	78	14	J. B. Day.
1829	Ld. Exeter	Green Mantle, by Sultan ..	77	14	Dockeray.
1830	Mr. Stonehewer..	Variation, by Bustard.....	77	18	G. Edwards.
1831	D. of Grafton	Oxygen, by Emilius.....	86	21	J. B. Day.
1832	Ld. Exeter	*b*Galata, by Sultan.....	83	19	Conolly.
1833	Sir M. Wood	Vespa, by Muley	97	19	Chapple.
1834	Mr. Cosby.....	Pussy, by Pollio	95	15	J. B. Day.
1835	Mr. Mostyn.....	*d*Q. of Trumps, by Velocipede	98	10	Lye.
1836	Mr. Scott.....	Cyprian, by Partisan	98	12	Scott.
1837	M. Powlett.....	Miss Letty, by Priam.....	92	13	J. Holmes.
1838	Ld. Chesterfield..	Industry by Priam	98	16	Scott.
1839	Mr. F. Craven....	Deception, by Defence	95	13	J. B. Day.
1840	Ld. G. Bentinck ..	*ab*Crucifix, by Priam	103	15	J. B. Day.
1841	Ld. Westminster..	Ghuznee, by Pantaloon	118	22	Scott.
1842	Mr. G. Dawson ..	Our Nell, by Bran	151	16	Lye.
1843	Mr. Ford.....	Poison, by Plenipotentiary..	91	23	F. Butler.
1844	Col. Anson	The Princess, by Slane....	117	25	F. Butler.
1845	D. of Richmond..	Refraction, by Glaucus	128	21	H. Bell.
1846	Mr. Gully.....	*b*Mendicant, by Touchstone..	140	24	S. Day.
1847	Sir J. Hawley....	Miami, by Venison.....	152	23	Templeman.
1848	Mr. H. Hill	Cymba, by Melbourne.....	152	26	Templeman.
1849	Ld. Chesterfield..	Lady Evelyn, by Don John	172	15	F. Butler.
1850	Mr. Hobson.....	Rhedycina, by Wintonian..	128	15	F. Butler.
1851	Ld. Stanley..	Iris, by Ithuriel	131	15	F. Butler.
1852	Mr. J. Scott.....	Songstress, by I. Birdcatcher	123	14	F. Butler.
1853	Mr. Wauchope ..	Cath. Hayes, by Lanercost..	141	17	Marlow.
1854	Mr. W. Cookson..	Mincemeat, by Sweatmeat ..	156	15	Charlton.
1855	Mr. R. Read.....	Marchioness, by Melbourne	162	11	Templeman.
1856	Mr. H. Hill.....	Mincepie, by Sweatmeat ...	136	10	A. Day.
1857	Mr. W. I'Anson..	*c*Blink Bonny, by Melbourne	130	13	Charlton.
1858	Mr. Gratwicke ...	*b* Governess, by Chatham...	152	13	Ashmall.
1859	Ld. Londesboro'..	Summerside, by W. Australn	168	15	G. Fordham.
1860	Mr. Eastwood.. ..	Butterfly by Turnus.....	158	13	J. Snowden.
1861	Mr. J. Saxon	B. Duchess, by F. Dutchman	174	17	L. Snowden.
1862	Mr. Naylor	Feu de Joie, by Longbow..	154	19	T. Chaloner.
1863	Ld. Falmouth....	Queen Bertha, by Kingston	187	20	Aldcroft.
1864	Ct. Lagrange	Fille de l'Air, by F a Ballagh	188	19	A. Edwards.
1865	Mr. W. Graham ..	Regalia, by Stockwell.....	197	18	Norman.
1866	Mr. Dunbar.....	Tormentor, by King Tom..	175	17	J. Mann.
1867	Baron Rothschild..	Hippia, by King Tom.....	206	8	J. Daley.
1868	Mr. W. Graham ..	*b* Formosa, by Buccaneer...	215	9	Fordham.
1869	Sir F. Johnstone..	Brigantine, by Buccaneer ..	181	15	T. Cannon.
1870	Mr. W. Graham..	Gamos, by Saunterer.....	187	7	Fordham.
1871	Baron Rothschild..	*b d*Hannah, by King Tom	175	9	Maidment.
1872	Mr. Lefevre..	*b*Reine, by Monarque.....	170	17	Fordham.
1873	Mr. Merry.....	*d*Marie Stuart, by S. Chief..	138	18	T. Cannon.
1874	Mr. Launde.....	*bd*Apology, by Adventurer..	182	11	J. Osborne.
1875	Ld. Falmouth....	*b*Spinaway, by Macaroni....	128	7	F. Archer.
1876	M. Lupin	Enguerrande, by Vermout..	164	14	Hudson.
1877	Mr. Pulteney.....	Placida, by Lord Lyon	177	9	H. Jeffery.
1878	Ld. Falmouth	*d*Jannette, by Lord Clifden..	212	8	F. Archer.
1879	Ld. Falmouth....	Wl. of Fort. by Adventurer	189	8	F. Archer.
1880	Mr. Perkin	Jenny Howlet, by The Palmer	187	13	J. Snowden.
1881	Mr. Crawford....	*b* Thebais, by Hermit.....	182	12	Fordham.
1882	Ld. Stamford	Geheimniss, by Rosicrucian	150	5	T. Cannon.
1883	Ld. Rosebery....	Bonny Jean, by Macaroni ..	145	14	Watts.
1884	Mr. Abington.....	Busybody, by Petrarch.....	148	9	T. Cannon.
1885	Ld. Cadogan	Lonely, by Hermit.....	145	10	F. Archer.

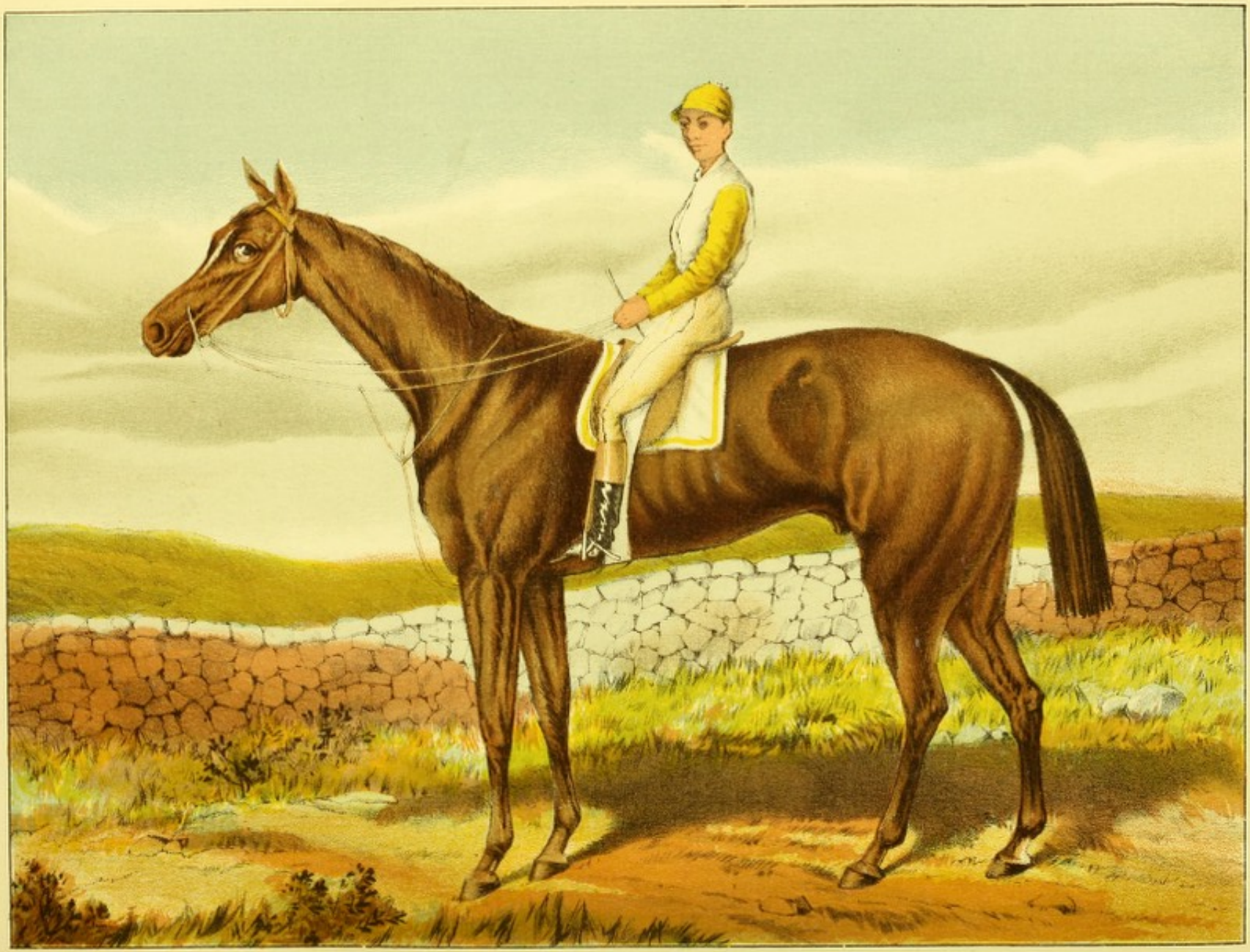
THE ST. LEGER.

Year.	Owner.	Winner.	Subs.	Strs.	Jockey.
1776	Ld. Rockingham..	Allabaculia, by Sampson...	6	5	Singleton.
1777	Mr. Sotheron.....	Bourbon, by Le Sang.....	12	10	J. Cade.
1778	Sir T. Gascoigne.	Hollandaise, by Match'em..	16	8	G. Hearon.
1779	Mr. Stapleton.....	Tommy, by Wildair.....	15	10	G. Lowry.
1780	Mr. Bethell.....	Ruler, by Young Marske...	17	7	Mangle.
1781	Col. Radcliffe....	Serina, by Goldfinder.....	13	9	Forster.
1782	Mr. Pratt.....	Imperatrix, by Alfred.....	9	5	Searle.
1783	Sir J. L. Kaye...	Phenomenon, by Herod....	10	4	Hall.
1784	Mr. Coates.....	Omphale, by Highflyer	12	7	Kirkton.
1785	Mr. Hill.....	Cowslip, by Highflyer.....	5	4	Searle.
1786	Lord A. Hamilton	Paragon, by Paymaster....	14	8	Mangle.
1787	Lord A. Hamilton	Spadille, by Highflyer.....	9	6	Mangle.
1788	Lord A. Hamilton	Young Flora, by Highflyer..	10	5	Mangle.
1789	Lord Fitzwilliam..	Pewet, by Tandem	9	6	Mangle.
1790	Mr. Dealtry.....	Ambidexter, by Phenomenon	15	8	Searle.
1791	Mr. Hutchinson..	Yg. Traveller, by K. Fergus	14	8	Jackson.
1792	Lord A. Hamilton	Tartar, by Florizel.....	22	11	Mangle.
1793	Mr. Clifton.....	Ninety-three, by Florizel...	16	8	Peirse.
1794	Mr. Hutchinson..	Beningbrough, by K. Fergus	19	8	Jackson.
1795	Sir C. Turner....	Hambletonian, by K Fergus	12	5	Boyes.

Horses marked (*a*) also won the Two Thousand, (*b*) the One Thousand, (*c*) the Derby, (*d*) the Leger.

THE ST. LEGER (*Continued*).

Year.	Owner.	Winner.	Subs.	Strs.	Jockey.
1796	Mr. Cookson.....	Ambrosio, by Sir Peter....	15	7	Jackson.
1797	Mr. G. Crompton	Lounger, by Drone.....	12	8	Shepherd.
1798	Sir T. Gascoigne.	Symmetry, by Delpini.....	14	10	Jackson.
1799	Sir H. T. Vane..	Cockfighter, by Overton...	12	7	Field.
1800	Mr. Wilson.....	Champion, by Pot8os.....	17	10	Buckle.
1801	Mr. G. Crompton	Quiz, by Buzzard.....	11	8	Shepherd.
1802	Lord Fitzwilliam.	Orville, by Beningbrough..	15	7	Singleton, j.
1803	Lord Strathmore..	Remembrancer, by Pipator.	23	8	B. Smith.
1804	Mr. Mellish.....	Sancho, by Don Quixote...	24	11	Buckle.
1805	Mr. Mellish.....	Staveley, by Shuttle	27	10	Jackson.
1806	Mr. Clifton.....	Fyldener, by Sir Peter.....	39	15	Carr.
1807	Lord Fitzwilliam.	Paulina, by Sir Peter.....	41	16	Clift.
1808	Duke of Hamilton	Petronius, by Sir Peter....	28	12	B. Smith.
1809	Duke of Hamilton	Ashton, by Walnut.....	51	14	B. Smith.
1810	Duke of Leeds...	Octavian, by Stripling.....	40	8	Clift.
1811	Mr. Gascoigne...	Soothsayer, by Sorcerer	63	24	B. Smith.
1812	Mr. Rob.....	Ottrington, by Golumpus ..	57	24	Johnson.
1813	Mr. Watt.....	Altisidora, by Dick Andrews	50	17	Jackson.
1814	Duke of Hamilton	William, by Governor	53	12	Shepherd.
1815	Sir W. Maxwell..	Filho da Puta, by Haphazard	59	15	Jackson.
1816	Sir B. R. Graham	Duchess, by Cardinal York.	46	13	B. Smith.
1817	Mr. Peirse	Ebor, by Orville.....	52	18	Johnson.
1818	Mr. Peirse	Reveller, by Comus.....	51	21	Johnson.
1819	Mr. Ferguson....	Antonio, by Octavian.....	50	14	Nicholson.
1820	Sir E. Smith.....	St. Patrick, by Walton....	72	27	J. Johnson.
1821	Mr. T. O. Powlett	Jack Spigot, by Ardrossan..	49	13	W. Scott.
1822	Mr. Petre.....	Theodore, by Woful.....	73	23	Jackson.
1823	Mr. Watt.....	Barefoot, by Tramp.....	84	12	Goodison.
1824	Mr. Gascoigne...	Jerry, by Smolensko.....	77	23	B. Smith.
1825	Mr. Watt.....	Memnon, by Whisker.....	88	30	W. Scott.
1826	Ld. Scarborough..	Tarrare, by Catton.....	95	27	Nelson.
1827	Mr. Petre.....	Matilda, by Comus.....	90	26	J. Robinson.
1828	Mr. Petre.....	The Colonel, by Whisker..	80	19	W. Scott.
1829	Mr. Petre.....	Rowton, by Ossian.....	97	19	W. Scott.
1830	Mr. Beardsworth	Birmingham, by Filho da Puta	68	28	P. Conolly.
1831	Lord Cleveland ..	Chorister, by Lottery.....	86	24	J. B. Day.
1832	Mr. Gully.....	Margrave, by Muley.....	73	17	J. Robinson.
1833	Mr. Watt.....	Rockingham, by H. Clinker	75	20	Darling.
1834	Ld. Westminster.	Touchstone, by Camel.....	71	11	Calloway
1835	Mr. Mostyn	Trumps, by Velocipede....	67	11	Lye.
1836	Lord Lichfield....	Elis, by Langar.....	75	14	J. Day.
1837	Mr. Greville.....	Mango, by Emilius.....	60	13	S. Day, jun.
1838	Lord Chesterfield.	D Jon., by Tramp (Waverley)	66	7	W. Scott.
1839	Major Yarburgh..	Charles XII., by Voltaire..	107	14	W. Scott.
1840	Ld. Westminster.	Launcelot, by Camel	112	11	W. Scott.
1841	Ld. Westminster.	Satirist, by Pantaloon.....	135	11	W. Scott.
1842	Lord Eglinton....	Blue Bonnet, by Touchstone	133	17	Lye.
1843	Mr. S. Wrather..	Nutwith, by Tomboy.....	127	9	J. Marson.
1844	Mr. E. J. Irwin..	Foig-a-Ballagh, by Hercules	108	9	H. Bell.
1845	Mr. Watt.....	The Baron, by Birdcatcher.	101	15	F. Butler.
1846	Mr. W. Scott....	Sir Ss. Sykes, by Melbourne	149	12	W. Scott.
1847	Lord Eglinton....	Van Tromp, by Lanercost..	145	8	J. Marson.
1848	Lord Clifden.....	Surplice, by Touchstone...	132	9	Flatman.
1849	Lord Eglinton....	F Dutchman, by B Middleton	140	10	Marlow.
1850	Lord Zetland	Voltigeur, by Voltaire.....	95	8	J. Marson.
1851	Mr. A. Nichol....	Newminster, by Touchstone	119	18	Templeman.
1852	Lord Exeter.....	Stockwell, by The Baron ..	116	6	Norman.
1853	Mr. Bowes	W Australian, by Melbourne	92	10	F. Butler.
1854	Mr. Morris	K. of St. Geo., by Birdcatcher	159	18	Basham.
1855	Mr. T. Parr.....	Saucebox, by St. Lawrence	117	12	Wells.
1856	Mr. Nichol	Warlock, by Birdcatcher...	133	9	Flatman.
1857	Mr. J. Scott	Imperieuse, by Orlando....	158	11	Flatman.
1858	Mr. Merry.....	Sunbeam, by Chanticleer ..	138	18	L. Snowden.
1859	Sir C. Monck....	Gamester, by The Cossack.	167	11	Aldcroft.
1860	Lord Ailesbury ..	St. Albans, by Stockwell ..	168	15	L. Snowden.
1861	Mr. W. I'Anson..	Caller Ou, by Stockwell....	177	18	T. Chaloner.
1862	Mr. S. Hawke....	The Marquis, by Stockwell.	180	15	T. Chaloner.
1863	Lord St. Vincent.	Ld. Clifden, by Newminster	204	19	J. Osborne.
1864	Mr. I'Anson	Blair Athol, by Stockwell..	217	10	J. Snowden.
1865	Ct. de Lagrange..	Gladiateur, by Monarque..	243	14	Grimshaw.
1866	Mr. Sutton	Lord Lyon, by Stockwell..	238	11	Custance.
1867	Colonel Pearson..	Achievement, by Stockwell	222	12	T. Chaloner.
1868	Mr. Graham	Formosa, by Buccaneer...	238	12	T. Chaloner.
1869	Sir J. Hawley....	Pero Gomez, by Beadsman.	226	11	Wells.
1870	Mr. T. V. Morgan	Hawthornden, by L. Clifden	232	19	J. Grimshaw
1871	Baron Rothschild.	Hannah, by King Tom	205	10	Maidment.
1872	Lord Wilton.....	Wenlock, by Ld. Clifden ..	191	17	Maidment.
1873	Mr. Merry.....	Marie Stuart, by S. Chief..	189	8	T. Osborne.
1874	Mr. Launde.....	Apology, by Adventurer...	197	13	J. Osborne.
1875	Mr. W. Crawfurd.	Craigmillar, by Blair Athol.	178	13	T. Chaloner.
1876	Lord Dupplin....	Petrarch, by Ld. Clifden...	206	9	J. Goater.
1877	Lord Falmouth...	Silvio, by Blair Athol.....	214	14	F. Archer.
1878	Lord Falmouth...	Jannette, by Lord Clifden..	243	14	F. Archer.
1879	Count Lagrange..	*c* Rayon D'Or, by Flagolet...	275	17	J. Goater.
1880	Mr. C. Brewer...	Robt. the Devil, by Bertram	254	12	T. Cannon.
1881	Mr. Lorillard	*b* Iroquois, by Leamington ...	231	15	F. Archer.
1882	Lord Falmouth ..	Dutch Oven, by Dutch Skater	193	14	F. Archer.
1883	Duke of Hamilton	Ossian, by Salvator.....	202	9	J. Watts.
1884	Mr. R. C. Vyner.	The Lambkin, by Camballo.	185	13	J. Watts.
1885	Lord Hastings...	Melton, by Master Kildare..	205	10	F. Archer.



HARVESTER.

RAN A DEAD HEAT FOR THE DERBY, 1884. WINNER OF THE PAINE STAKES, NEWMARKET 1884 THE TRIENNIAL PRODUCE STAKES, NEWMARKET, AND THE CLEARWELL STAKES, NEWMARKET, 1883.

By Sterling — Wheatear — Trained by J. Jewett — Ridden by S. Loates.

ASCOT GOLD CUP.

Year.	Winner.	Age	Weight.	Jockey.
		yrs.	st. lb.	
1807	Master Jackey....	3	6 12	—
1808	a Brighton.....	4	8 2	—
1809	Anderia	4	7 13	—
1810	Loiterer	4	8 2	—
1811	b Jannette	4	7 13	—
1812	Flash	3	6 10	—
1813	Lutzen	4	8 2	—
1814	Pranks.....	5	8 9	—
1815	Aladdin	5	8 12	—
1816	Anticipation.....	4	8 2	—
1817	Sir Richard.....	4	8 2	—
1818	Belville	a	9 3	—
1819	Anticipation	a	9 3	—
1820	Champignon	4	8 2	—
1821	Banker	5	8 12	—
1822	Sir Hildebrand...	4	8 2	—
1823	c Marcellus	4	8 2	Wheatley.
1824	Bizarre	4	8 2	W. Arnull.
1825	Bizarre	5	8 12	W. Arnull.
1826	Margaux	4	8 2	G. Dockeray.
1827	Memnon	5	8 12	S. Chifney.
1828	Bobadilla.....	3	6 7	T. Lye.
1829	Zinganee.....	4	8 2	Chifney.
1830	Lucetta	4	7 13	Robinson.
1831	Cetus	4	8 2	Robinson.
1832	d Camarine	4	7 13	Robinson.
1833	Galata	4	7 13	Arnull.
1834	Glaucus	4	8 2	Scott.
1835	Glencoe	4	8 2	Robinson.
1836	Touchstone.....	5	8 12	J. Day.
1837	Touchstone.....	6	9 3	Scott.
1838	Grey Momus.....	3	6 10	W. Day.
1839	Caravan.....	5	9 0	Robinson.
1840	St. Francis.....	5	9 0	Chifney.
1841	Lanercost	6	9 3	Noble.
1842	Beeswing	a	9 0	Cartwright.
1843	Ralph	5	9 0	Robinson.
1844	e The Emperor....	3	6 3	Whitehouse.
	[THE EMPEROR'S PLATE.]			
1845	The Emperor....	4	8 5	Whitehouse.
1846	Alarm	4	8 5	Flatman.
1847	The Hero.....	4	8 5	A. Day.
1848	The Hero.....	5	9 0	A. Day.
1849	Van Tromp.....	5	9 0	Marlow.
1850	Flying Dutchman	4	8 5	Marlow.
1851	Woolwich	5	9 0	J. Marson.
1852	Joe Miller	3	6 10	G. Mann.
1853	Teddington.....	5	9 0	J. Marson.
	[ASCOT GOLD CUP—RENEWED.]			
1854	West Australian..	4	8 5	A. Day.
1855	Fandango.....	3	6 10	Ashmall.
1856	Winkfield	5	9 0	Bartholomew.
1857	Skirmisher	3	6 10	Charlton.
1858	Fisherman.....	5	9 0	Wells.
1859	Fisherman	6	9 3	Cresswell.
1860	Rupee	3	6 7	H. Grimshaw.
1861	Thormanby.....	4	8 7	Custance.
1862	Asteroid	4	8 7	Wells.
1863	f Buckstone.....	4	8 7	A. Edwards.
1864	Scottish Chief....	3	7 5	H. Covey.
1865	g Ely	4	8 10	Custance.
1866	Gladiateur.....	4	8 10	H. Grimshaw.
1867	Lecturer	4	8 10	Fordham.
1868	Blue Gown.....	3	7 5	Cameron.
1869	Brigantine.....	3	7 2	D. Butler.
1870	Sabinus	3	7 2	Rowell.
1871	Mortemer	6	9 5	Fordham.
1872	Henry	4	8 10	Fordham.
1873	Cremorne	4	8 10	Maidment.
1874	Boiard	4	8 10	Carver.
1875	Doncaster	5	9 3	Fordham.
1876	Apology.....	5	9 0	J. Osborne.
1877	Petrarch	4	8 10	Cannon.
1878	Verneuil	4	8 10	Goater.
1879	Isonomy	4	8 10	Cannon.
1880	Isonomy.....	5	9 3	Cannon.
1881	Robert the Devil..	4	9 0	Cannon.
1882	Foxhall.....	4	9 0	Cannon.
1883	Tristan	5	9 4	Fordham.
1884	St. Simon.....	3	7 9	C. Wood.

a After a dead heat with Butler's Epsom, 4 yrs, 8st. 2lb.
b Ashmole's Smallhopes, 5 yrs, came in first, but was disqualified, his owner having omitted to make stakes.

DONCASTER CHAMPAGNE STAKES.

Year.	Winner.	Subs.	Stes.	Jockey.
1823	Swiss.....	18	9	W. Scott.
1824	‡ Memnon.....	12	4	W. Scott.
1825	King Catton.....	21	8	J. Jackson.
1826	Moonshine	22	7	G. Edwards.
1827	‡ The Colonel.....	18	3	W. Scott.
1828	Cant	25	9	T. Lye.
1829	Bud	29	10	Owner.
1830	Frederica.....	28	7	S. Darling.
1831	Francesca	31	10	W. Scott.
1832	Muley Moloch....	22	8	T. Lye.
1833	Cotillon	29	11	W. Scott.
1834	Coriolanus.....	29	12	P. Conolly.
1835	Beeswing	29	7	Cartwright.
1836	Jereed.....	25	6	W. Scott.
1837	‡ Don John.....	24	6	W. Scott.
1838	Eliza.....	22	8	T. Lye.
1839	‡ Launcelot.....	21	8	W. Scott.
1840	Kedge.....	27	7	J. Holmes.
1841	* Attila.....	26	6	W. Scott.
1842	British Yeoman..	34	5	S. Templeman
1843	The Cure.....	32	10	Hesseltine.
1844	Lancs. Witch....	37	12	Flatman.
1845	Princess Alice....	42	13	W. Abdale.
1846	‡ Van Tromp.....	40	7	J. Marson.
1847	Assault.....	35	8	Edwards.
1848	*‡ F. Dutchman...	32	5	Marlow.
1849	The Italian.....	17	3	Templeman.
1850	§ Aphrodite.....	34	8	J. Marson.
1851	Augur.....	26	9	J. Marson.
1852	Vindex.....	31	4	J. Marson.
1853	Champagne.....	34	5	S. Rogers.
1854	Bonnie Morn....	33	5	J. Marson.
1855	* Ellington.....	33	7	Aldcroft.
1856	Tasmania.....	29	8	Holmes.
1857	Gildermire	31	7	Aldcroft.
1858	Prelude	33	10	J. Osborne.
1859	King of Diamonds	32	8	Fordham.
1860	Walloon.....	33	10	A. Edwards.
1861	† c The Marquis....	38	7	Fordham.
1862	‡ Lord Clifden.....	45	10	Fordham.
1863	Ely	43	4	Aldcroft.
1864	Zambesi	46	10	H. Covey.
1865	h Redan	49	13	J. Grimshaw.
1866	‖ ‡ Achievement...	49	5	Custance.
1867	Virtue.....	51	12	J. Snowden.
1868	Morna	57	4	J. Adams.
1869	Sunshine.....	51	6	Fordham.
1870	K. of the Forest..	43	5	J. Snowden.
1871	Cremorne.....	40	3	Maidment.
1872	* Kaiser	37	6	Maidment.
1873	Napoleon III....	41	12	F. Webb.
1874	Camballo	34	7	J. Osborne.
1875	Farnese	44	6	F. Archer.
1876	Lady Golightly ..	34	6	F. Archer.
1877	Clementine.....	48	6	Goater.
1878	Charibert	32	5	F. Archer.
1879	Evasion.....	92	12	Snowden.
1880	Bal Gal.....	55	8	F. Archer.
1881	Kermesse.....	48	6	Cannon.
1882	Hauteur.....	32	5	Fordham.
1883	Superba	91	4	F. Archer.
1884	Langwell.....	94	8	F. Archer

c Mr. J. Dilly's Netherfield, 4 yrs., came in first, but was disqualified on the ground of a cross.
d After a dead heat with Mr. W. Chifney's Rowton 6 yrs., 9st. 3lb. (S. Chifney).
e Carried 3lb. over-weight.
f After a dead heat with Lord W. Poulett's Tim Whiffler, 4 yrs., 8st. 7lb. (S. Rogers).
g After a dead heat with Lord Glasgow's Gen. Peel, 4 yrs, 8st. 10lb. (Fordham).
h Redan walked over, after a dead heat with Lord Lyon (J. Osborne).
i Stakes divided, and Surinam w.o.
(*) Subsequently won the Derby; (†) the Two Thousand (‡) the St. Leger; (§) the One Thousand.
Horses marked (‖) won the St. Leger; (¶) the Two Thousand.

MIDDLE PARK PLATE.

Year.	Winner.	Weight.	Jockey.
		st. lb.	
1866	The Rake	8 9	Loates.
1867	Green Sleeve.....	8 3	Kenyon.
1868	§ Pero Gomez	8 6	J. Adams.
1869	Frivolity.....	8 10	T. Chaloner.
1870	Albert Victor.....	8 6	Morris.
1871	Prince Charlie.....	8 6	Hunt.
1872	i Surinam.....	8 6	J. Osborne.
1873	Newry.....	8 6	F. Webb.
1874	Plebeian	8 6	Mordan.
1875	¶ Petrarch	8 6	J. Goater.
1876	& Chamant.....	8 13	J. Goater.
1877	Beauclerc.....	8 9	Snowden.
1878	Peter.....	9	C. Wood.
1879	Beaudesert.....	8 10	Fordham.
1880	St. Louis	8 10	Fordham.
1881	Kermesse.....	9 0	Cannon.
1882	Macbeath	9 3	C. Wood.
1883	Busybody.....	8 7	F. Archer.
1884	Melton	9 3	F. Archer.

NORTHUMBELAND PLATE.
(NEWCASTLE.)

Year.	Winner.	Age.	Weight.	Jockey.
		yrs.	st. lb.	
1833	Tomboy.....	4	8 2	R. Johnson.
1834	Fanny	4	7 2	Wintringham.
1835	Satan.....	5	8 4	T. Lye.
1836	Cyprian.....	3	6 0	J. Gray.
1837	Wedge.....	4	8 4	T. Lye.
1838	St. Bennet	4	7 0	T. Lye.
1839	St. Bennet.....	5	8 8	T. Lye.
1840	Hetman Platoff ..	4	8 4	Flatman.
1841	Calypso.....	4	8 0	Templeman.
1842	Heslington	4	7 4	J. Joy.
1843	Moss Trooper	4	7 6	Francis.
1844	The Æra.....	4	7 1	T. Lye.
1845	Inheritress.....	5	7 10	T. Lye.
1846	Dolo	3	6 5	J. Prince.
1847	Eryx.....	3	6 8	J. Prince.
1848	Chanticleer.....	5	8 8	Bumby.
1849	John Cosser.....	4	7 0	Charlton.
1850	Elthiron.....	4	7 7	Cartwright.
1851	Neasham.....	3	5 4	Haxby.
1852	Stilton.....	3	6 10	Aldcroft.
1853	Kingston	4	8 7	Basham.
1854	Grapeshot.....	4	6 12	Ashmall.
1855	Whitelock.....	4	5 9	J. Walters.
1856	Zeta.....	3	5 5	T. Chaloner.
1857	Underhand	3	6 1	Plumb.
1858	Underhand	4	8 0	Basham.
1859	Underhand	5	8 12	Aldcroft.
1860	First Lord.....	3	5 8	Page.
1861	Joey Jones.....	3	5 7	J. Doyle.
1862	Montebello	3	5 7	J. Grimshaw.
1863	Caller Ou.....	5	8 8	T. Chaloner.
1864	Caller Ou.....	6	8 12	T. Chaloner.
1865	Brown Bread	3	6 5	Carrol.
1866	Rococo.....	3	6 3	Cameron.
1867	Fervacques.....	3	5 13	D. Butler.
1868	Fortunio.....	4	8 7	J. Snowden.
1869	The Spy	4	8 3	Morris.
1870	Kennington.....	3	7 0	Hunt.
1871	Taraban.....	a	7 0	Gradwell.
1872	Spennithorne....	4	6 12	W. Gray.
1873	Falkland	6	7 9	T. Osborne.
1874	Lily Agnes.....	3	6 11	W. Chaloner.
1875	Harriet Laws....	3	5 7	H. Morgan.
1876	Snail.....	6	7 6	Morbey.
1877	Hampton	5	8 12	F. Webb.
1878	Glastonbury.....	5	7 8	Carlile.
1879	Clearhead.....	5	6 9	Luke.
1880	Mycenæ.....	4	7 13	Morgan.
1881	Bonnie Doon	4	7 3	Kellet
1882	Victor Emanuel..	5	8 0	W. Platt.
1883	Barcaldine	5	9 10	F. Archer.
1884	Lawminster.....	6	7 13	J. Fagan.

GREAT YORKSHIRE STAKES (YORK).

Year.	Winner.	Subs.	Strs.	Jockey.
1843	Prizefighter	75	12	F. Butler.
1844	Joe Lovell	129	15	Flatman.
1845	Miss Sarah	104	10	Holmes.
1846	Poynton	116	13	Templeman.
1847	Elferdale	139	14	J. Marson.
1848	Maid of Masham	169	10	Templeman.
1849	Old Dan Tucker	165	12	A. Day.
1850	Pitsford	162	10	A. Day.
1851	Nancy	158	9	F. Marson.
1852	Stockwell	165	13	Norman.
1853	Umbriel	131	10	F. Butler.
1854	Acrobat	156	8	Templeman.
1855	Rifleman	158	8	Flatman.
1856	Fazzoletto	176	11	Flatman.
1857	Vedette	104	5	Ashmall.
1858	Tunstall Maid	100	7	Bullock.
1859	Napoleon	82	9	Bumby.
1860	Sabreur	104	4	J. Osborne.
1861	Oldminster	90	10	G. Fordham.
1862	Zetland	82	4	G. Fordham.
1863	The Ranger	65	7	J. Goater.
1864	The Miner	84	6	J. Osborne.
1865	Klarinska	75	5	T. Chaloner.
1866	Strathconan	85	7	Snowden.
1867	Achievement	49	5	T. Chaloner.
1868	Viscount	70	7	Custance.
1869	Ryshworh	90	6	Maidment.
1870	Gertrude	87	9	Morris.
1871	Rose of Athol	78	7	T. Cannon.
1872	Cremorne	51	4	Maidment.
1873	Kaiser	55	4	Maidment.
1874	Trent	77	4	T. Cannon.
1875	Mintdrop	48	5	J. Osborne.
1876	Coltness	46	3	T. Osborne.
1877	Lady Golightly	53	6	Morris.
1878	Castlereagh	66	4	J. Osborne.
1879	Ruperra	103	5	C. Wood.
1880	Napsbury	126	11	Morgan.
1881	Ishmael	167	6	J. Osborne.
1882	Pepperment	54	5	J. Osborne.
1883	Ossian	53	6	Watts.
1884	Damietta	83	3	T. Cannon.

WOODCOTE STAKES.

Year.	Winner.	Subs.	Strs.	Jockey.
1850	Marlborough Buck	30	13	Whitehouse.
1851	Elcot	27	14	Whitehouse.
1852	Orestes	32	13	Templeman.
1853	Woodcote	39	12	Charlton.
1854	Flatterer	52	10	Yates.
1855	Lawn	36	9	T. Cliff.
1856	Commotion	41	15	D. Hughes.
1857	Sedbury	36	12	J. Goater.
1858	Merryman	52	18	F. Bates.
1859	Restes	43	11	Wells.
1860	Dundee	45	16	Custance.
1861	Wingrave	47	12	Wells.
1862	Lord Clifden	59	15	Fordham.
1863	Fille de l'Air	60	15	A. Watkins.
1864	Gardevisure	48	13	Thomas.
1865	Janitor	61	11	Wells.
1866	Achievement	62	8	T. Chaloner.
1867	Le Sarrazin	80	16	Hibberd.
1868	Belladrum	72	19	H. Covey.
1869	Sunshine	75	20	J. Snowden.
1870	The Pearl	60	13	H. Jeffery.
1871	Cremorne	49	9	Maidment.
1872	Cantinière	41	14	T. Chaloner.
1873	Marsworth	44	11	Parry.
1874	Ladylove	48	12	F. Archer.
1875	Folkestone	45	8	J. Goater.
1876	Chevron	51	10	Constable.
1877	Cyprus	77	13	F. Webb.
1878	Cadogan	66	10	J. Goater.
1879	Sabella	67	13	H. Jeffery.
1880	Angelina	83	7	F. Archer.
1881	Dunmore	63	5	F. Archer.
1882	Beau Brummel	73	8	F. Archer.
1883	Wild Thyme	42	10	G. Fordham.
1884	Rosy Morn	64	4	F. Archer.

THE GREAT METROPOLITAN STAKES.

Year.	Winner.	Age.	Weight.	Jockey.
		yrs.	st. lb.	
1846	Chamois	3	5 7	Sharpe.
1847	Clermont	3	5 3	Treen, jun.
1848	Glen Saddel	3	5 3	Cree.
1849	Fernhill	4	6 13	Pearl.
1850	Backbiter	5	7 3	Dockeray.
1851	The Ban	3	5 4	T. Smith.
1852	Stilton	3	4 11	Carroll.
1853	Gadabout	3	5 7	Carroll.
1854	Virago	3	6 0	Wells.
1855	Fandango	3	6 2	Steggles.
1856	Cannobie	3	5 12	Bullock.
1857	Poodle	a	8 0	D. Hughes.
1858	Telegram	3	5 5	T. Chaloner.
1859	Lifeboat	4	7 9	L. Snowden.
1860	St. Albans	3	5 9	T. French.
1861	Parmesan	4	7 3	A. Edwards.
1862	Elcho	4	8 0	J. Adams.
1863	Haddington	4	7 1	J. Doyle.
1864	Joco	4	7 2	S. Adams.
1865	Planet	4	7 10	T. French.
1866	Treasure Trove	3	6 0	Cameron.
1867	Endsleigh	5	7 0	Murray.
1868	Blueskin	3	6 0	Hammond.
1869	The Drummer	3	6 9	W. Platt.
1870	Sabinus	3	6 9	Rowell.
1871	Captivator	4	8 6	Fordham.
1872	Dutch Skater	6	8 13	Fordham.
1873	Mornington	5	8 5	T. Cannon.
1874	Royal George	4	7 7	Glover.
1875	Hampton	3	6 3	Weedon.
1876	New Holland	4	7 2	Rossiter.
1877	John Day	4	7 5	Morbey.
1878	Mida	5	5 7	T. Hopper.
1879	Parole	6	8 2	F. Archer.
1880	Chippendale	4	8 10	Osborne.
1881	Brown Bess	5	6 8	Weston.
1882	Fiddler	4	7 11	Huxtable.
1883	Vista	4	7 0	S. Loates.
1884	Zadig	3	5 7	Tomlisson.

EPSOM.—CITY AND SUBURBAN HANDICAP.

Year.	Winner.	Age.	Weight.	Jockey.
		yrs.	st. lb.	
1851	Elthiron	5	8 5	Marlow.
1852	Butterfly	3	4 12	Kendall.
1853	a Elthelbert	3	5 13	Wells.
1854	Virago	3	6 4	Wells.
1855	Ireland's Eye	5	7 4	Wells.
1856	Hospitality	3	6 2	Bullock.
1857	Adamas	3	6 5	Fordham.
1858	Mdle. de Chantilly	4	7 0	Spreoty.
1859	Glenbuck	3	4 12	J. Adams.
1860	b Comforter	4	7 0	Custance.
1861	Cantine	5	8 3	L. Snowden.
1862	Sawcutter	4	7 12	T. Chaloner.
1863	Adventurer	4	5 12	Noble.
1864	Merry Hart	4	7 6	Morgan.
1865	Argonaut	6	8 11	Wells.
1866	Delight	3	5 9	Kenyon.
1867	Abergeldie	4	7 1	Huxtable.
1868	Speculum	3	6 12	Cameron.
1869	Alpenstock	3	6 3	Jeffery.
1870	Sabinus	3	5 9	Rowell.
1871	Jack Spigot	3	6 9	F. Crickmere.
1872	Digby Grand	4	7 10	F. Webb.
1873	Mornington	5	7 13	Mordan.
1874	Aldrich	3	6 4	Morbey.
1875	Dalham	4	7 1	Mills.
1976	Thunder	6	9 4	F. Archer.
1877	Julius Cæsar	4	7 10	F. Archer.
1878	Sefton	3	5 8	Gallon.
1879	Parole	6	8 2	F. Archer.
1880	Master Kildare	5	9 2	F. Archer.
1881	Bend Or	4	9 0	F. Archer.
1882	Passaic	4	6 7	Weston.
1883	Roysterer	5	7 0	Gallon.
1884	Quicklime	5	7 5	K. Tomlinson.

a After a dead heat with Pancake, 4 yrs., 5 st. 2 lb. (Steggles.)
b After a dead heat with Lord Nelson, 6 yrs., 8 st. 3 lb. (Wells).

LIVERPOOL SUMMER CUP.

Year.	Winner.	Age.	Weight.	Starters.
		yrs.	st. lbs.	
1853	Goorkah	3	5 5	
1854	Ammonia	5	6 2	
1855	Seducer	4	7 5	8
1856	Pretty Boy	3	5 10	8
1857	Bashi Bazouk	3	6 4	14
1858	Roman Candle	4	6 9	13
1859	Ancient Briton	4	6 5	8
1860	Moorcock	4	7 0	9
1861	Doefoot	3	6 12	7
1862	Fairwater	4	8 3	11
1863	The Knave	4	7 8	11
1864	Black Deer	4	7 2	3
1865	Success	3	6 1	7
1866	Terror	3	5 10	7
1867	Challenge	3	6 5	8
1868	Dean	4	6 12	6
1869	Spy	4	8 3	5
1870	Fidelia	5	8 0	3
1871	Pretty John	6	8 7	5
1872	Indian Ocean	5	7 6	7
1873	Jarnac	6	7 9	8
1874	Blantyre	3	7 1	13
1875	Tam o' Shanter	4	6 12	8
1876	Controversy	5	8 12	1
1877	Snail	aged	7 12	27
1878	Strathmore	4	7 2	9
1879	Maximilian	4	7 7	11
1880	Blackthorn	4	6 7	6
1881	Dominic	4	7 0	9
1882	Ishmael	4	7 9	4
1883	The Jilt	4	6 4	10
1884	John Jones	4	6 7	5

GREAT YORKSHIRE HANDICAP (DONCASTER.)

Year.	Winner.	Age.	Weight.	Jockey.
		yrs.	st. lb.	
1842	Galanthus	3	5 12	G. Abdale.
1843	Pompey	3	6 7	G. Noble.
1844	Pompey	4	7 8	J. Howlett.
1845	My Mary	3	5 0	Kitchener.
1846	Cranebrook	3	6 7	G. Abdale.
1847	Yardley	a	7 5	Whitehouse.
1848	Miss Sarah	6	8 8	F. Butler.
1849	Snowstorm	3	5 12	J. Arnold.
1850	Mark Tapley	3	5 9	J. Arnold.
1851	The Confessor	3	6 4	Charlton.
1852	Hungerford	4	6 8	Hiett.
1853	Hungerford	5	8 7	Charlton.
1854	Grapeshot	4	7 8	Ashmall.
1855	Wild Huntsman	4	7 0	Bates.
1856	Typee	6	8 12	Flatman.
1857	Warlock	4	8 2	Flatman.
1858	Prioress	5	7 3	Fordham.
1859	Paul	3	5 10	I. Sadler.
1860	Moorhen	3	6 2	H. Grimshaw.
1861	Wallace	4	8 7	L. Snowden.
1862	Cowley	4	7 8	Drewe.
1863	Dulcibella	6	7 8	A. Edwards.
1864	Magnum Bonum	5	8 5	Norman.
1865	John Davis	4	8 2	Fordham.
1866	Caithness	3	6 2	Thomson.
1867	Seville	3	5 10	D. Butler.
1868	Romping Girl	4	7 6	Kenyon.
1869	Gt. des Batailles	4	7 10	Hudson.
1870	Border Knight	4	8 10	Custance.
1871	The Dwarf	3	7 11	Hunt.
1872	Dalnacardoch	4	8 12	T. Chaloner.
1873	Pirate	3	6 2	Newhouse.
1874	Louise	5	7 7	Constable.
1875	Saint Leger	3	6 2	Thomson.
1876	Bersaglier	3	6 8	J. M'Donald.
1877	Albert Edward	3	6 8	Hopkins.
1878	Flotsam	3	6 9	W. M'Donald.
1879	Dresden China	3	6 0	Coates.
1880	Reveller	4	7 12	Kellet.
1881	Petronel	4	8 12	F. Archer.
1882	Baliol	3	6 7	J. Woodburn.
1883	Vista	4	6 11	S. Loates.
1884	Lawminster	6	8 6	J. Osborne.

ASCOT STAKES.

Year.	Winner.	Age.	Weight.	Jockey.
		yrs.	st. lb.	
1839	Marchioness.....	3	fea.	H. Bell.
1840	Darkness	3	5 4	Percy.
1841	Welfare.....	4	7 11	Flatman.
1842	Vibration	3	5 13	H. Bell.
1843	Teetotaller.....	4	6 6	Riley.
1844	Johnny.....	ag.	7 2	Flatman.
1845	(1st cl.) Lothario	5	8 1	Flatman.
	(2nd cl.) Q. Mab	6	8 7	Flatman.
1846	(1st cl.) Akbar..	5	8 2	Chapple.
	(2nd cl.)Petitioner	3	5 7	W. Marson.
1847	Woodpigeon	5	7 13	S. Mann.
1848	Vampyre.....	4	6 5	Kitchener.
1849	Vampyre.....	5	7 9	Flatman.
1850	Wanota	6	8 0	J. Marson.
1851	Vatican.....	5	7 7	Flatman.
1852	Lucio	3	5 7	Wells.
1853	Buckthorn.....	4	8 5	A. Day.
1854	Little Harry.....	5	8 7	Wells.
1855	Mortimer	5	7 1	Clement.
1856	Redemption.....	4	5 12	Prior.
1857	Claude Lorraine..	3	5 3	Parry.
1858	Pensioner.....	3	5 7	Pritchard.
1859	Rouble	3	5 0	J. Adams.
1860	Mouravieff.....	4	8 5	Aldcroft.
1861	Optimist	4	7 13	Fordham.
1862	Rapparee	4	8 8	Osborne.
1863	Stanton	5	7 8	Midgley.
1864	Hippolyta	3	6 6	Grimshaw.
1865	Tomato.	4	8 4	Daley.
1866	War.....	3	6 10	Cameron.
1867	Zenobia	5	7 4	Hibberd.
1868	Emigration.....	5	6 7	Kenyon.
1869	Bête Noir.....	3	5 8	Gradwell.
1870	Musket	3	8 12	Chaloner.
1871	Rosicrucian	6	9 0	Wells.
1872	Molly Cobroy....	4	7 8	Gray.
1873	Uhlan.....	4	7 12	Maidment.
1874	Coventry	3	6 3	Clay.
1875	Organist	4	8 8	Griffiths.
1876	Whitebait	5	7 4	Newhouse.
1877	Chypre.....	5	7 3	Wood.
1878	Chesterton	4	7 8	Wood.
1879	Ridotto.....	4	7 11	Constable.
1880	Teviotdale.....	3	5 13	Kellet.
1881	Teviotdale.....	4	8 2	Osborne.
1882	Retreat	5	8 7	F. Archer.
1883	Ishmael.....	5	7 10	Fordham.
1884	Greenbank.....	4	7 6	Bowman.

LIVERPOOL AUTUMN CUP.

Year.	Winner.	Age.	Weight.	Jockey.
		yrs.	st. lb.	
1856	Md. of Derwent..	3	5 11	J. Snowden.
1857	Special Licence..	3	5 7	Pritchard.
1858	Special Licence..	4	7 10	Plumb.
1859	Meg Merrilies....	3	4 10	Buck.
1860	The Brewer.....	ag.	7 1	Bray.
1861	Petra	5	6 9	Midgley.
1862	Gardener	4	6 6	G. Noble.
1863	Blithfield	3	6 13	T. French.
1864	Tartar.....	3	6 4	J. Grimshaw.
1865	Elland.....	3	6 4	G. Sopp.
1866	Beeswing	3	6 7	Kenyon.
1867	Mandrake.....	3	6 10	J. Hudson.
1868	The Palmer.....	4	8 2	Morris.
1869	Lictor	4	7 0	D. Butler.
1870	Excisеman	3	6 4	W. Gray.
1871	Whinyard	5	6 0	T. Osborne.
1872	Vanderdecken....	3	7 8	H. Jeffery.
1873	Sterling.....	5	9 4	Custance.
1874	Louise Victoria..	5	7 9	Constable.
1875	Activity.....	3	7 2	F. Archer.
1876	Footstep.....	3	5 13	Hopkins.
1877	Arbitrator	3	8 0	Glover.
1878	Belphœbe.....	4	8 1	H. Jeffery.
1879	Master Kildare...	4	8 13	F. Archer.
1880	Prestonpans.....	3	8 2	Fordham.
1881	Pirmus.....	4	6 7	Woodburn.
1882	Goggles	4	7 11	Huxtable.
1883	Boswell	5	8 3	C. Wood.
1884	Thebais.....	6	9 4	F. Archer.

CESAREWITCH STAKES.

Year.	Winner.	Age.	Weight.	Jockey.
		yrs.	st. lb.	
1839	Cruiskeen	5	6 6	Stagg.
1840	Clarion.....	4	8 4	Robinson.
1841	Iliona	4	6 11	R. West.
1842	Arcanus.....	3	5 4	T. Day.
1843	Coranna.....	4	7 11	W. Boyce.
1844	Faugh-a-Ballagh..	3	8 0	H. Bell.
1845	The Baron	3	7 9	Flatman.
1846	Wit's-end.....	3	6 2	Donaldson.
1847	Caurouch (h.b)...	4	7 0	G. Abdale.
1848	The Cur	6	8 3	Rogers.
1849	Legerdemain.....	3	5 7	Hiett.
1850	Glaucs	4	7 7	Chapple.
1851	Mrs. Taft (h.b)...	6	6 0	S. Steggles.
1852	Weathergage	3	6 11	Wells.
1853	Haco.....	3	5 12	Palmer.
1854	Muscovite	5	8 3	Flatman.
1855	Mr. Sykes (h.b)..	5	6 8	F. Bates.
1856	Vengeance	4	7 7	Aldcroft.
1857	a Prioress	4	6 9	G. Fordham.
1858	Rocket	3	6 4	Custance.
1859	b Artless.....	3	5 3	Drewe.
1860	Dulcibella.....	3	6 11	A. Sadler.
1861	Audrey.....	5	8 5	Custance.
1862	Hartington.....	3	5 10	J. Grimshaw.
1863	Lioness.....	4	6 8	H. Covey.
1864	Thalestris	4	6 2	J. Grimshaw.
1865	Salpinctes.....	3	6 3	Scorey.
1866	Lecturer.....	3	7 3	Hibberd.
1867	Julius	3	8 0	T. Chaloner.
1868	Cecil.....	3	5 13	Wyatt.
1869	Chérie.....	3	5 7	F. Webb.
1870	Cardinal York....	4	7 8	Parry.
1871	Corisande.....	3	7 12	Maidment.
1872	Salvanos.....	3	5 7	F. Archer.
1873	King Lud.....	4	7 5	Brucksbaw.
1874	Aventurière.....	3	6 12	Glover.
1875	Duke of Parma...	3	6 0	Rossiter.
1876	Roseberry	4	7 5	F. Archer.
1877	Hilarious	3	6 5	J. M'Donald.
1878	Jester.....	5	6 10	Luke.
1879	Chippendale.....	3	7 5	W M'Donald.
1880	Robert the Devil.	3	8 6	T. Cannon.
1881	Foxhall.....	3	7 12	W. M'Donald.
1882	Corrie Roy	4	8 7	C. Wood.
1883	Don Juan	3	5 10	E. Martin.
1884	St. Gatien.....	3	8 10	C. Wood.

PRINCE OF WALES STAKES.

Year.	Winner.	Subs.	Weight.	Jockey.
			st. lb.	
1862	Carisbrook:	106	8 10	S. Rogers.
1863	Avenger	166	8 3	A. Edwards.
1864	Elv	140	9 1	Custance.
1865	Breadalbane....	137	8 3	Custance.
1866	Rustic	125	8 13	Fordham.
1867	Vauban,.....	99	9 1	Fordham.
1868	King Alfred....	139	8 10	Daley.
1869	Martyrdom	94	8 10	Fordham.
1870	King o' Scots..	92	8 10	Hunt.
1871	Kg. of the Forest	95	9 1	J. Snowden.
1872	Q'ns Messenger.	106	9 1	T. French.
1873	Kaiser	86	9 1	Maidment.
1874	Leolinus	80	8 3	T. Osborne.
1875	Earl of Dartrey	81	8 10	J. Goater.
1876	Petrarch	84	9 1	Morris.
1877	Glen Arthur...	101	8 3	Dodge.
1878	Glengarry	98	8 3	Fordham.
1879	Whl. of Fortune	96	9 0	F. Archer.
1880	Zealot	86	8 10	Macdonald.
1881	Iroquois.....	87	9 5	F. Archer.
1882	Quicklime	73	9 1	C. Wood.
1883	Galliard.....	62	9 1	F. Archer.
1884	Sir Reuben....	75	8 3	C. Wood.

a Bred in America. After a dead heat with El Hakim (3 yrs., 6 st. 9 lb.), and Queen Bess (3 yrs., 4 st. 10 lb.) Tankesley rode Prioress in the dead heat.
b After a dead heat with Gaspard (3 yrs., 6 st. 9lb.

ROYAL HUNT CUP.

Year.	Winner.	Age.	Weight.	Jockey.
		Yrs.	st. lb.	
1856	Forbidden Fruit...	3	6 0	Creswell.
1857	Rsa Bonheur.....	3	5 10	C. Rayner.
1858	Hesperithusa	3	5 6	T. Chaloner.
1859	King at Arms....	3	7 2	Britton.
1860	Crater	3	6 13	W. Bottom.
1861	Buccaneer.....	4	8 7	J. Goater.
1862	Canary	4	6 0	Deacon.
1863	Victor	4	5 12	Morris.
1864	Gem of the Sea..	4	7 10	H. Grimshaw.
1865	Gratitude	5	7 8	H. Covey.
1866	Attaché	4	7 12	Parry.
1867	Jasper	3	6 4	H. Jeffery.
1868	Satyr	4	8 1	J. Adams.
1869	See-Saw	4	8 7	Fordham.
1870	Judge.....	4	6 6	Newhouse
1871	Valuer.....	6	6 6	G. Jarvis.
1872	Ripponden	4	7 2	H. Covey.
1873	Winslow.....	4	8 9	Fordham.
1874	Lowlander	4	7 7	Constable.
1875	Thuringian Prince	4	7 4	C. Wood.
1876	Hopbloom.....	3	6 0	Hopkins.
1877	Cradle.....	4	6 4	Hopkins.
1878	Julius Cæsar.....	5	8 6	F. Archer.
1879	The Mandarin....	ag.	8 4	C. Wood.
1880	Strathern	4	6 5	Brockwell.
1881	Peter.....	5	9 3	F. Archer.
1882	Sweetbread	3	6 4	Woodburn.
1883	Elzevir	3	7 7	C. Wood.
1884	Acrostic.....	4	6 5	F. Barrett.

NEWMARKET HANDICAP.

Year.	Winner.	Age.	Weight.	Jockey.
		yrs.	st. lb.	
1845	Vol-au-Vent.....	4	6 6	W. Abdale.
1846	Kesheng	4	7 0	Pettit.
1847	Clermont	3	4 10	Treen, jun.
1848	St. Demetri.....	5	7 7	Pettit.
1849	Canezou.....	4	8 7	F. Butler.
1850	Cheerful.....	4	5 12	Collins.
1851	Hesse Homburg..	3	5 5	T. Smith.
1852	Father Thames ..	3	5 9	A. Cowley.
1853	Talfourd	3	5 3	Oliver.
1854	Coup d'Etat.....	3	5 13	J. Steggles.
1855	Hercules.....	4	7 3	Clement.
1856	The Earl	4	6 4	Humpage.
1857	Poodle.....	ag	9 2*c*	D. Hughes.
1858	f Monarque.....	6	8 9	Flatman.
1859	Old Robert.....	3	5 12	A. Edwards.
1860	Confectioner	3	5 11	H. Grimshaw.
1861	Ebony	4	7 10	G. Fordham.
1862	Carbineer.....	4	8 0	A. Edwards.
1863	Bedouin	4	6 7	S. Adams.
1864	Guerilla.....	3	5 7	J. Grimshaw.
1865	Accident.....	5	7 5	Deacon.
1866	Eakring	3	5 7	Kenyon.
1867	Leases.....	3	6 4	T. Goodwin.
1868	Montagnard.....	4	7 9	Huxtable.
1869	Lancet.....	3	5 8*g*	Wilson.
1870	Miss Sheppard...	3	5 13	Jewitt.
1871	Idas.....	4	8 7	Fordham.
1872	Enfield	5	6 13	Loates.
1873	Houghton	5	7 2	Newhouse.
1871	Lydon	6	7 1	C. Wood.
1875	Saint Leger.....	3	5 13	Thompson.
1876	Huntsman	4	7 1	Thompson.
1877	Hidalgo	3	5 11	Harding.
1878	Thurio.....	3	6 4	Lemaire.
1879	Parole	6	8 4	Morbey.
1880	Wallenstein.....	3	6 5	Weston.
1881	Elf King.....	5	8 12	Fordham.
1882	Spring Tide.....	4	7 9	Barrett.
1883	Faugh-a-Ballagh..	4	8 3	E. Martin.
1884	Victor Emanuel...	ag.	7 9	C. Wood.

c Walked over after a dead heat with Hetman Platoff, 4 yrs., 9 st. 8 lb. (including 4 lb. extra), who fell lame.
d After a dead heat with Brother to Plenipotentiary, 6 yrs., 7 st. 4 lb.
e Including 7lb. extra. *f* Bred in France.
g Carried 5 st. 8 lb.

CAMBRIDGESHIRE STAKES.

Year.	Winner.	Age.	Weight.	Jockey.
		yrs.	st. lb.	
1839	Lanercost	4	8 9	W. Noble.
1840	Roscius	4	7 3	Chapple.
1841	Vulcan	4	7 4	Flatman.
1842	Ralph	4	8 7	Robinson.
1843	Nat	3	6 9	Simpson.
1844	Evenus	4	7 10	Flatman.
1845	Alarm	3	7 9	Flatman.
1846	Prior of St. Marg.	3	6 7	A. Day.
1847	The Widow	a	7 0	Pettit.
1848	Dacia	3	5 9	G. Brown.
1849	Raby	3	5 10	Arnold.
1850	Landgrave	4	6 13	Chapple.
1851	Truth	3	5 13	Wells.
1852	Kt. of the Shire	3	6 2	Harding.
1853	Little David	3	5 10	Fordham.
1854	Scherz	3	7 7	Birbeck.
1855	Sultan	3	7 6	J. Goater.
1856	Malacca	3	5 5	Hibberd.
1857	Odd Trick	3	7 4	Fordham.
1858	Eurydice	3	5 7	Britton.
1859	Red Eagle	3	5 13	H. Grimshaw.
1860	Weatherbound	3	6 10	J. Adams.
1861	Palestro	3	7 2	Watkins.
1862	Bathilde	4	6 10	E. Martin.
1863	Catch 'em Alive	4	7 0	S. Adams.
1864	Ackworth	3	7 0	Cannon.
1865	Gardevisure	3	6 2	A. Carter.
1866	Actæa	3	6 6	Huxtable.
1867	a Lozenge	5	7 2	S. Adams.
1868	See-Saw	3	8 2	Fordham.
1869	Vestminster	3	6 4	Gradwell.
1870	Adonis	3	6 3	F. Lynham
1871	Sabinus	4	8 7	Fordham.
1872	Playfair	3	6 3	Ashworth.
1873	Montargis	3	7 13	Carratt.
1874	Peut-être	3	6 10	Rolfe.
1875	Sutton	4	5 13	Morgan.
1876	Roseberry	4	8 5	Constable.
1877	Jongleur	3	8 4	Rolfe.
1878	Isonomy	3	7 1	Morgan.
1879	La Marveille	4	8 0	Constable.
1880	Lucetta	4	7 1	Greaves.
1881	Foxhall	3	9 0	J. Watts.
1882	Hackness	4	6 4	S. Loates.
1883	Bendigo	3	6 10	Luke.
1884	Florence	4	9 1	F. Webb.

CRITERION STAKES.

Year.	Winner.	Weight.	Sub.	Jockey.
		st. lb.		
1829	Cestus	8 5	28	S. Day.
1830	Clansman	8 3	30	Robinson.
1831	Margrave	8 5	26	G. Edwards.
1832	Weeper	8 3	42	Conolly.
1833	Bentley	8 10	44	A. Pavis.
1834	Preserve	8 8	30	Arnull.
1835	Elis	8 10	46	J. Day.
1836	Chap. d'Espagne	8 1	36	S. Day.
1837	D'Egville	8 10	42	J. Day.
1838	Cara	8 5	36	G. Edwards.
1839	b Crucifix	9 0	44	J. Day.
1840	Ralph	8 7	36	W. Cotton.
1841	Chatham	9 0	40	Flatman.
1842	Gaper	8 7	24	Rogers.
1843	Ratan	8 9	37	Rogers.
1844	Jericho	8 7	41	Bartholomew.
1845	Sting	9 0	45	H. Bell.
1846	Coningsby	8 7	41	F. Butler.
1847	Loadstone	8 13	45	Flatman.
1848	Nina	8 8	30	Robinson.
1849	The Nigger	8 7	37	Flatman.
1850	Mountain Deer	8 7	38	Simpson.
1851	Red Hind	8 11	34	Flatman.
1852	Speed the Plough	8 7	29	Flatman.
1853	Phaeton	8 7	32	J. Mann.
1854	Para	8 8	23	Rogers.
1855	Artillery	8 13	25	Basham.
1856	Beechnut	8 5	40	G. Fordham.
1857	Happy Land	8 10	42	G. Fordham.
1858	North Lincoln	8 13	42	Wells.

a After a dead heat with Wolsey, 4 yrs., 6 st. 8 lb. (Kenyon.)

CRITERION STAKES (*Continued*).

Year.	Winner.	Weight.	Sub.	Jockey.
		st. lbs.		
1859*	Thormanby	8 13	42	G. Fordham.
1860	Klarikoff	8 7	40	G. Fordham.
1861	Old Calabar	8 13	51	W. Boyce.
1862	Hospodar	8 13	53	H. Grimshaw.
1863†	Fille de l'Air	9 0	52	A. Watkins.
1864	Chattanooga	8 10	63	T. Chaloner.
1865*‡	Lord Lyon	9 1	73	Custance.
1866†	Achievement	8 13	62	Custance.
1867	Rosicrucian	8 8	59	T. French.
1868†‡	c Pero Gomez	8 12	63	J. Adams.
1869	Hester	8 8	55	J. Grimshaw.
1870	‡Général	9 1	55	Custance.
1871	Prince Charlie	8 12	52	T. French.
1872	Flageolet	8 12	46	G. Fordham.
1873	Miss Toto	8 8	56	G. Fordham.
1874	Garterly Bell	8 8	47	Morris.
1875	Claureald	8 8	50	J. Osborne.
1876	Jongleur	8 12	48	Carratt.
1877*†	‡Jannette	8 13	44	F. Archer.
1878	Mons Philippe	8 8	46	J. Osborne.
1879	Preston Pans	9 1	52	Cannon.
1880	Thebais	8 13	58	Fordham.
1881	Bruce	8 12	48	Mordan.
1882	Macheath	9 1	45	C. Wood.
1883	Archiduc	8 8	41	J. Goater.
1884	Melton	9 1	29	F. Archer.

GREAT EBOR HANDICAP (YORK.)

Year.	Winner.	Age.	Weight.	Jockey.
		yrs.	st. lb.	
1843	Pagan	5	7 13	Templeman.
1844	Godfrey	3	4 6	Berwick.
1845	Coheiress	4	6 0	W. Abdale.
1846	Arthur	4	6 3	J. Sharpe.
1847	Mathematican	3	5 9	Donaldson.
1848	Meaux	4	7 6	Flatman.
1849	The Hero	6	9 4	A. Day.
1850	Mark Tapley	3	5 9	Arnold.
1851	Nancy	3	6 13	Charlton.
1852	Adine	3	5 9	Rickards.
1853	Pantomime	3	5 8	T. Olliver.
1854	Grand Inquisitor	3	5 7	Fordham.
1855	Vandal	3	5 0	Creswell.
1856	Warlock	3	5 8	Withington.
1857	El Hakim	3	5 4	Little.
1858	Vedette	4	8 7	J. Osborne.
1859	Underhand	5	9 1	Aldcroft.
1860	Pax	4	6 11	A. Edwards.
1861	Rising Sun	4	7 9	Fordham
1862	Makeshift	5	6 8	Hardcastle.
1863	Golden Pledge	3	6 0	J. Loates.
1864	Raglan	4	6 5	Morris.
1865	Verdant	3	6 7	Heartfield.
1866	Westwick	3	6 6	H. Covey.
1867	Mandrake	3	6 3	Cameron.
1868	Fairwind	4	6 6	W. Platt.
1869	Fortunio	5	8 12	Chaloner.
1870	Paganini	5	9 4	J. Snowden.
1871	Not Out	4	7 0	D. Butler.
1872	Albert Victor	4	8 12	Custance.
1873	Louise Victoria	4	6 13	Constable.
1874	Chivalrous	4	7 0	Griffiths.
1875	Lily Agnes	4	8 8	W. Wood.
1876	Lilian	a	7 11	F. Archer.
1877	Il Gladiatore	3	6 0	Morrell.
1878	Ceranu	3	6 9	Lemaire.
1879	Isonomy	4	9 8	Cannon.
1880	Novice	3	6 9	Bell.
1881	Mother Shipton	3	5 11	Percival.
1882	Victor Emanuel	5	9 0	J. Osborne.
1883	Corrie Roy	5	9 12	C. Wood.
1884	Ben Alder	4	7 8	J. Fagan.

b After a dead heat with General Yates's Gibraltar.
c Walked over and divided after a dead heat with the Duke of Hamilton's Wild Oats.
Horses marked * subsequently won the Derby, † the Oaks, and ‡ the St. Leger.

GREAT NORTHAMTONSHIRE STAKES.

Year.	Winner.	Age.	Weight.	Jockey.
		yrs.	st. lb.	
1844	Vitellius	4	7 0	J. Williams.
1845	Discord	a	8 0	Flatman.
1846	Morpeth	5	7 9	Bumby.
1847	Wolflog	5	8 11	F. Butler.
1848	Wildair	6	8 5	Flatman.
1849	Fernhill	4	6 8	Pearl.
1850	Priestess	4	6 10	Arnold.
1851	Valentine	4	6 1	T. Sherwood.
1852	Poodle	3	4 5	Carroll.
1853	Defiance	3	5 13	Wells.
1854	Jacqueline	4	6 8	Ashmall.
1855	Hungerford	a	7 13	Charlton.
1856	Siding	4	6 6	Quinton.
1857	St. Giles	3	6 4	Hibberd.
1858	Borderer	4	7 4	Fordham.
1859	Bevis	3	4 11	J. Adams.
1860	Simple Simon	3	5 9	Mitchell.
1861	Danae	4	6 9	J. Adams.
1862	Stampedo	5	8 2	Fordham.
1863	Fairwater	5	8 10	Custance.
1864	Dollar	4	7 9	Kitchener.
1865	Scamander	5	7 8	T. Cannon.
1866	John Davis	5	9 0	T. Chaloner.
1867	Havelock	4	6 7	G. Jarvis.
1868	Mariner	3	5 11	Hudson.
1869	Marquis of Carabas	4	6 7	Hunt.
1870	Midsummer	4	8 3	Maidment.
1871	Jester	3	6 7	G. Jarvis.
1872	Messager	4	6 5	Newhouse.
1873	Flurry	5	7 10	Mordan.
1874	Gleneagle	3	5 12	Thompson.
1875	Peeping Tom	4	7 3	F. Archer.
1876	Prodigal	a	8 0	Clement.
1877	Queen of Cyprus	4	6 10	W. Johnson.
1878	Prince George	5	7 13	C. Wood.
1879	Rochampton	6	8 5	Snowden
1880	Dresden China	4	8 4	Snowden.
1881	Commandant	5	7 11	Fordham.
1882	Sun of York	6	6 12	Bowman.
1883	Glenluce	5	7 7	S. Loates.
1884	Loch Ranza	3	7 5	Luke.

GOODWOOD STAKES.

Year.	Winner.	Age.	Weight.	Jockey.
		yrs.	st. lb.	
1823	Elfrid	3	7 4	Hammond.
1824	Vitellina	3	5 8	J. Barrett.
1825	Stumps	3	6 13	G. Edwards.
1826	Stumps	4	9 0	W. Arnull.
1827	Miss Craven	3	7 2	F. Buckle, jun.
1828	Souvenir	4	8 6	walked over.
1829	The Alderman	a	8 9	F. Boyce.
1830	Aaron	4	7 13	F. Buckle.
1831	Conciliation	3	6 12	A. Pavis.
1832	Lucetta	6	9 5	Robinson.
1833	Litttle Red Rover	6	8 6	J. Day.
1834	Rob. Roughead	4	7 7	Norman.
1835	Glaucus	5	9 8	Scott.
1836	Felix	4	7 8	Chapple.
1837	Lucifer	5	7 10	Twitchett.
1838	Loutherbourg	4	7 1	Wakefield.
1839	Barnacles	6	8 1	Conolly.
1840	Orelia	4	6 9	Percy.
1841	Orelia	5	8 8	Conolly.
1842	Retriever	6	7 11	Murphy.
1843	Lucy Banks	4	7 7	H. Bell.
1844	Franchise	5	6 0	A. Day.
1845	Miss Ellis	3	5 7	Kitchener.
1846	Jonathin Wild	3	4 7	Ryder.
1847	Hydrangea	4	6 10	J. Sharpe.
1848	Chanticleer	5	9 2	Marlow.
1849	Maid of Lyme	6	6 13	Evans.
1850	Windischgratz	3	5 10	G. Mann.
1851	Backbiter	6	7 9	Flatman.
1852	Weathergage	3	5 6	Wells.
1853	Adine	4	7 8	Flatman.
1854	Bribery	3	5 11	T. Cliff.
1855	Quince	4	6 10	Ashmall.
1856	Pretty Boy	3	7 8	Aldcroft.
1857	Leamington	4	8 6	Aldcroft.
1858	Roman Candle	4	7 0	Bray.
1859	Starke	4	7 7	Plumb.
1860	Wallace	3	7 4	T. Chaloner.
1861	Elcho	3	5 13	Daley.
1862	Boabdil	4	6 6	Daley.

GOODWOOD STAKES (*Continued.*)

Year.	Winner.	Age	Weight.	Jockey.
		yrs.	st. lbs.	
1863	Blackdown	3	6 2	Mordan.
1864	Blondin	4	7 6	Heslop.
1865	Suspicion	4	6 13	J. Grimshaw.
1866	Rama	3	5 12	Kenyon.
1867	Gomera	5	9 0	Fordham.
1868	Tabouret	3	6 0	Hudson.
1869	Starter	3	5 10	Hunt.
1870	Paganini	5	8 10	Fordham.
1871	Tarabas	a	8 5	Fordham.
1872	Spennithorne	4	7 7	W. Gray.
1873	Uhlan	4	8 8	Maidment
1874	Scamp	3	6 8	Glover.
1875	Freeman	6	8 5	Fordham.
1876	Hampton	4	7 10	Mordan.
1877	Prince George	4	7 0	Huxtable.
1878	Norwich	4	7 3	Fordham.
1879	Bay Archer	3	6 8	Gallon.
1880	Reveller	4	7 4	Kellet.
1881	Brown Bess	5	6 8	Weston.
1882	Fortissimo	4	8 3	Fordham.
1883	Corrie Roy	5	9 0	C. Wood.
1884	Stockholm	4	6 8	Tomlinson.

MANCHESTER TRADES CUP.

Year.	Winner.	Age.	Weight.	Starters.
		yrs.	st. lb.	
1834	Giovanni	6	8 12	
1835	Red Rover	4	7 12	
1836	Vestment	5	8 0	
1837	The Carpenter	4	7 9	
1838	Catherina	aged	8 7	
1839	Gasparoni	4	7 4	
1840	Colchicum	4	6 1	
1841	Galaor	3	7 0	
1842	*a*The Young-un	5	7 7	
1843	Aristotle	4	7 10	
1844	Truchoy	4	8 2	
1845	Best of Three	4	7 12	
1846	Slayer's Daughter	3	5 0	
1847	Sheraton	4	7 2	
1848	Swiss Boy	3	5 5	
1849	Sylvan	4	6 12	
1850	Legerdemain	4	7 6	
1851	Paquetta	3	4 0	
1852	The Black Doctor	4	8 3	
1853	Chief Justice	6	7 10	
1854	Rataplan	4	9 3	
1855	Soucebox	3	5 10	6
1856	Pretty Boy	3	5 4	9
1857	Underhand	3	7 10	10
1858	Herne	3	6 10	13
1859	Little Agnes	3	5 5	6
1860	Ben Webster	3	7 1	5
1861	Ivanhoff	3	6 0	8
1862	Ivanhoff	4	8 12	3
1863	Isoline	3	6 4	7
1864	*b*Trust	4	7 6	3
1865	Cathedral	4	8 12	5
1866	Retrousse	3	5 10	6
1867	*c*Dunsany	5	8 12	6
1868	Buttercup	3	5 7	4
1869	Ploughboy	5	7 3	4
1870	Muster	3	7 9	3
1871	Monseigneur	4	7 3	12
1872	Sir Bertram	4	6 12	7
1873	Indian Ocean	6	8 12	8
1874	Cambuslang	4	7 5	15
1875	Innishowen	3	5 7	16
1876	Conseil	5	7 3	12
1877	Umpire	4	8 12	19
1878	Attalus	3	6 4	16
1879	Lartington	3	6 1	18
1880	Isonomy	5	9 12	21
1881	Valour	6	8 9	18
1882	Wallenstein	5	8 5	15
1883	Primrose II.	4	7 6	16
1884	Florence	4	7 2	18

a Walked over.
b Won after a dead heat with Oldminster, 6 yrs. 8 st. 12 lb.

THE TWO THOUSAND GUINEAS STAKES.

Year.	Owner.	Winner.	Jockey.
1809	Mr. Wilson	Wizard	—
1810	L. Grosvenor	Hephestion	—
1811	Mr. Andrew	Trophonius	—
1812	L. Darlington	Cwrw	—
1813	C. Bunbury	Smolensko	—
1814	Mr Wyndham	Olive	—
1815	Lord Rous	Tigris	—
1816	L. Cavendish	Nectar	—
1817	Stonehewer	Manfred	—
1818	Lord Foley	Interpreter	—
1819	Sir J. Shelley	Antar	—
1820	D. of Grafton	Pindarrie	—
1821	D. of Grafton	Reginald	—
1822	D. of Grafton	Pastille	F. Buckle.
1823	Mr. Rogers	Nicolo	Wheatley.
1824	Mr Haffenden	Schahriar	Wheatley.
1825	Lord Exeter	Enamel	J. Robinson.
1826	D. of Grafton	Dervise	J. Dly.
1827	D. of Grafton	Turcoman	Buckle.
1828	D. of Rutland	Cadland	J. Robinson.
1829	Lord Exeter	Patron	F. Boyce.
1830	Lord Exeter	Augustus	Conolly.
1831	Lord Jersey	Riddlesworth	Robinson.
1832	Colonel Peel	Archibald	Pavis.
1833	Lord Oxford	Clearwell	Robinson.
1834	Lord Jersey	Glencoe	Robinson.
1835	Lord Jersey	Ibrahim	Robinson.
1836	Lord Jersey	*Bay Middleton	Robinson.
1837	Lord Jersey	Achmet	E. Edwards.
1838	Ld. Bentinck	Grey Momus	J. Day.
1839	Ld. Lichfield	The Corsair	Wakefield.
1840	Ld. Bentinck	†Crucifix	J. Day.
1841	L. Albermarle	Ralph	J. Day.
1842	Mr. Bowes	Meteor	W. Scott.
1843	Mr. Bowes	*Cotherstone	W. Scott.
1844	Mr. J. Day	The Ugly Buck	J. Day, jun.
1845	L. Stradbroke	Idas	Flatman.
1846	Mr. W. Scott	‡Sir T. Sykes	W. Scott.
1847	Sir R. Pigot	Cenyngham	J. Robinson.
1848	Mr. B. Green	Flatcatcher	J. Robinson.
1849	Mr. A. Nichol	Nunnykirk	F. Butler.
1850	Mr. H. Hill	Pitsford	A. Day.
1851	Lord Enfield	Hernandez	Flatman.
1852	Lord Exeter	‡Stockwell	Norman.
1853	Mr. Bowes	‡W. Australian	F. Butler.
1854	Mr. Gully	Hermit	A. Day.
1855	Mr. Merry	Lord of Isles	Aldcroft.
1856	Lord Derby	Fazzoletto	Flatman.
1857	Lord Zetland	Vedette	J. Osborne.
1858	Sir J. Hawley	Fitz-Roland	Wells.
1859	Mr. W. Day	Promised Land	A. Day.
1860	Mr. Nichol	The Wizard	Ashmall.
1861	Ld. Stamford	Diophantus	A. Edwards.
1862	Mr. Hawke	‡The Marquis	Ashmall.
1863	Mr. Naylor	*Macaroni	T. Chaloner.
1864	Ld. Glasgow	General Peel	Aldcroft.
1865	De Lagrange	*‡Gladiateur	Grimshaw.
1866	Mr. Sutton	*‡Lord Lyon	Thomas.
1867	D. of Beaufort	Vauban	Fordham.
1868	Mr. Crawford	*d*Moslem	T. Chaloner.
1869	Mr. Johnstone	*Pretender	J. Osborne.
1870	Mr. Merry	Macgregor	J. Daley.
1871	Mr. Johnstone	Bothwell	J. Osborne.
1872	Mr. Dawson	Prince Charlie	J. Osborne.
1873	Mr. Crawford	Gang Forward	T. Chaloner.
1874	Ld. Falmouth	Atlantic	F. Archer.
1875	Mr. H. Vyner	Camballo	J. Osborne.
1876	Ld. Dupplin	Petrarch	Luke.
1877	Cp. Lagrange	Chamant	J. Goater.
1878	Ld. Lonsdale	‡Pilgrimage	T. Cannon.
1879	Ld. Falmouth	‡Charibert	F. Archer.
1880	D. of Beaufort	Petronel	Fordham.
1881	Mr. Norman	Peregrine	F. Webb.
1882	D. of W'minster	Shotover	T. Cannon.
1883	Ld. Falmouth	Galliard	F. Archer.
1884	Mr. Foy	Scot Free	W. Platt.

c Divided, after a dead heat with Deceit, 3 yrs., 6 st. 10 lb.

Horses marked (*) also won the Derby; (†) the Oaks; and (‡) the St. Leger.

THE ONE THOUSAND GUINEAS STAKES.

Year.	Owner.	Winner.	Jockey
1814	Mr. Wilson	Charlotte	—
1815	Ld. Foley	Selim	—
1816	D. of Rutland	Rhoda	—
1817	Mr. Watson	‖Neva	—
1818	Mr. Udny	Corinne	—
1819	D. of Grafton	Catgut	—
1820	D. of Grafton	Rowena	—
1821	D. of Grafton	Zeal	—
1822	D. of Grafton	Whizgig	F. Buckle.
1823	D. of Grafton	‖Zinc	F. Buckle.
1824	Ld. Jersey	‖Cobweb	J. Robinson
1825	D. of Grafton	Tontine	J. Day.
1826	D. of Grafton	Problem	
1827	D. of Grafton	Arab	F. Buckle.
1828	Mr. Molony	Orville	J. Robinson
1829	L. Cavendish	Mouse	Arnull.
1830	Ld. Jersey	Charlotte West	J. Robinson
1831	Sir M. Wood	Galantine	Conolly.
1832	Ld. Exeter	‖Galata	Arnull.
1833	Mr. Cooke	Tarantella	Wright
1834	Ld. Berner	May-day	J. Day.
1835	Mr. Greville	Preserve	Flatman.
1836	Houldsworth	Destiny	J. Day.
1837	Ld. Bentinck	Chapeau	J. Day.
1838	L. Albemarle	Bacarolle	E. Edwards.
1839	Mr. Watt	Cara	G. Edwards.
1840	Ld. Bentinck	§‖Crucifix	J. Day.
1841	Mr. Batson	Potentia	J. Robinson.
1842	Ld. Bentinck	Firebrand	Rogers.
1843	Mr. Thornhill	Extempore	S. Chifney.
1844	Osbaldeston	Sorella	J. Robinson.
1845	D. Richmond	Pic-nic	W. Abdale.
1846	Mr. Gully	‖Mendicant	S. Day.
1847	Mr. Payne	Clementina	Flatman.
1848	Ld. Stanley	Canezou	F. Butler.
1849	Mr. F. Clarke	Flea	A. Day.
1850	Ld. Oxford	Slane	F. Butler.
1851	Sir J. Hawley	Aphrodité	J. Marson.
1852	Mr. Sargent	Kate	A. Day.
1853	B. Rothschild	Mentmore Lass	Charlton.
1854	Mr. Howard	Virago	Wells.
1855	D. of Bedford	Habena	S. Rogers.
1856	W. H. Brook	Manganese	J. Osborne.
1857	Mr. J. Scott	¶Impériense	Flatman.
1858	Mr Gratwicke	‖Governess	Ashmall.
1859	Mr. Crawfurd	Mayonaise	Fordham.
1860	Ld. Derby	Sagitta	Aldcroft.
1861	Mr. Fleming	Nemesis	Fordham.
1862	Ld. Falmouth	Hurricane	Ashmall.
1863	Ld. Stamford	Lady Augusta	A. Edwards.
1864	B. Rothschild	Tomato	Wells.
1865	D. of Beaufort	Siberia	Fordham.
1866	M of Hastings	Repulse	T. Cannon.
1867	Col. Pearson	¶Achievement	Custance.
1868	Mr. Graham	‖¶Formosa	Fordham.
1869	D. of Beaufort	Scottish Queen	Fordham.
1870	Mr. Dawson	Hester	Grimshaw.
1871	B. Rothschild	‖¶Hannah	Maidment.
1872	M. Lefevre	‖Reine	Parry.
1873	Ld. Falmouth	Cecilia	Morris.
1874	Mr. Launde	‖Apology	J. Osborne
1875	Ld. Falmouth	‖Spinaway	F. Archer.
1876	Ct. Lagrange	*e*Camelia	Glover.
1877	L. Hartington	Belphœbe	H. Jeffrey.
1878	Ld. Lonsdale	§Pilgrimage	Cannon.
1879	Ld. Falmouth	Wheel of Fort.	Archer
1880	Mr. Walker	Elizabeth	C. Wood.
1881	Mr. Crawfurd	Thebais	Fordham.
1882	Mr. Crawfurd	St. Marguerite.	C. Wood.
1883	C. J. Lefevre.	Hauteur	Fordham.
1884	Mr. Abington	Busybody	T. Cannon.

d After a dead heat with Mr. W. Graham's Formosa, (Fordham), who afterwards divided the stakes.

Those marked (§) also won the Two Thousand, (‖) the Oaks, (¶) the St. Leger.

e Ran a dead heat with Enguerrande for the Oaks.

DONCASTER CUP.

Year.	Winner.	Age.	Weight.	Jockey.
		yrs.	st. lb.	
1825	Lottery	5	8 10	G. Nelson.
1826	Fleur de Lis	4	8 3	G. Nelson.
1827	Mulatto	4	8 3	T. Lye.
1828	Laurel	4	8 3	T. Nicholson.
1829	Voltaire	3	7 0	T. Lye.
1830	Retriever	4	8 3	T. Lye.
1831	The Saddler	3	7 0	Chapple.
1832	Gallopade	4	8 3	R. Johnson.
1833	*Rockingham	3	7 3	T. Nicholson.
1834	Tomboy	5	8 10	R. Johnson.
1835	Touchstone	4	8 3	W. Scott.
1836	Touchstone	5	8 10	W. Scott.
1837	Beeswing	4	8 3	Cartwright.
1838	*Don John	3	7 3	Flatman.
1839	*Charles XII.	3	7 3	T. Lye.
1840	Beeswing	a	9 0	Cartwright.
1841	Beeswing	a	9 0	Cartwright.
1842	Beeswing	a	8 13	Cartwright.
1843	Alice Hawthorn	5	8 9	Hesseltine.
1844	Alice Hawthorn	6	8 13	Bumby.
1845	Sweetmeat	3	7 0	Whitehouse.
1846	The Hero	3	7 0	A. Day.
1847	War Eagle	3	7 7	S. Mann.
1848	Chanticleer	5	8 12	Flatman.
1849	Canezou	4	8 4	F. Butler.
1850	Voltigeur	3	7 7	Flatman.
1851	*The Ban	3	7 0	Arnold.
1852	Teddington	4	8 12	J. Marson.
1853	Hungerford	5	8 12	Charlton.
1854	Virago	3	7 4	Wells.
1855	Rataplan	5	9 1	A. Cowley.
1856	Fandango	4	8 12	J. Marson.
1857	Vedette	3	7 0	T. Chaloner.
1858	Vedette	4	8 12	J. Osborne.
1859	Newcastle	3	7 4	G. Fordham.
1860	Sabreur	3	7 0	T. Chaloner.
1861	aKettledrum	3	7 7	Bullock.
1862	Tom Whiffler	3	7 7	Bullock.
1863	Macaroni	3	7 7	T. Chaloner.
1864	General Peel	3	7 3	H. Covey.
1865	Ackworth	4	8 2	G. Fordham.
1866	Rama	3	7 0	Kenyon.
1867	*Achievement	3	7 4	Kenyon.
1868	Mandrake	4	8 5	J. Osborne.
1869	Good Hope	3	7 0	W. Gray.
1870	Sornette	3	6 11	Handley.
1871	Shannon	3	7 13	Hunt.
1872	Dutch Skater	6	9 0	Fordham.
1873	Uhlan	4	8 10	Maidment.
1874	Lily Agnes	3	7 6	W. Chaloner.
1875	Fraulein	5	8 11	J. Goater.
1876	Craigmillar	4	9 3	T. Chaloner.
1877	Hampton	5	9 7	F. Webb.
1878	Pageant	a	8 11	T. Cannon.
1879	Isonomy	4	9 3	T. Cannon.
1880	Dresden China	4	9 0	Snowden.
1881	Petronel	4	8 10	F. Archer.
1882	Retreat	5	9 0	C. Wood.
1883	Thebais	5	8 11	C. Wood (w.o.)
1884	Louis D'Or	a	9 0	T. Cannon.

Horses marked (*) won the St. Leger the same year.
a Walked over and divided after a dead heat with Mr. Saxon's Brown Duchess (Midgley).

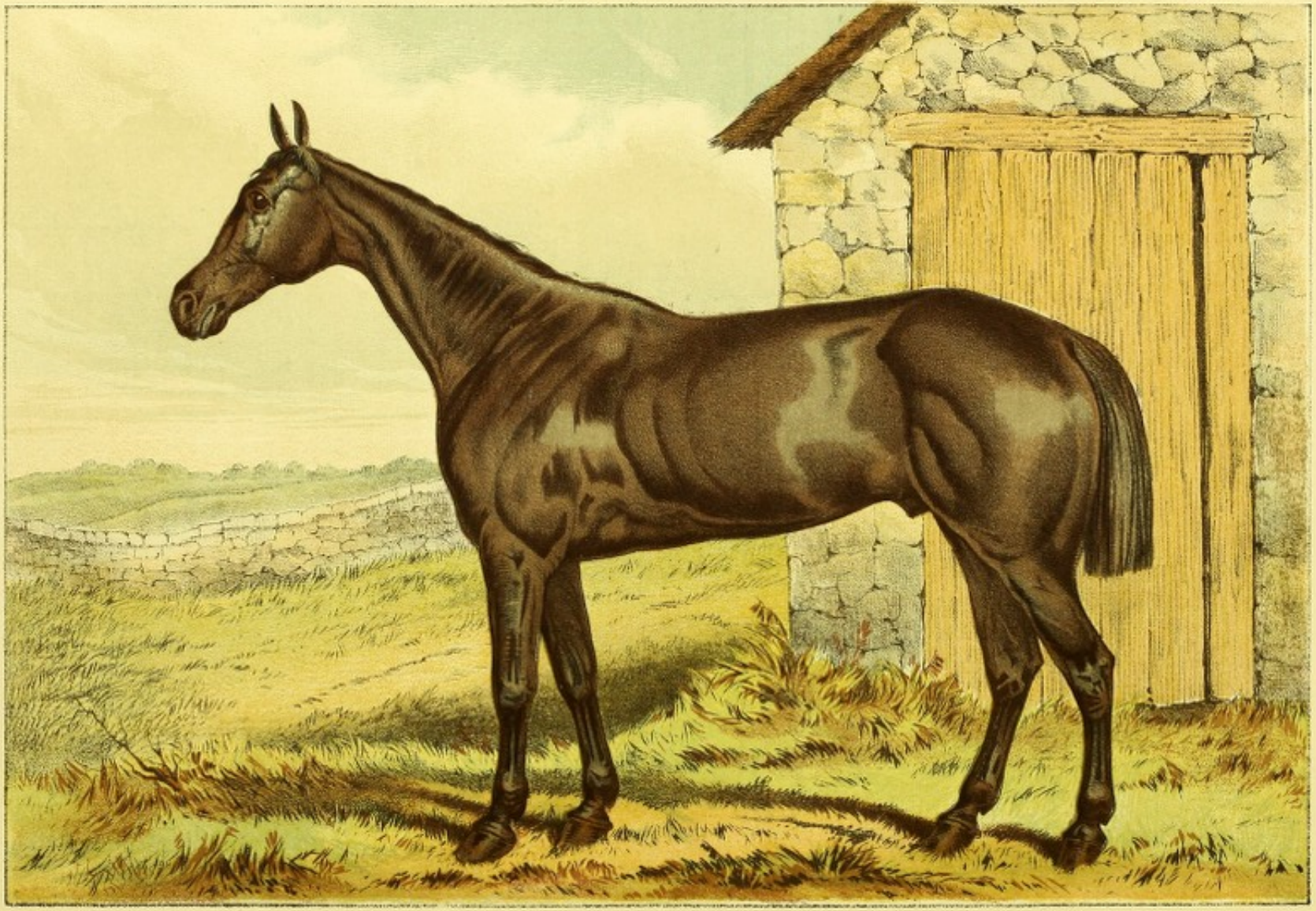
GOODWOOD CUP.

Year.	Winner.	Age.	Weight.	Jockey.
		yrs.	st. lb.	
1825	Cricketer	3	7 0	G. Edwards.
1826	Stumps	4	8 11	walked over.
1827	Linkboy	4	8 4	F. Boyce.
1828	Miss Craven	4	8 1	F. Boyce.
1829	Fleur de Lis	a	9 3	Robinson.
1830	Fleur de Lis	a	9 9	G. Nelson.
1831	Priam	4	9 5	Conolly.
1832	Priam	5	9 13	Conolly.
1833	Rubina	5	9 9	F. Boyce.
1834	Glencoe	3	7 4	Flatman.
1835	Rockingham	5	9 4	Robinson.
1836	Hornsea	4	8 10	W. Scott.
1837	Carew	4	8 1	Flatman.
1838	Harkaway	4	8 8	Wakefield.
1839	Harkaway	5	9 4	Calloway.
1840	Beggarman	5	8 5	Robinson.
1841	Charles XII.	5	8 13	J. Marson.
1842	Charles XII.	6	9 9	Robinson.
1843	Hyllus	a	9 7	F. Butler.
1844	Alice Hawthorn	6	9 5	Templeman.
1845	Miss Elis	3	7 0	W. Abdale.
1846	Grimston	3	7 4	T. Lye.
1847	Hero	4	9 6	J. Day, jun.
1848	Van Tromp	4	9 3	Marlow.
1849	Canezou	4	8 11	F. Butler.
1850	Canezou	5	9 7	F. Butler.
1851	Nancy	3	7 0	Charlton.
1852	Kingston	3	7 6	Flatman.
1853	cJouvence	3	5 9	T. Sherwood.
1854	Virago	3	7 3	Wells.
1855	cBaroncino	3	5 13	Fordham.
1856	Rogerthorpe	3	7 2	Fordham.
1857	cMonarque	5	8 9	Ashmall.
1858	Saunterer	4	9 0	J. Osborne.
1859	Promised Land	3	7 7	Bray.
1860	Sweetsauce	3	7 7	Charlton.
1861	dStarke	6	8 10	Fordham.
1862	Tim Whiffler	3	7 7	Bullock.
1863	Isoline	3	7 3	T. French.
1864	cDollar	4	9 0	Kitchener.
1865	Ely	4	9 7	Custance.
1866	The Duke	4	9 0	Fordham.
1867	Vauban	3	7 7	Parry.
1868	Speculum	3	7 7	Kenyon.
1869	Restitution	4	9 0	Daley.
1870	Siderolite	4	9 0	Wells.
1871	Shannon	3	7 4	Hunt.
1872	Favonius	4	9 3	Maidment.
1873	cFlageolet	3	7 7	Huxtable.
1874	Doncaster	4	9 3	F. Webb.
1875	Aventurière	4	8 7	T. Chaloner.
1876	New Holland	4	8 10	T. Cannon.
1877	Hampton	5	9 0	F. Webb.
1878	bKincsem	4	8 7	Madden.
1879	Isonomy	4	9 3	T. Cannon.
1880	Dresden China	4	8 7	Snowden.
1881	Madame du Barry	6	8 11	Snowden.
1882	Friday	5	7 11	E. Martin.
1883	Border Minstrel	3	7 5	Fordham.
1884	St. Simon	3	8 0	C. Wood.

b Bred in Hungary. *c* Bred in France.
d Bred in America.

CHESTER CUP.

Year.	Winner.	Age.	Weight.	Jockey.
		yrs.	st. lb.	
1824	Doge of Venice	6	9 2	T. Nicholson.
1825	Hymettus	5	8 3	B. Smith.
1826	Brutandorf	5	8 7	Scott.
1827	Grenadier	6	8 9	Templeman.
1828	Fylde	4	7 12	Nelson.
1829	Halston	4	8 0	Templeman.
1830	Felt	4	8 3	Johnson.
1831	Independence	5	8 9	Darling.
1832	Colwick	4	8 3	Darling.
1833	Pickpocket	5	8 9	Darling.
1834	The Cardinal	a	8 7	E. Wright.
1835	Birdlime	4	8 1	Lye.
1836	Tamworth	5	8 5	Spring.
1837	General Chasse	6	9 7	Holmes.
1838	King Cole	5	7 8	Marlow.
1839	Cardinal Puff	5	9 3	Darling.
1840	Dey of Algiers	4	7 10	Flatman.
1841	Cruiskeen	a	7 9	Stagg.
1842	Alice Hawthorn	4	6 0	Bumby.
1843	Millepede	5	7 3	Bumby.
1844	Red Deer	3	4 0	Kitchener.
1845	Intrepid	4	6 6	Arthur.
1846	Coranna	a	8 9	F. Butler.
1847	St. Lawrence	a	7 10	Ford.
1848	Peep o' Day Boy	4	7 0	A. Day.
1849	Malton	4	6 01	Fenn.
1850	Mounseer	4	6 9	G. Dockeray.
1851	Nancy	3	4 12	Kendall.
1852	Joe Miller	3	4 10	J. Goater.
1853	Goldfinder	5	7 6	Alderoft.
1854	Epaminondas	3	4 10	Fordham.
1855	Scythian	4	7 4	Wells.
1856	One Act	3	5 1	Hibberd.
1857	Leamington	4	6 9	D. Hughes.
1858	Vanity	4	6 10	Withington.
1859	Leamington	6	8 2	Wells.
1860	St. Albans	3	5 3	T. French.
1861	Ben Webster	4	7 8	L. Snowden.
1862	Tim Whiffler	3	6 11	Doyle.
1863	Asteroid	5	9 4	Wells.
1864	Flash in the Pan	a	6 4	Morris.
1865	Dalby	4	6 8	Hibberd.
1866	Dalby	5	7 7	Hibberd.
1867	Beeswing	4	7 0	Prior.
1868	Paul Jones	3	6 2	Jeffery.
1869	Kt. of the Garter	5	9 1	Fordham.
1870	Our Mary Ann	5	6 0	Newhouse.
1871	Gleulivat	4	6 2	G. Jarvis.
1872	Inveresk	3	5 12	Griffiths.
1873	Field Marshal	5	6 12	Griffiths.
1874	Organist	3	6 6	Glover.
1875	Freeman	6	7 9	Glover.
1876	Tam o' Shanter	5	6 11	Thompson.
1877	Pageant	6	7 10	Glover.
1878	Pageant	a	8 12	T. Cannon.
1879	Reefer	4	7 1	Luke.
1880	Fashion	3	6 5	Greaves.
1881	Windsor	4	6 6	Weston.
1882	Prudhomme	5	8 4	Lemaire.
1883	Biserta	3	6 3	S. Loates.
1884	Havock	6	7 10	C. Wood.



THE HUNTER "GLENGARRY".

CHAPTER VIII.

THE HUNTER.—THE HUNTER OF THE OLD AND THE NEW SCHOOL.—GLENGARRY.—FORM AND CHOICE OF A HUNTER.—PURCHASING AND HIRING.—TREATMENT IN THE FIELD.—OVER-MARKING.

THE modern hunter, to "live the pace," must be a blood-horse, or one of those very best of stout cocktails, who, with four-fifths of "blood" in them, pass dealer's muster as thorough-breds. His height should be not under fifteen nor over sixteen hands; over the latter he will scarcely be handy through dirt and at his jumps, under the former standard he cannot so well measure the height of the object before him. True, some exceptional and wonderful, if not quite credible, cases are in tradition of the jumping of cobs and galloways, but these are so very exceptional that they do not invalidate the general rule, that under fifteen hands is too small, and over sixteen is too big for a hunter. In a former chapter, pages 81 to 86, will be found some general remarks on the conformation of the race-horse, many of which will apply, with little modification, to the modern hunter. In a work like the present, which aims at giving the best thoughts of the best thinkers, and the experiences of the most practised upon the varied and numerous subjects of which it treats, it would be unpardonable to omit the neatest sketch of what a modern hunter is or should be, as depicted by that *facile princeps* of hunting writers, "Nimrod," in his celebrated *Quarterly Review* article, "The Chase."

"The half-bred horse of the last century was, when highly broken to his work, a delightful animal to ride; in many respects more accomplished, as a hunter, than the generality of those of the present day. When in his best form, he was a truly-shaped and powerful animal, possessing prodigious strength, with a fine commanding frame, considerable length of neck, a slight curve in his crest, which was always high and firm, and the head beautifully put on. Possessing these advantages, in addition to the very great pains taken with his mouth in the bitting, and an excellent education in the school or at the bar, he was what is termed a complete snaffle-bridle horse, and a standing as well as a flying leaper. Held well in hand—his rider standing up in the stirrups, holding him fast by the head, making the best of, and being able, from the comparatively slow rate at which hounds then travelled, to pick or choose his ground—such a horse would continue a chace of some hours' duration at the pace he was called upon to go, taking his fences well and safely to the last; and he would frequently command the then large sum of one hundred guineas. But all these accomplishments would never have enabled a horse of this description to carry the modern sportsman, who rides well up to hounds, on a good scenting day, over one of our best hunting countries. His strength would be exhausted before he had gone ten minutes, by the increased pace at which he would now be called upon to travel, but to which his breeding would be quite unequal; and his true symmetry, his perfect fencing, his fine mouth, and all his other *points*, would prove of very little avail. If ridden close to the hounds, he would be powerless and dangerous before he had gone across half-a-dozen Leicestershire enclosures.

"The increased pace of hounds, and that of the horses that follow them, have an intimate connection with each other, if not with the march of intellect. Were not the hounds of our day to go so fast as they do, they would not be able to keep clear of the crowd of riders who are now mounted on horses nearly equal to the racing pace. On the other hand, as the speed of hounds has so much increased, unless their followers ride speedy, and, for the most part, thorough-bred horses, they cannot see out a run of any continuance if the scent lies well. True it is that, at the present time, every Leicestershire hunter is not thorough-bred; but what is termed the cock-tail, or half-bred horse of this day, is a very different animal from that of a hundred years back. In those days, a cross between the thorough-bred, or perhaps *not quite thorough-bred*, horse, and the common draught-mare, was considered good enough to produce hunters equal to the speed of the hounds then used. There was not such an abundance of what may be termed the intermediate variety of the horse in the country —'pretty well bred on each side of the head'—which has of late years been in demand for the fast coaches of England, in which low-bred horses have no chance to live.* Mares of *this* variety, put to thorough-bred stallions, *and their produce crossed with pure blood*, create the sort of animal that comes *now* under the denomination of the half-bred English hunter, or cocktail. These are also the horses which contend for our several valuable stakes, made for horses not thorough-bred, though, when brought to the post, they are sometimes so much like race-horses in their appearance and their pace, that it would be difficult to detect the blot in their pedigree. A prejudice long existed against thorough-bred horses for the field, particularly such as had once been trained to the course; and in some quarters it still lingers. It is argued by their opponents that the thinness of their skins make them afraid

* The reader must bear in mind that though this was written before the locomotive had thrown the "fast coaches" off the road, the fact of the improved racing blood of the modern hunter is yet more general. The park hack of 1861, would have been a cocktail racer, if not a so-called "blood-horse," of the last generation. The prejudice against the thorough-bred is extinct, except among the "pigtails."

of rough black-thorn fences, and that they lose their speed in soft, or what, in sporting language, is termed deep ground; also, that having been accustomed from their infancy to the jockey's hand, they lean upon their bits, as when in a race, and are therefore unpleasant to ride. Such of them as have been long in training may undoubtedly be subject to these objections, and never become good and pleasant hunters; but when purchased young, and possessing strength and bone, they must have many counterbalancing advantages over the inferior-bred horse. So far from not making good leapers, the firmness of bone and muscle peculiar to this variety of the breed is prodigiously in favour of that desirable qualification. Indeed, it has been truly said of them, that they can often leap large fences when lower bred horses cannot leap smaller ones,—the result of their superior wind when put to a quick pace.

"Whoever wishes to see two distinct species of the horse in the most perfect state, should go to Newmarket and Melton-Mowbray—to the former for the race-horse, to the latter for the hunter. In no place upon the earth is *condition* attended to with so much care, or managed with such skill, as in this renowned metropolis of the fox hunting world. Indeed, we conceive it would be useless to expect horses to live with hounds in such a country as Leicestershire, unless they were in condition to enable them to contend for a plate."

Colonel Cook, in his *Observations on Hunting*, fully indorses this view. "Many fox hunters," he says, "prefer thorough-bred horses, others cocktails; I always gave the preference to the former, if it was possible to get them. It is the general opinion that thorough-bred horses cannot leap so well as cocktails: I think otherwise; and if you will try the experiment, by taking ten young horses of the former, and ten of the latter sort, I am convinced you will find the thorough-bred ones to have the advantage, and naturally to clear their fences with more ease to themselves. Horses that have been in training for years cannot be expected to make hunters; but, nevertheless, what superiority has a thorough-bred one in every respect—above all, in speed, bottom, and wind? It often happens, when a cocktail is at the height of his speed, a thorough-bred horse is only at three-quarters, and the latter will always go through dirt (as the term is) best." This absolute opinion requires some qualifications. A cocktail, with a well-placed head, a good bridle neck, high withers, deep and oblique shoulders, broad and low-placed knee, muscular arms, deep girthing-place, good loins, muscular and blood-like haunch and thigh, and low-placed deep hocks, such as Harry Hall has drawn in the opposite plate of GLENGARRY,* should have our vote for a welter weight: all but his head, which we cannot admire—but "handsome is that handsome does."

In the selection of a hunter a primary consideration is the nature of the country to be hunted over. In stony and thickly enclosed countries, the heavier and lower-bred horse may get along creditably; but in the best countries where "racing" is required, such an animal is "out of the hunt" in no time. Where a heavy deep soil predominates, presenting also a large portion of ploughed ground, intersected by wide and strong fences, like those of Essex and some of the midland counties, such localities will require a horse of sufficient height with much substance; while one with lighter build, and in height not exceeding fifteen hands and a half, is best adapted to a hilly country, as the Surrey Hills, the Sussex and Wiltshire Downs, the Cheviots, &c., &c.

The sportsman who rides a welter weight should always be "over-horsed." It is imperative on him that he be mounted on one presenting a combination of power, activity, and durability. These are essential requisites to him, and when such a form is united with high-breeding, the rider, spite of his weight, may hope to be in the *right place*. Some Irish horses are well adapted for the purpose of carrying heavy weights; and if they do not always go at a racing pace, their admirable fencing will tend to make up the deficiency. Neither are the Irish hunters at the present time defective in their breeding, as their local races and steeple-chases testify.

As to the choice of a hunter a condensed enumeration of his "points" will serve to form an ideal of his best form.

The first property of a good hunter is, that he should be light in hand. His head must be moderately small, the neck thin beneath, the crest firm, the jaws wide; it will then form that angle with the neck which gives a light and pleasant mouth.

The forehand should be loftier than that of the racer. A turf horse may be forgiven if his hind quarters rise an inch or even two above his fore ones. His principal power is wanted from behind, and the very lowness of the forehand may throw more weight in front, and cause the whole machine to be more easily and speedily moved. A lofty forehand, however, is indispensable in the hunter; a shoulder as

* The following note from the artist accompanied the portrait of GLENGARRY:—"He is a dark-bay horse, with black points, clear of white, standing 15 hands 3½ inches, rather long on the legs, with magnificent shaped shoulders—neck rather thin and straight; is very deep in the girth, round in the barrel, and well ribbed home; has great power in his thighs, loins, and hind-quarters. He has been in the possession of his present owner, Mr. Sadleir Bruère, for eight years, and has been hunted now for nine years, and is a most extraordinary animal for endurance and bottom. Mr. Bruère has regularly hunted him through every season for the last eight years with the Bedale hounds; and the horse has done the work of any two animals throughout each season—sometimes going twenty-five miles to cover on the morning of hunting, distinguishing himself afterwards in a severe run of an hour so, and having perhaps twenty or thirty miles to get home on bad roads. Glengarry has never been known 'off his feed' after such exertions; and could come again in three or four days as fresh as ever. Need I add, he is one of the soundest horses possible in every way—is very speedy, and a most extraordinary careful fencer, and has never been down in his life at any jump; and, at his present age, thirteen years, he can still keep his own with the very best of horses, and would be hard to beat. To prove his good qualities, his owner ran him for the Hunters' Stakes at Calleuch this spring (*vide* the Calendar, 1860); and carrying the heavy weight of 12st. 7lb., he beat the field of thirteen horses (all of a superior class), with the exception of a 5-yr. old mare, and lost his race of two miles by a head only, with the difference of 1st. 2lb. in the mare's favour. He is considered one of the best, if not the very best, horse that has been known in the county for these twenty-five years at least."

extensive as in the racer and as oblique, and somewhat thicker. The saddle will then be in its proper place, and will continue so, however long may be the run.

The barrel should be rounder, in order to give greater room for the heart and lungs to play, and to send more and purer blood to the larger frame of this horse, especially when the run continues unchecked for a time that begins to be distressing. A broad chest is always an excellence in a hunter. In the violent and long-continued exertion of the chase the respiration is much quickened, and hence more blood is hurried through the lungs in a given time than when the animal is at rest. There must be sufficient room for this, or he will not only be distressed, but possibly destroyed. The majority of the horses that perish in the field are narrow-chested.

The arm should be as muscular as that of the racer, or even more so, for both strength and endurance are wanted.

The leg should be deeper than that of the race-horse—broader as we stand at the side of the horse—and especially beneath the knee. In proportion to the distance of the tendon from the cannon or the shank-bone, and more particularly a little below the knee, is the mechanical advantage with which it acts.

The leg should be shorter. Higher action is required than in the racer, in order that the legs may be clearly and safely lifted over many an obstacle, and, particularly, that they may be well doubled up in the leap.

The pastern should be shorter, and less slanting, yet retaining considerable obliquity. The long pastern is useful, by the yielding resistance which its elasticity affords to break the concussion with which the race-horse from his immense stride and speed must come on the ground: and the oblique direction of the different bones beautifully contributes to effect the same purpose. With this elasticity, however, a considerable degree of weakness is connected, and the race-horse occasionally breaks down in the middle of his course. The hunter, from his different action, takes not this length of stride, and therefore wants not all this elastic mechanism. He more needs strength to support his own heavier carcass, and the greater weight of his rider, and to undergo the fatigue of a long day.

The foot of the hunter is a most material point. The narrow and contracted foot is the plague-spot of most of our racing blood. The work of the racer is, however, all done on the turf: but the hoof of the hunter is battered over the hard road and the stony field, and if not particularly good must soon be ruined.

The position of the feet in the hunter requires some attention. They should if possible stand straight. If they turn a little outward there is no serious objection; but if they turn inward his action cannot be safe, particularly when he is fatigued or over-weighted.

The body should be short and compact, compared with that of the race-horse, that he may not in his gallop take too extended a stride. This would be a serious disadvantage in a long day and with a heavy rider, from the stress on the pasterns; and more serious when going over clayey poached ground during the winter months. The compact short-strided horse will almost skim the surface, while the feet of the long-reached animal will sink deep, and he will wear himself out by efforts to disengage himself.

Every sporting man knows how much more enduring is a short-bodied horse in climbing hills, although perhaps not quite so much in descending them. This is the secret of suiting the *race-horse* to his course; and unfolds the apparent mystery of a horse decidedly superior on a flat and straight course, being often beaten by a little horse with far shorter stride, on uneven ground and with several turnings.

The loins should be broad; the quarters long; the thighs muscular; the hocks well-bent, and well under the horse.

The reader needs not to be told how essential temper and courage are. A hot irritable brute is a perfect nuisance, and the coward that will scarcely face the slightest fence exposes his owner to ridicule.

The methods of procuring hunters are of course various. Many are passed from one gentleman to another in the different hunts, while more are purchased from the London and country horsedealers. The inexperienced hand will most readily suit himself at once in purchasing from among those horses he may see performing in any celebrated hunt. There is a pleasure in horse-dealing, that makes almost every horse comeatable; and it is better for a novice to give a good price at once for a known good horse, than to be taken in two or three times with cheaper but indifferent ones. The enormous prices now given for hunters of character would almost call the grandfathers of some of the buyers out of the grave to stop the bargain. 500 guineas have been frequently paid, and in some instances even a larger sum has been given for a hunter; 200 and 300 guineas are every day prices.

The London horsedealers of respectability furnish their stables with hunters of some pretensions, and occasionally of no small ones either; such, if young, are usually horses bred by sporting farmers, which, having been a little fielded, are then warranted as steady hunters, and many of them turn out so. The west end dealers have high-bred and seasoned hunters of known repute on sale; and, at all times, we believe, they have well-bred young horses, that a little good fielding, under a judicious rider, will make good hunters.

Colonel Cook is favourable to purchasing at Tattersall's, and says, "If you wish to give a large price for what is called a well known made hunter, from one cause or other, there are, every spring, some such valuable horses to be purchased at Tattersall's. It is a lounge three times a week, where you are sure to meet your friends, and can listen with pleasure to their reports of the achievements of the different packs of hounds the season past, and the arrangements for the future. Suppose you purchase half-a-dozen young horses, at a hundred guineas each, to carry fourteen stone; if two out of the six turn out well, you ought to be satisfied, as there is every probability of your selling the remaining four for 50 each, barring accidents." We are acquainted with several sporting characters, some of them owners of hounds, who make a point, towards the autumn,

of buying such blood-like nags as are likely to suit their purpose from among those parted with by the Londoners and others, to avoid the expense and trouble of keeping through the winter. These are taken to the country, and, having been tried, the buyers select perhaps three out of five that will suit either themselves or others. The remainder they sell, probably by the same hammer, at £5 or £10 loss, still leaving the others decided bargains: and, if so inclined, "obliging a friend" with one of the remaining three, at a "good figure," serves to pay for the whole lot.

Masters of hounds, who have sufficient and extensive range both of paddock and stable, have many better opportunities of obtaining horses than by breeding them. Horse breeding, except on fancy occasions, or when it is done from some particular strain, where all the progeny turn up trumps, is a losing speculation to most gentlemen. If such an one should be a thorough judge of colts—a judgment by the bye that requires half a life and close attention into the bargain to gain—we repeat, if he be possessed of this judgment, he can use it to great advantage in selecting from the colts of the neighbouring breeders such as promise well. These being picked up as occasion offers, at three or four years old, having been already early handled, bitted, and backed, but not worked, are now to be trained, and gradually conditioned, and worked in turn by the under-attendants in the field, which soon enables the eye of the master to judge what will suit and what will not. The 40 or 50 guinea horse thus soon grows into a 200 guinea hunter; and others, rejected from the hunting-stable, fetch 80, 90, or 100, for the saddle, cabriolet, brougham, &c.

Many country horse-dealers, who reside in the breeding districts, have opportunities of furnishing their customers with horses of high hunting qualities: but the best of these are generally collected and brought to the great metropolitan or provincial emporiums.

The hiring of hunters is a modern custom, and much favoured by the facilities for human and equine locomotion afforded by the development of railroads.* The hiring may be by week, month, or season — and in some cases includes groom and appointments of every description. To foreigners, who come to this country for a few months; to mercantile and professional men, who can spare only a few weeks in the hunting season; this mode is most convenient, and, we think, economical also. Speaking of Leamington—and it is the same in many other parts of the country—Lord William Lennox says:—"If a gentleman distrust his own judgment, or does not like the trouble and expense of getting such a stud together, he has nothing to do but to hire them in the county (Warwick). In the town and neighbourhood of Leamington he will find plenty of sporting liverymen, farmers, and horse-dealers, who, for a fair consideration, and with the chance of selling, will furnish him with horses that can go the pace, and do the trick."

Of the love of the chase inherent in the old hunter so many anecdotes are told, that a small volume might be filled with them. In the chase, in the days of his activity and strength, he shares the enthusiasm of his rider. No one who has seen an old hunter turned into a park for life, but must have marked his animation when the distant cry of the hounds or the horn of the huntsman meets his ear. If power and chance is left him, he will join the chase, and come in at the death. It is recorded by an unimpeachable authority, that a hunter, who had shortly previous been fired in both hind legs, and placed in a loose box, with a hatch-door four feet high, and an aperture of three feet square above it, hearing the cheering of the huntsmen and the cry of the dogs, sprang through the opening, and joined the hunt. The horse was nearly sixteen hands, and master of fifteen stone.

It is, then, easily credible that, entering as fully as his master into the sport of the day, the horse disdains to yield to fatigue, and voluntarily presses on, until nature is exhausted, and he falls and dies; but, much oftener, the poor animal intelligibly enough speaks his distress—unwilling to give in, yet painfully and falteringly holding on. The true sportsman, though unwilling to relinquish the chase—he who "is merciful to his beast"—soon recognises the symptoms of excessive and dangerous distress. To the drooping pace and staggering gait, and heaving flank, and heavy bearing on hand, will be added a very peculiar noise. The inexperienced may fancy it to be the beating of the heart; but that has almost ceased to beat, and the lungs are becoming gorged with blood. It is the convulsive motion of the muscles of the belly, called into violent action to assist in the now laborious office of breathing.

Over-working the hunter is a too frequent occurrence, and often requires very judicious and prompt treatment to save life. It unfortunately also happens, that when death does not immediately ensue, from the congestion which has taken place in the lungs, either broken wind or founder follows, and thus the horse is equally ruined for active service. We will, however, premise, that there appear to be two dangers to be apprehended from inordinate exertion; one from a cessation of the powers of life, the other from the tendency which such inordinate excitement has to produce congestion of the lungs, or active inflammation of some of the vital organs: sometimes spasm of the midriff occurs, and rupture of it has taken place.

When the vital powers have been brought almost to a standstill, the horse with great difficulty reaches home, and often scours, and stales bloody urine on his journey there. He breathes with irregularity and difficulty; becomes hot and cold by turns; or a clammy sweat breaks out, at first partially, but if he cannot rally, it becomes universal. His skin has a peculiar feel and loses its elasticity; the haw* is drawn forward; the nose, at first fiery, now becomes pale; the breath-

* The reader will find this point dilated upon amusingly in a couple of eight papers by Lord William Lennox, called "Chaunting for the Million," and "Sporting Life *from* London," in the collection published by his lordship entitled *Merrie England*: London, Newby, 1859.

* See in GLOSSARY, *post*.

ing is hurried, and the pulse is found to be tremulous, and almost invariably intermitting. Some cases are marked with a settled determination in the horse not to lie down; while others not only lie down, but are with difficulty made to rise again. Bleeding as a remedy is commonly resorted to; but Blaine advises, if no active symptoms of inflammation are present not to do so. Place the hand on the chest; does the heart vibrate quick, rather than beat lustily, by no means bleed. Press any one of the larger veins, and, unless it swells up at once, let bleeding alone, at least until the medical adviser arrives. Should it however happen, that no veterinary surgeon is near, if the breathing becomes hurried, the nostrils dilated, and the horse reaches out his neck as though reaching for more *rein liberty*, if the linings of the nose, although at first pale, now begin to look flushed and red, and the mouth becomes hot, proceed to bleed. If the vein rises well, make a large orifice, so that it may discharge the blood quickly, watching the effects of the flow. If it rushes out, and the horse does not falter, take three quarts, or even more, away. Let his head be turned to the door, and rub and bandage his legs up. As soon as the first symptoms go off, or his legs and ears become cold, briskly hand-rub them, clothe the body also, and throw up a gruel clyster; and, unless the weather be very cold, allow a free current of air, but clothe the body and give the following:—Sweet spirit of nitre, half an ounce; mix with a pint and a half of gruel. Should active symptoms of weakness come on, horn down equal parts of gruel and sound ale; and, should the debility increase, horn these down every half hour, with occasional full doses of opium also, to allay irritability in the system, and to arrest the looseness that is usually present.

When active inflammation follows the over exertions of a hard day, the over-marking does not immediately show itself. The horse probably appears at first only moderately fatigued, but he soon gets a strong shivering fit, accompanied with an oppressed pulse. The lining of the nose becomes highly injected, and the breathing much disturbed. The symptoms which follow vary according to the organ which is the principal object of attack, and the treatment also must vary with that. While proper medical assistance is procuring, the groom, under these symptoms, with propriety may bleed, back-rake, and bandage up the legs if cold; but he should avoid giving any heating, *i.e.* stimulating, drinks, under the name of cordials; indeed, he should not give any thing supposed to be medicinal, until the horse has been seen by a veterinary surgeon.

In the article "Fox-Hunting," in our companion volume, "British Field Sports," will be found some Remarks on "Riding to Hounds." When treating of "Breaking and Training the Horse," we shall avoid repetition by noticing the several peculiarities of "Education" required by horses, according to the purpose for which the animal under consideration is intended. The article on "The Paces of the Horse," will also furnish incidental suggestions.

CHAPTER IX.

BREEDING, BREAKING, AND TRAINING THE RACEHORSE—TRAINING GROUNDS.—EXERCISE.—SWEATS.—THE TURKISH BATH.—TRIALS.

The two great objects in breeding domestic animals may be summarily stated. The first, purely profitable, or commercial, aims at multiplying their numbers; the second, of a higher order, has the object of improving their forms and raising their qualities. To the latter, the sportsman and the breeder of the superior class of animals directs his judgment and his attention.

So much has been written on the subject of breeding for the turf, that it would be absurd in a work intended for general perusal to overlay its pages with scientific questions of physiology or psychology; such as what share each parent takes in impressing the sex, the temper, the form and qualities of the future progeny, and the like.* It will suffice if we speak generally of the main admitted facts in breeding as they relate to the race-horse, the hunter, and the saddle-horse.

BREEDING THE RACE-HORSE.

The requisites necessary to render breeding the race-horse profitable as a "business," are, judgment in selecting, and plenty of money at command to secure mares and stallions of the first blood; paddocks and necessary buildings on a suitable soil; and intelligent and trustworthy grooms to look after the establishment. With these essentials in proper order, breeding, distinct from racing, cannot fail to pay, on the average, whether the foals are sold off at weaning time, or as yearlings.

The present race of stud-grooms and trainers are a very different class of men from their predecessors, whom they far excel in point of respectability and intelligence, the result of education and the general diffusion of knowledge. Books written by those who have taken practical experience and nature for their guides, have been published for the service of breeders and trainers, who have both read and reflected on their contents. The breeder, taught by practical knowledge the bad effects of a humid atmosphere, and rank and succulent food, now provides warm sheds, small paddocks on a dry upland soil, and, as we shall presently show, plenty of corn for his young racing stock.

Having fixed on a dry, healthy situation, such as, for instance, the neighbourhood of Downs, and provided every convenience and accommodation for the mares and young stock, together with loose boxes, and a small exercise ground, well secured with a high and impervious fence for the stallions, the breeder's next care is to purchase brood mares and entire horses, particularly the latter, as experience has long confirmed the truth of the supposition, that in breeding a racer in his highest form and excellence, the stallion is of more importance than the mare. On consulting the racing calendar for the last seventy years, it will be seen that the produce of the highest bred and most successful mares by inferior stallions, has turned out comparatively worthless, while all our most celebrated winners have been got by the best entire horses. The judicious breeder from this sees that it is the worst possible economy to purchase cheap stallions, and never grudges paying the difference between the price of a first-rate and an inferior one. Above all things, it is essential that both mares and stallions should be free from "constitutional infirmity;" by which term is understood a tendency to defects in the wind, and of their legs and feet to give way in training.

The most eminent authorities on human pathology have agreed as to hereditary transmission of certain diseases and defects, such as scrofula, gout, insanity, &c., and guided by their discoveries, able veterinarians, both foreign and British, have shown that the horse is subject to the same law of nature. This opinion, which is founded on reason, common sense, and experience, existed in the days of the Cæsars, and is beautifully expressed by Horace in the following lines:—

> Fortes creantur fortibus et bonis.
> Est in juvencis est in equis patrum
> Virtus; neque imbellem feroces
> Progenerant aquilæ columbam.

Inattention to this important law of nature has occasioned many an owner of race-horses large sacrifices of money, by breeding from favourite stallions and mares a weedy progeny incapable of standing the severity of training, or which "goes amiss," before making the slightest return. On the other hand, the knowledge of this defect has frequently prevented breeders sending mares to stallions of otherwise good repute; instances of which it would be invidious to quote.

To the defects above mentioned, we must add badnesss of temper, which is a great drawback to a full and safe exercise of the powers of the racer, and which is often found to be hereditary.

In the choice of the brood mare, after the soundness of her constitution, and freedom from the above disqualifications have been ascertained, the breeder should direct his attention to shape and substance, selecting an animal with a good

* The reader desirous of becoming thoroughly *au fait* in the minutiæ of training, may consult the *Philosophical Transactions*, vol. lxxxix. p. 173, (paper by Sir Everard Home), *Phil. Trans.* for 1809, p. 357, (paper by Mr. Knight). The *Veterinarian*, vols. for 1832 to 1840, articles by Mr. Castley, and Mr. Karkeek, of Truro. Percivall's Lectures, part iii. p. 112. *Breeding for the Turf*, by Mr. N. H. Smith. Blaine's *Cyclo.*, art. *Breeding*, p. 277. Professor Morton's Works. Darvill on the Race-horse. The *Stud Farm*, by Cecil, &c., &c.

roomy frame; what is termed a "fashionable" pedigree is also requisite, in case her produce is to be brought to market previous to performing in public.

The racing capabilities of both mare and stallion form an important consideration with the breeder in matching them; his object being to combine the good qualities of both sire and dam in the produce; as, for example, should the forte of the mare lay in speed, then a stallion remarkable for the stoutness of his running should be selected.

The system of breeding in-and-in with race-horses, has occasioned much difference of opinion, and given rise to much discussion among those most interested and best capable of forming a judgment on the subject. The advocates in its favour certainly appear to have the best of the argument, as they adduce many instances of its success, against the theory of its opponents. Among these instances are Flying Childers, and very many of our best racers from his time up the present day; the case also of George IV.'s favourite mare, Maria, has been particularly dwelt on, her produce by Rubens and Soothsayer being worthless, while that by Waterloo and Rainbow, both closely allied to her, proved winners.

In a former part of this volume, under "Turf Celebrities," many confirmations of this will be found. Mr. Hankey Smith, who resided a considerable period among the Arabs, remarks in his "Observations on Breeding for the Turf," that "colts bred in-and-in, show more blood in their heads, are of better form, are fit to start with fewer sweats than others; but when the breed is continued incestuous for three or four crosses, the animal degenerates."

It must be understood, however, that by breeding in-and-in, this writer does not mean breeding from brother and sister, or from a mare with her own sire, but "after the first cross, to return to original blood."

Contrary to the practice pursued with other sorts, blood mares are put to the horse very early in the year, the object being that their produce may be dropped as soon as possible in the commencement of a new year; colts dating their age from the first of January. This is a great point, as the modern racer is called upon to show his quality before he is two years old.

The careful stud-groom will make it a point to pay the utmost personal attention to the comfort and safety of the sires and dams under his charge, leaving no important duty to the mercy of underlings.

According to the conditions of the most important racing-stakes now annually the subject of competition, thorough-bred stock must be considered in training from the moment they first see the light. Too much care cannot be taken in sheltering the foals from the rain and weather, in warm sheds, constructed with rollers on the side of the entrances, so as to prevent injury to the timid little animals as they rush in and out by the sides of their dams. These entrances, as well as the walls or hedges of the paddocks, should be free from any projection against which they might hurt themselves in their quick and giddy movements.

As they are required to display at the "starting-post" at two years old, in a form and with power as nearly as possible approaching to maturity, their constitution must be forced with the most generous nourishment; consequently, we find that corn, in large quantities, is given to the young animal, in addition to the milk of the highly fed dam; and, as occasion may require, physic is administered under the direction of the careful stud-groom.

BREAKING AND TRAINING THE RACER.

Young blood stock cannot be handled too soon, too carefully, or too gently; as their tempers, good or bad, in after life are almost invariably the result of their treatment at this period. We are, however, happy to say that the present system of breaking colts is conducted with less severity, and therefore with less danger to the animal than formerly.

To command obedience and insure confidence are the first points aimed at; and, as such, the importance of the early handling we have recommended must be evident, as greatly simplifying this part of the process. Colts are now taken "in hand" much earlier than formerly; racing colts at a twelvemonth, and saddle colts of promise are now bitted and suppled at two. They are finally and fully broken and trained, some at three, and few later than four years old. When a colt has had early "handling," and at two years old is subjected to some initiatory discipline, his full breaking being protracted to his fourth or even fifth year, much may be expected from him, for the usual wear and tear will hardly make an impression on a constitution that has had all its powers developed.

The breaking of racing colts and fillies commences at twelve months old. Nor would this be so injurious as is supposed, were the exercising less severe. On the other hand, what is done is perhaps actually necessary to bring about that early extension and suppling of their limbs and joints, so essential to the future speed of the animal; at least, it certainly is so, to bring such young horses out for two-year-old stakes. Rope dancers, stage dancers, posture masters, &c., never acquire celebrity unless their initiatory exercises are begun at an early period of life; and to insure *high form* in the racer, and first-rate speed, mild training, but mild training only, cannot be commenced too soon. To such an extent, however, is this early engagement of the race-horse now carried in large racing establishments, that it is not uncommon to make severe trials of the speed and bottom of colts and fillies at very early periods, that time and keep may not be thrown away on such as give no promise of future excellence; but that, if necessary, they may be at once disposed of for inferior purposes. By three years old, the breaking of the young racers of the present day is completed; about which time the breaking of the better sort of saddle-horses of all descriptions commences; unless an early initiatory handling, lounging, and partial backing at two years old have preceded, which is a very prudent practice.

The details of the application and use of the cavesson, and of saddling, bitting, and backing the colt, have already been treated of under "Breaking the Horse for General

Purposes," we shall, therefore, pass them over here. The same remark will apply to food and physic.

We have already observed that training stables should be in the vicinity of open downs, as well for the benefit of the air as for suitable exercise. Their extent also presents greater variety, and avoids the necessity of constantly using the same track or course, a practice which much injures the surface for galloping. When, however, this cannot be avoided, rolling at a proper time may be resorted to with advantage.

Mr. Darvill is of opinion, that it is not so much the hardness of the ground as the uneven surface that occasions horses to break down; and that small mole-hills and cart-ruts are the principal causes of this injury. This is reasonable enough; but, at the same time, the bad effects of galloping horses over the hard soil which the principal training grounds of the south of England present in summer and a dry autumn, are too well known to require further explanation. A remedy, however, has been found which, to a great extent if not completely, remedies this evil, and it has the advantage of being both cheaply and easily obtained. The material is common tan, which may be obtained from the tanner's yard, sometimes for the troubling of carting, but always for a few shillings a load; this, having been exposed to the sun and air, should be spread over the turf, which should be afterwards rolled.

Training Grounds.—At Newmarket, as may be supposed, there is great variety of ground to gallop over, and in spring and autumn it is generally in good order—that is, if a moderate portion of rain should fall, without which it is mostly very hard; it is, therefore, not good for summer work; but, as that is a season when there is not so much going on at that place, it does not operate so importantly, except with horses which are in preparation for country meetings. In order to obviate this evil, Marson had a ploughed gallop contiguous to where he usually exercised. This has of late years been much resorted to; it presents a yielding surface at all seasons, and a similar practice has been adopted at other places where there are many horses in training.

The very fact of a number of horses being constantly exercised over certain places, must in time have the effect of rendering the land very solid; and it is astonishing how some ground appears to have a tendency to shaking horses—that is, of making them gallop sore and short.

Although a considerable portion of the downs in the vicinity of Newmarket have been enclosed for many years, enough remains to afford both race-courses and training-ground of great extent and variety. The horses standing at the west end of the town, are generally galloped and sweated on that part of the Heath where the courses are situated; for which there is ample space along the Flat by the side of the Ditch, and home up Cambridge Hill, or over the Flat coming home round the Turn of the Lands on the lower side of the Beacon Course, without touching the running ground. The principal training-ground for the horses that stand at the east end of the town is the Warren Hill, on the road leading to Bury.

The principal public trainers on these grounds are, we put them alphabetically:—W. Arnull; R. Boyce; W. Harlock; Sam Rogers. Of private trainers:—W. Channel; R. Cotton, and J. Hayhoe.

The Downs of Epsom and of Ascot are the principal training-grounds of the south. In the neighbourhood of Epsom various places are resorted to on the approach of those races; and there are several training-stables in the vicinity, where horses are kept at work throughout the year. The first that may be noticed is the exercise on Epsom Downs, which has not much to recommend it: in dry weather it is sufficiently hard, and the natural solidity of the surface is enhanced by the numerous race meetings which have been held, and which have attracted such multitudes of persons, who, with their carriages and horses, have trampled more or less over every inch of it; in wet weather it is slippery. The surface is a light chalky clay, with a substratum of chalk and flint, upon which tan has an admirable effect.

Leatherhead Downs demand a preference over all other in this locality, especially so far as the nature of the soil is concerned; the only objection to them is, that they are not quite so extensive as might be wished, therefore it is necessary to make several turns in order to get a gallop of sufficient distance.

Mickleham Downs, which are only on the other side of the hill, are very good, and it is almost impossible to conceive a more picturesque or interesting spot; the upper part, parallel to which the termination of the gallop extends, is protected by a narrow belt or plantation, and the Downs are studded over with hawthorn and juniper bushes, which, though wildly arranged, produce a very pretty contrast, as the hawthorn is, at the season of the year, in full blossom. Its appearance is that of a gentleman's domain, rather than the uncultivated rudeness of a common. The gallops pass between the clumps of hawthorn and juniper, which serve to define the track.

The trainers on these Downs are, pursuing our alphabetical impartiality of public "educators:"—J. Armstrong; C. Balchin; E. Balchin; J. Hughes; W. Reeves; R. Sherwood. Private:—R. I'Anson; and J. Mellish.

Many horses are trained for the Midland Counties' Meetings at Hednesford, between Cannock and Rugeley, in Staffordshire, at which place several public trainers reside. J. Cliff, J. Howlett, and H. Lister, train here.

A portion of Delamere Forest, in Cheshire, is used for training racers. It is a light sandy soil, which never becomes hard but in dry weather. It is liable to work into holes, the land not being good enough to carry a sound turf.

There is a training-ground arranged at Aintree, near Liverpool, connected with the race-course, comprising a circle, or rather an oval, within that upon which the races are held. The intention is giving gallops to those horses which are sent to run there, although it has been occasionally used for regular training at other seasons. The nature of the soil is good, but it wants that important auxiliary to the establishment of condition, a hill—without which horses cannot be brought to the highest state of perfection.

Cleeve Hill, near Prestbury, Wilts, is the site on which Cheltenham races are held. The nature of the land, taken altogether, is good; there is, however, one disadvantage—the horses have a long hill to ascend in going to their work, and, of course, the same to descend afterwards. The situation—two miles from Cheltenham—is central for many country meetings worthy of notice.

The ground over which John Scott trains at Malton is highly spoken of; indeed, nothing can more faithfully demonstrate the fact of its being well calculated for the purpose than the excellent condition in which his horses always appear when brought to the post, especially the remarkable freshness which they invariably exhibit in their legs. He has stables at Newmarket, as also at Pigburn, near Doncaster, at which place most of his horses undergo the latter part of their preparation for the Great Northern Meeting.

Yorkshire contains the four best training-grounds in the north of England. Of these, the most extensive is Black Hamilton, on the high-road leading from Thirsk to Helmsley. Notwithstanding that the soil is a strong stiff clay, this ground gallops well—the turf being very much intermixed with moss, which prevents it from becoming hard, and preserves it elastic even in the driest weather.

Langton Wolds, the next ground, is extensive, contains every variety of surface, and is principally covered with a short heather, intermixed with moss, affording a fine springy turf for galloping. These wolds, or downs, are divided into the training ground and the race-course, by the high-road leading from the town of Malton, the latter laying on the right of it; and the only drawback on them is their difficulty of access from the training-stables.

The Middleham Moors, divided into the upper and lower moor, is the third training-ground, and is open to the same objection as the Whiteclift Moors, on the score of not containing sufficient space; the upper moor contains the best galloping ground. The Whiteclift Moors, about two miles from the town of Richmond, are likewise divided into higher and lower moor. The latter is the race-course, and is within a mile from the town. J. Fobert, John Osborne, E. Gill, W. Oates, and C. Winteringham are the trainers at this place.

Perhaps the best training ground in Britain is that of the Curragh of Kildare in Ireland. It is a fine open heath of nearly five thousand acres of elastic turf.

In Scotland, Gullane Links, to the east of Edinburgh, and close to the sea, is the most celebrated training ground. It is a large tract of sandy soil, never hard, but apt to work into holes.

Whether training ground be public or private some attention is requisite to keep it in order; and if it be a very poor, weak, hungry soil, occasional dressings of manure will be found the greatest auxiliary possible. The description of manure must depend upon the nature of the land; on some, stable manure will have an admirable effect, but upon almost all tan will be found to be the best.

Rolling during wet weather is, in many instances, indispensable to press in the tracks and holes which have been made by the horses' feet; but the less this practice is resorted to the better, as it must tend to render the land more solid; therefore, the lighter the roller which is used for the purpose, the more advantageous, so that it is sufficiently ponderous to press in the turf which has been misplaced. If, previously to rolling in the spring, some seeds of the finer grasses, which are natural to the land and productive of a firm, tough, and elastic sward, be sown, it will add greatly to the verdure and improve the closeness of the turf. In order to avoid the use of the roller as much as may be, the boys should be sent on to turn down the foot-marks and tread them in their proper places whenever the surface is so soft as to be cut up. This should be done when they have not got their horses to attend to. The employment keeps them out of mischief and does good in another way.

Exercise.—The exercise necessary to get a racer into proper condition varies of course with constitution, the forward or backward state of the colt, and other incidental circumstances; and in no one thing is the talent of the trainer more evinced than in regulating the work according to the time for preparation, the "sluggish" or "free" disposition of the animal, and the nature of his coming engagements. Exercise is of three degrees—walking, galloping, and sweating. After getting the horses into form by walking exercise every morning and evening, for from half an hour to two hours as may appear requisite, the training-groom commences giving them short gallops, increasing their length gradually, as his horse's condition and wind improve; taking care, however, to observe from day to day the manner in which they stand the work, and relaxing or adding to it accordingly. These gallops not only have the effect of preventing a horse from getting on too much flesh and of improving his wind, but at the same time they teach him to stride and to be active on his legs.

At exercise the horses are divided into classes, the arranging of which depends principally on their age, but sometimes on their qualities—such as stoutness or speed; each class having a horse to lead the gallops or sweats. When the pace is slow, a common hack is good enough for this sort of work; but should it be severe, or should the trainer wish to form some idea of the rate of going of any of his untried horses, then a horse of superior powers, and of known public running, is generally selected.

The length of gallops for different horses varies from half a mile to a mile and a half; but distances of three quarters of a mile and a mile and a quarter are most frequent.

The horses being at length in proper condition to undergo sweating, this severe exercise is to be given them from time to time. While some horses are so extremely delicate, and have to run such short lengths, that they may be brought to the post without sweating, others require this severe sort of exercise as often as three times a fortnight.

In addition to the important task of regulating the quantity of work according to age, constitution, &c., the trainer must observe the length of ground necessary to make them sweat

well; and bear in mind that in the commencement of their training, his principal object is to get the flesh off them. But as they are getting forward in their work, and approach the day of public trial on the race-course, it will become necessary to increase the rate of going sufficiently to bring them stout to pace.

The trainer, or in his absence a groom he can trust, having mounted a hack, accompanies the horses about to be sweated. The horses are clothed in their sweaters, and, on the way, the trainer gives such directions and advice to the boys who have to ride, as they may require, more especially to the head lad, who has to lead the gallop and regulate the pace. While the horses are taking their gallop the trainer is occupied in watching their action and rate of going, making the lads increase or diminish the latter as may be necessary, and taking care to be where the horses are pulled up, so as to perceive the effect of the sweat on each horse.

The ground selected for this purpose should be at least two miles, and, if possible, considerably more in circumference; and a place having in some parts one or more gradual ascents and descents is preferable to a perfect level. According to Darvill, the proper length for a yearling to go a sweat is two miles; for a two-year-old, two miles and a half; a three-year-old, three miles or three miles and a half; a four-year-old, four miles or four and a half; while a five or six-year-old may, at times, sweat five miles. But, as we have before observed, these lengths are frequently altered from circumstances, as the trainer may deem requisite. We consider these prescribed distances purely empirical.

After the horses are pulled up, they should be allowed to stand a minute or two to recover their wind a little, and as it is phrased in stable vernacular "blow their noses." They should then be ridden gently to the rubbing-house, or should there not be one on the training-ground, to the stable, where the lads having turned them about in their stalls, dismount and proceed to loosen their horses' girths and unbuckle their boots. The next proceeding is to heap on the horses a quantity of additional clothing, which has the effect of immediately and considerably increasing their respiration, and causing them to break out into a violent sweat. This operation occupies from five minutes to a quarter of an hour, during which time the horses may be refreshed by having their heads wiped and their legs rubbed.

When they are considered to have perspired sufficiently the cloths are removed, and the boys proceed immediately to scrape the sweat off them with a wooden scraper and well rub them down; after which they should be refreshed with a few mouthfuls of lukewarm water, be warmly and drily clothed, and then again walked out until sufficiently cool to be dressed. During their absence from the stable, the stable-doors and windows may be thrown open, the beds set fair, &c. The length of sweating gallops, and weight of clothing, are matters of much variance in modern and former training.

The Turkish Bath.—It would be unpardonable not to notice in this place the controversy which has broken out in the racing world about the use, the abuse, and results to be obtained from the Turkish bath for horses. Admiral Rous opened fire with an elaborate essay in its favour in *Baily's Magazine* for April, 1861, and the columns of *Bell's Life* soon teemed with disputants, who either enthusiastically lauded, or scornfully decried the newly introduced adjunct; or, holding an even scale, declared there "was much to be said on both sides."

The Turkish, or more properly speaking, the Roman bath—for the world's masters bequeathed the hot-air bath to the Greeks of the Lower Empire, and from them it was inherited by the Turks, Moors, and Saracens—is by no means an entire novelty in horse-training. Professor Gamgee, of the New Veterinary College in Edinburgh, speaks of having been consulted thirty-two years ago by Sir Hedworth Williamson, on the substitution of the hot-air bath for the ordinary process of sweating horses then in vogue. This took place at Florence, where Lord Normanby, with some English noblemen and gentlemen, had established races.

Looking dispassionately at the question so keenly debated, we must confess that a study of the physiology of the horse, and of the phenomena of absorption and excretion in the animal economy, we cannot view this new introduction with the fervour of its gallant advocate; by whom it is elevated, as we think with indiscreet zeal, into a panacea for all the ills which horse-"flesh is heir to." We shall, however, place before the reader the salient points of Admiral Rous's essay, appending thereto such observations as may tend to elucidate, confirm, or controvert its theories and propositions.

After some laudatory remarks on that very eccentric individual, Mr. David Urquhart, as the introducer of the said Turkish or Roman bath, Admiral Rous proceeds to say:—"There was always a difficult problem to be solved. How is a trainer to prepare a horse to race? alias to get his inside clean and his muscles in full vigour, without the assistance of strong purgatives, and galloping distances under a weight of heavy woollen clothing. I do not deny the necessity of giving horses the strongest exercise, wisely adapted to their age and condition. It is proved that you can lighten a horse's frame as well by the operation of a hot-air bath as by a four mile sweat; and the question arises, which is the best practice to get them into condition? My belief is that a smart two mile or a three mile gallop with the horse stripped, carrying a light weight, and a hot-air bath afterwards, is more beneficial to a horse's lungs, and, no doubt, to his legs and sinews, than a four mile gallop under heavy clothes. Try it on a jockey; let him take his usual walk of nine miles under sweaters; and the next time walk half the distance, and then take a hot-air bath; I fancy he will find himself a lighter, a stronger, and a wiser man after the second process. Owing to the exhaustion of a four or five mile sweat, a horse is only fit to walk the following day, and many horses are annually disabled by this severity; but after a hot-air bath a horse is fit and ready for any task. I therefore pronounce the hot-air bath a most powerful and valuable auxiliary: with

this assistance you may bring an infirm horse to the post which would break down in two orthodox four mile sweats. With respect to the sound horses, why should not we try to keep them sound?—is not prevention better than cure?

"The Roman bath invigorates a horse's frame, gives increased action to his liver, improves his appetite, cleanses the pores of suppressed perspiration, and fortifies the skin from extreme heat and cold; the joints become more supple, the sinews more elastic, and the heart, lungs, and kidneys being freed from fat, horses are able to take the strongest exercise without suffering from internal fever. Rheumatism, sore shins, and cutaneous eruptions are speedily subdued by hot air. Under this system no horse ought to be exercised in heavy clothes; in my opinion it is always objectionable to give a horse a sharp or a very long gallop when he is clothed; and looking to hot air as an agent, we may keep our horses sound for thrice the estimated period of their present efficacy; the veterinary surgeon and the saddler will send in diminished bills: this will balance the expenses of the bath, and will save large sums of money to the proprietors of racehorses."

With as little of "ignorant adhesion to ancient prejudices" as the writer himself, we cannot but think that he here imputes far too high merit and powers to his favourite nostrum. On the contrary, we consider there is much more soundness in the views of Professor Gamgee, who comments upon these assertions to the following effect:—"Does the Roman bath invigorate the frame, or only temporarily excite? If the latter, will the excitement, if pushed, become exhaustive? Does it increase the action of the liver?—and if so, is that desirable? The improved appetite is accounted for by the laws of nature. It is her effort to draw fresh material to supply the waste which the bath has induced. Is there usually suppressed perspiration in racehorses under the present system of training? Observation and experience do not show this. Can the Roman bath be relied on for rendering the skin proof against the extreme action of heat and cold? The sinews, we are told, become more elastic through the influence of the hot air baths! This is the first time we ever saw it deliberately written that sinews were elastic at all; and since, for obvious reasons, nature has not made them elastic, it is not desirable, even if it were possible, that the art of man should render them so. However, by other destructive influences, not noticed by the Admiral, a very opposite condition of the tendons (sinews) ensues. About the internal fever which is said to prevail, I must plead ignorance as to what the definition points to. Besides curing cutaneous eruptions, the Roman bath, we are told, cures rheumatism and sore skins in horses. No matter what the causes and character of these different diseases, the Roman bath is to cure all. What a wonder that the old Romans, who used their baths in great measure as a luxury, should have overlooked all these miraculous properties!"

The next important physiological question noticed, is the use of the bath for absorbing the fat and superfluous flesh of the yearling colt. A healthy well-managed colt, which has been allowed space for voluntary exercise, will not, at the age of eighteen or nineteen months have accumulated deposits of fat that require other means to diminish than the necessary breaking and training process. As to the superfluous *flesh* spoken of, we had always believed that trainers, in conformity with physiological laws, tried to increase flesh, it being the very element of power and speed; any process, including starvation, that causes the flesh to be absorbed, would prove as destructive to the racehorse as to any other animal. "Whilst I am no adherent to old errors," observes Professor Gamgee, "I consider it equally important that we should not run from one extreme to another. The old errors were of slow growth and have had their sharp errors taken off. New projects, plausible in themselves and warmly advocated, may mislead; and if so, the retracing of our steps may be very difficult and very costly. If the tender yearling could, by being submitted to the hot air bath, be prepared for trial as to speed and power, what will not art be able to accomplish? Such doctrine contemplates a reversal of some of Nature's fundamental laws; physical power in all animals, as well as mental power in man, increases by exercise."

We omit the Admiral's remarks on the allowance of water to horses in training, as irrelevant to the questions under consideration. The writer proceeds:—

"Thus the raw material, in the shape of a healthy, well-grown colt, eighteen or nineteen months old, is introduced to the care and tender mercies of the groom. After the usual process of leading him about, lunging him, backing him, his proud spirit bends to the yoke; from gentle exercises he is abruptly called upon to mend his paces, and within fourteen weeks he is tried with older horses, from six hundred yards to half a mile. A trainer may justly complain and object to these early preparations. He generally quietly acquiesces, owing to a natural curiosity to find out a trump, or to be able to select the wheat from the chaff. As far as these early trials are concerned, the experiment can now be made at half the risk of destroying the colt, or, in other words, laying the seed for future unsoundness, by using the hot air bath for absorbing his internal fat and superfluous flesh, without having recourse to strong medicine or long preparatory gallops.

"At two years old the trainer considers it necessary to clothe the unfortunate colt more warmly, on the principle that he becomes more tender as he advances in age (a novel doctrine); and he is not satisfied until he makes the horse uncomfortable by a flannel or a woollen hood when he goes out to exercise. A showman thinks it right to dress up his dancing dogs or his monkey at a fair; that is quite admissible: but a hood makes a horse susceptible of cold; it is laying a trap for a sore throat. A hood is excusable in a railroad van: for all other purposes it is only good for trade. Ask a trainer why he uses it, you will receive an unmeaning answer.

"If their predecessors quarrelled with fresh air, and stopped up the holes for the pure love of ammonia, which propagated the disease of roaring, and made a great many horses blind, there was one redeeming point, they took out their horses twice a day to exercise, for eight months in the

year, which gave two opportunities for reventilating a putrid stable. This practice was in vogue for many years after I went to Newmarket and highly approved; it is now changed because it disturbs the domestic felicity of the trainer.

"You would imagine that during the height of summer the horses would be out at daybreak, when the dew makes the grass pleasant to their feet, and that the work would be over and the stables made up and the horses fed by seven o'clock. Not at all. Instead of exercising their horses in the cool of the morning, and taking them out a second time at 6.30 p.m. to walk them for an hour when the stables might be thoroughly cooled, the trainers consider it a more judicious plan to commence work at seven in the morning, and to keep the horses out till ten o'clock, frequently the hottest time in the day, before the breeze springs up. By this policy they evade the trouble of saddling their horses a second time.

"When oxygen is a scarce article in the stable, and ammonia gets the ascendancy, horses suffer from lassitude, loss of appetite, and a dull coat significant of disease. This is expected as a matter of course, and parried with calomel and aloes.

"When a horse's coat breaks in October, and racehorses are deeply engaged, a cough is heard, and coughing runs like wildfire through the stable. What is this owing to? The stable temperature charged with ammonia, the warm clothes, flannel bandages, hoods, and deleterious physic have won the battle; every horse's skin impregnated with suppressed perspiration was susceptible of disease, and they have caught what the trainers have so studiously engendered. I have known more horses coughing in a stable at Newmarket than in all the cabs from Hyde Park Corner to Somerset House, simply because the cab-horses stand for fourteen hours in the open air, and racehorses are shut up for twenty-one hours in a hot stable. The laws of Nature cannot be defied with impunity.

"The trainer now has a lucid interval. He turns the horses into open boxes from a temperature of 65 to 40; the cold air invigorates them, the fever is checked, the cough ceases, and the horse gets well in a week. Woe to the invalids if they are still confined to the warm stable. They may be on the sick list for months. But the racing season is over, and the money is lost. Again the trainers fall back to the ancient system, and all experience is lost upon them."

Four-fifths of Admiral Rous's essay are devoted to an eulogy of pure oxygen, and a fierce denunciation of ammonia and an exhausted atmosphere. On these points no one will join issue; but their merits seem to be confused inextricably with those of low or high temperature: and "pure air" is almost converted into a synonyme for "cold."

Of clothing the Admiral says:—

"My training theory is that no race-horse should be clothed beyond a linen or a cotton sheet either in the stable or at exercise, excepting during a cold winter, when a simple rug may be allowed both indoors and when his work is confined to a straw bed during a frost. It is an outrage on common sense to say that an old horse is more tender than a sucking foal. The hot-air bath, by cleansing and opening the pores of the skin, restores its tone and reinstates the animal in his original purity to despise the changes of the weather, the trainer having exerted all his ingenuity to make him tender, helpless, and susceptible. As the hot air stimulates the action of the liver, physic will seldom be required, and then in very small doses. When a yearling comes into the stable fat and fleshy, instead of giving him extra slow work and keeping him out four hours, it saves a great deal of trouble to physic him well. Extra physic is less troublesome than extra work, and it is supposed to be all the same thing in the end.

"From the 15th of March to the end of the racing season the horses should be exercised twice a day, and be kept out altogether four hours, instead of the present system, from two hours and a half to three hours at one interval. They should always have access to water, or, according to the American system, it should be offered to them in small quantity six or seven times in the course of the day. Most horses you cannot feed too highly when they are in strong work; and my belief is that no three horses require exactly the same food and the same exercise.

"A stable should be built on brick arches, unless the foundation is chalk or limestone. Rooms about seventeen feet in height, with large windows, ventilated near the ceiling by hollow or perforated bricks; no mangers to the stalls or boxes; large white wooden basins hooked on to staples in the wall for corn—the said basins to be taken away and washed when the horses have fed; and in every stall a fixture for a water-pail. There are three appendages necessary to a perfect establishment: a dormitory for the lads, who should not be allowed to sleep in the stable, because, when the night air is cool, they will shut the windows; a Roman bath; thirdly, a weighing-machine, to register every horse's weight after each operation of the hot air, and after every public race or trial. A wooden grating over the floors of the stalls, fitted with iron hinges to trice up to the sides, in order to be washed and purified, would be a great improvement, and there would be no necessity for straw litter."

To this, an experienced trainer, who writes under the signature of "VALESMAN," replies in a letter to the Editor of *Bell's Life in London*:—"The twice a day system of exercise, the Admiral tells us, was in vogue when he first went to Newmarket, but he does not say that this cotton or linen sheeting plan was also, and until I hear on very reliable authority that it was, I shall certainly take leave to doubt it. Again, when the Admiral tells us that a wooden grating over the floors of the stalls would be a great improvement and *supersede the necessity for straw litter*, I am bound to say I can't believe in it. It is not every man, much less every race-horse, that is as partial to a hard couch as our late 'Iron Duke,' who used to sleep on an iron pallet. It may have suited him, but if his thews and sinews had been put to the same stretch and strain as a racehorse's in taking a sweat, to say nothing of the opening of the pores of the skin, I much doubt he would have found it either agreeable or beneficial,

more especially if he lay *with the window open, and no other covering but his shirt, whether linen or cotton!* Either with the window open and a wooden grating, or with window closed and the ordinary straw litter, I believe that the cotton or linen sheet clothing system would be found a failure.

"The want of a woollen rug, so far as warmth, care, and comfort to the animal are concerned (no light matters), would be less felt in a common straw-littered stall; but there is always, and especially after seasons like last harvest, some danger from damp, to which the coat of the racehorse in condition renders him peculiarly liable, and against which the *thin cotton or linen sheet* would oppose a very poor and insufficient barrier, whilst the spectacle of my Derby favourite nag lying on the bare boards after his final sweat, with nothing else to protect him from their hardness or the eddying currents of air that would inevitably gather underneath the grating, and draught up to the open window, on the Admiral's plan, (right through him as it were), is more than I can bear to contemplate.

"The Admiral is fond of comparing the training of the racehorse to that of a man for running or fighting. Does he imagine that the trainers of Manx, or Jackson (the American Deer), Sayers or Heenan, ever exposed their men to an ordeal of this kind by way of bringing them 'fit' to the scratch? Let the Admiral try it himself after a hard day's grouse shooting next August, and I shall be much mistaken if we hear any more of this 'cotton-sheeting-no-straw-wooden-grating-open-window' theory of his for some time to come. To speak the truth, it seems so manifestly erroneous as to afford intrinsic evidence of somewhat careless, superficial thinking, such as one would hardly believe one holding the high position of the Admiral as a turf authority would have committed himself to the expression of. Pure 'oxygen,' it is plain, has run clean away with him for once. So much for this system of clothing *in stable*. As to its use in exercise I have not so much objection to make, being of opinion that some of my brethren do then clothe their horses in excess, and as to sweating am inclined to follow John Osborne's well-known opinions on that head. But if I follow further on this track, I shall be going on the wrong side of the post, so let me hark back to the bath at once. That the Turkish or Roman bath may be made a very valuable auxiliary in training a man to run or fight, where *expedition is necessary*, I do not for a moment doubt, but that it is an indispensable adjunct in other cases, I must be at liberty to question, conceiving the regular and judicious use of the ordinary bath, either in or out of doors according to season and circumstances, amply sufficient for every practical purpose.

"To the jockey, who is frequently called upon to get off lumps of weight on the shortest possible notice, it will on such occasions unquestionably prove an inestimable boon: and in this respect, besides the other purposes for which Mr. Scott considers they are likely to be made available in 1870, it is consolatory at any rate to reflect that the money expended in the erection of these 'ovens' will not be entirely thrown away. The main question, however, is what is their effect upon the racehorse, and what will be their influence upon our present system of training him? On the one hand, Admiral Rous, in no hesitating or doubtful language, affirms that their use is productive of a variety of valuable results. On the other, Mr. Scott, in somewhat jocosely exaggerated terms, perhaps, predicts disastrous consequences; and you, (Mr. Editor,) point to special instances of failure in the performances of Mouravieff and The Alderman. These, however, cannot be quoted as affording anything like a conclusive argument upon the point at issue, since it is by no means clear that those horses would not have failed equally apart from the use of the bath. Moreover, the failure, if failure there were attributable to the bath, may have been owing to an improper or imperfect application of the system. There is nothing more easy than to make a mistake in a matter of this kind."

To return to Admiral Rous. There is a suggestion with regard to the use of the hot-air bath in cutaneous disorders and rheumatism (in dogs), which, though not entirely in place, is worthy of consideration and experiment.

"All the cavalry depôts in Great Britain, Ireland, and India, ought to be fitted up with Roman baths capable of holding six horses. In India there are two indigenous complaints which destroy forty per cent of our cavalry horses. The first is a cutaneous disorder called 'bursatee,' from the Hindostanee word 'burusaria' relating to the disease, peculiar to the rainy season; it generally attacks horses picketted out in wet ground. No doubt the disease is propagated by an insect, and is contagious. This fearful complaint is of a tubercular nature; the skin swells, then ulcerates until regular sores are formed; no part of the body is exempt, but it generally commences in the legs, and is considered incurable. The second, a cold night air called the wind-stroke, which paralyses a horse's loins—and I have heard of every horse in a stable being disabled in one night: they rarely recover. It is very probable that the hot-air bath would cure both these terrible diseases, and at a very small expenditure millions of rupees may be saved.

"To a hunting establishment a bath is a most valuable acquisition: during a long frost, horses may be kept in the most perfect condition. After a hard day's work it is a most powerful restorative to man and horse; and nothing would surprise me less than to hear that the kennel lameness in hounds (which, I presume, is rheumatism,) can be cured by the same process.

"Finally, old-fashioned trainers will condemn the bath without condescending to investigate its results; for nothing is so intolerant or presumptuous as the prejudice of an ignorant man. It reminds me that when steam was in its infancy a celebrated stage-coachman hoped to be hanged, or something worse, if they could ever travel so fast upon an iron rail for twenty miles as he could drive his own chesnuts. Of course this hot air, so potent in its effects, may be abused like any other valuable gift. I leave to clever and experienced men to define where its use ends and abuse begins. Grooms have much to learn, still more to forget. And as the farmers of

1861 ridiculed the system of husbandry in 1820, so will the trainers of 1870 amuse themselves with the errors of their predecessors in 1860."

The last fling is unjust to many, if not most of our modern trainers. The veteran John Scott, however, has replied, nor are other respondents wanting. A report from Whitewall of April 1861, says:—"The total number of horses at present at Whitewall is 75, including young ones in breaking and one or two in the infirmary. The latter never had fewer occupants, which bespeaks the extremely healthy state of the stable in general; and the venerable *chef's* numerous friends will be glad to learn that he has 'wintered' better than for many years past. Unlike Middleham and Newmarket, the Turkish bath 'has no friends' at Malton, and an announcement in a contemporary a week or two since that Mr. Peck contemplated erecting one was another *canard*, Mr. P. having no such intention. Mr. Scott repudiates them *in toto*, and after fifty years' experience feels too much disposed to 'leave well alone' to indulge in what he terms 'new-fangled notions,' from a conviction that if horses cannot be trained against the hill on good wholesome hay and corn, whereby they get wind and put on muscle, not all the Roman or Turkish baths in the world, which tend to weaken the system instead of strengthening it like the natural mode of sweating, will assist them to pay their training bill at the end of the year. Instead, therefore, of the trainers of 1870 amusing themselves with the errors of their predecessors in 1860, as prophesied by Admiral Rous, Mr. Scott expresses his belief that in a very short time, after a few horses have been suffocated or 'baked to a cinder,' the 'ovens' which have been erected in such haste will be converted to more useful purposes, such as drying the clothes of horses sweated on the old natural system, and that the 'old school' will have the laugh at the 'quacks' after all. We hear of two or three trainers who have already repented the use of the Turkish bath; and if report be true, Mouravieff was not benefited by his 'melting' before Warwick, where, by the bye, the Alderman's performance in the Leamington Stakes (for which the stable 'stood him' for a large stake), contrasted most unfavourably with that of his more successful stable companion, Neptunus, who, trained on the orthodox system, ran 'big' at Liverpool, whilst the Alderman's preparation was assisted (?) by the use of the Turkish bath."

Dr. F. Page, an eminent physiologist, thus gives his decision on the "last new adjunct" to training:—"I fear the plausible reasoning upon this subject may have a mischievous influence on the minds of persons to whom it is more particularly addressed, and thus propagate the humbug. Everybody who understands the structure and functions of an animal must be quite aware that it is not only having the machine in a favourable condition—that is, sound, with the muscles fully developed, and the system free from superfluous flesh, &c.—but that the force or power by which the machine is propelled, and by which the animal undergoes its great exertion, shall be at its *maximum;* without this the machine, however perfect, is useless. I maintain that the nerve force or vital power in an animal subjected to this parboiling system will be so depressed or exhausted, so enervated, that he will be good for nothing for racing purposes; and therefore the idea of training racehorses by such a system is perfectly absurd.

"What authority has any person for saying that the fat of the animal is the only tissue removed by sweating under a high temperature? Why may not the *muscular*, the *tendinous*, and the *nerve fibre* be reduced, and thus rob the animal at once of his mechanical powers, instead of increasing them? Is the Turk famous for his great muscular development? his great powers of endurance? Or is he not emasculated both in body and mind by the use of this great depressing agent? Let an advocate for the Turkish bath subject himself to one every day for a week, and see what he will be fit for. He will prefer his quiet cigar on the sofa to a gallop round the Bury Hill, I imagine. The feeling of the racehorse will be the same, for all animals are governed by the same physical laws.

"This bath may be of use in some cases of disease, and, under judicious advice, highly beneficial; but as to its application to animals in health, for training purposes, it is a 'delusion, a mockery, and a sham.'"

Having thus placed the leading *pros* and *cons* of this moot point before our readers, we leave the subject to the criterion of "Time," which "tries all things;" coupled with the opinion that the hot-air bath will be found in practice rather a remedial application for abnormal states of the horse's condition, or a direct agent for the removal of disease, than a systematic adjunct to ordinary training processes.

TRIALS.

Among the divisions of practical training which especially require the attention of the trainer, the trials of racehorses require particular notice; for unless the greatest care be taken in selecting a horse of known public running, and in proper condition at the time, the nicest skill in regulating the weights, according to age, fixing the distance, &c., and putting up the best jockeys, will not prevent the trainer and his employer from being misled by the result.

The necessity of ascertaining a horse's powers before he is brought out to run in public, must be obvious to every one, and it is a subject of no mean importance; by the opinion which is formed of him in his trials, the propriety of paying forfeit, or starting him for such stakes as he may be engaged in, will depend; and, furthermore, the propriety of backing him for a still greater sum must be determined.

It is a very common thing to find that old horses, as they improve in stoutness, diminish in speed; thus, single-handed, they are not honest tests of the merits of young ones. To have a trial which is really to be depended on, it is requisite to start two or three young ones, with a horse four years old or upwards, who has not lost his speed, to make the running; at the same time, also, it is necessary that the latter has recently been running in public—they are found to vary so much at different times of the year. Before it is possible to form an

accurate estimate of the powers of a horse, three or four trials must be obtained, and the important fact established whether his speed or stoutness be his specialty. The weights at which the horse is tried must depend upon the goodness of the trial horse and the time of year, which latter circumstance may easily be determined by reference to the Calendar. The nature of the course, whether hilly or flat, on which a horse can run to the greatest advantage should be ascertained; some little judgment of this may be formed in the common course of exercise; but it may be taken as an established fact that, previously to running, no true opinion can be formed of any horse, except after two or three well directed and unbiassed trials; favour and affection to any animal, pedigree, or owner, being completely set aside in the deductions made from the experiment.

If trials are to be looked upon as affording real information, each horse must be prepared with as much scrupulous attention as if he were going to run in public; unequivocal proof should be sought for, and nothing deemed satisfactory until it is established. In order to ascertain a horse's power, it is obvious that he must be beaten; because, however often he may be tried, either in private or in public, it is impossible, so long as he be a winner, to say how much farther he could have won had there been a horse superior to his second to have urged greater efforts of the victor. The rock upon which so many persons founder in trials is having a slow old horse in the capacity of schoolmaster—one whose speed is so much reduced that, at the distance which young ones are tried, he cannot go fast enough to get them out; in consequence of which they win their trials, and are immediately supposed to be flyers. The best horse to try young ones with is a speedy animal who can run but a mile; if his rider have orders to make the pace as good as he can, he will stretch the tyros, and give some measure that may be relied upon.

It frequently happens that a boy is put up to ride the trial horse, and jockeys are employed to ride the juveniles. This is just reversing the order of propriety, because the boy is required to perform the most difficult and important duty, that of making the running, and the experienced jockeys being upon the young ones, their performances are made to appear more flattering than they really ought to be.

There are many persons who place but little faith in private trials. That they should not be held cheap in many instances is neither to be wondered at or condemned; independently of the mistakes which are made, the misrepresentations of the results are frequently so great that little reliance can be placed on them.

There is no contrivance by which more money can be thrown away, than in so-called trials. The trial horse is often stale with hardly a leg to stand on, at high weights, and perhaps on a course which does not suit him; and thus is brought out against a young one in the highest possible train, fresh, and ready to fly out of his skin, and a light weight on his back. The old one, whether it be his forte or not, must make the play; and, as naturally may be expected, the young one runs up to the old like a shot, as the trainers say. He is accordingly backed heavily, and on the day gets a comfortable beating, to the great surprise of those who are not in the secret. The solemn secrecy which, on many occasions, is employed to keep the result of a trial from the knowledge of a vulgar public is oftentimes exceedingly unnecessary, as well as marvellously troublesome to those who are concerned. Indeed, if a trainer knows his business, he need not care who witnesses the trial; because, if properly managed, no man can be wiser from what he sees—indeed, he is certain to be misled. Here, however, to avoid inculcating a principle of deception, we must explain the difference between misinforming a friend, and using those precautions which the peculiarity of the transaction requires for the purpose of maintaining secrecy into that which the intruding eye of a bystander has no right to penetrate.

Any man who would be guilty of misinforming an acquaintance, and thereby inducing him to back a bad horse, does so for the purpose, directly or indirectly, of robbing him. It matters little whether he actually win from the person so deceived, by directing an agent to bet with that individual. His friend is caused to lose his money; others follow his example in backing the horse; and the treacherous knave wins his stake from some one. Such deception cannot be too severely condemned, or too conspicuously exposed to public contempt. But against other persons, who will not scruple to resort to any measures to gain information for their own pecuniary profit, to the exclusion of all who are first entitled to that profit, on a subject which they have clearly no right to be permitted to discover—all stratagems are warrantable for defeating their object.

Every man who acquires fair and honest information has an undoubted right to turn it to his own advantage. A merchant learning from certain sources that a rise or fall in the markets is likely to take place, buys or sells any commodity in which he deals: so has any one who bets a right to avail himself of the knowledge of a horse's powers, an equal right to back him or to lay against him; but the owner of the horse is clearly justified in keeping that secret to himself, or submitting it only to his intimate friends.

In order, therefore, to defeat the ends of those who may be desirous of watching trials, one *ruse* is readily managed—for the horses to gallop on some distance beyond the place where the trial actually terminated, and, in so doing, to change places; when it is very easy to have the horse which won the trial last at the point where a spectator imagines it is finished. Another thing—the weights never ought to be suffered to transpire. Thus, by having saddles and saddle-cloths, the weight of which none of the boys or other persons about the establishment have any knowledge of, the secret cannot transpire through their agency.

We have given the regulations concerning trials, laid down by the Jockey Club, in a previous part of this work; all, therefore, that remains for us to add on this point, is to recommend to the trainer the careful perusal of that part of Mr. Darvill's

excellent work on racing which treats on this subject, and in which he will find proper directions for trying horses of every age, and of every description of temper and constitution.

In no calling of life are shrewdness and caution more required than in the trainer; in fact, without these qualifications a man might as well attempt to scale the moon as to do any good on the turf. In addition to these indispensables, he should be of the strictest integrity; which, sooner or later, amply repays its possessor, by obtaining for him the confidence of his employer and the public. He must also be sober, that he may always have a clear head to study and attend to the various tempers and constitutions of the horses placed under his management, so as to do the best with them in training, and afterwards run them to the best advantage. Finally, he must be close to all the world, except his employer, concerning the secrets of the stable.

As the trainer is expected to know everything relating to a racehorse and to the turf, his apprenticeship to his calling cannot begin too early in life. The knowledge we speak of may be briefly defined under the following heads, which are not unworthy the attention of those noblemen and gentlemen on the turf, who may not be ashamed of learning.

In the first place, the trainer should acquire a competent knowledge of the Stud-book, so as to be able to advise and guide his master in the purchase of brood mares, the selection of stallions, or even the purchase of young horses to run. This has reference to their selection with regard to pedigree, or what is commonly called fashionable or running blood.

From actual observation, in preference to theory, he should endeavour to make himself a good judge of the formation and action of a racehorse. The very nature of his calling, of course, gives him abundant opportunity of doing this.

The Racing Calendar should be his constant study and companion; the laws, rules, and regulations of racing, he should have at his fingers' ends, and he should know with accuracy the running of all the horses of the day, the length of the courses they run over, the weights they carried, and the opponents they defeated.

In addition to mere works of reference on racing, and the best works on the training and management of racehorses, the trainer should furnish himself with the works of our best veterinarians, and make himself thoroughly conversant with the different symptoms, modes of treatment, remedies, &c., which they explain and recommend. A catalogue of such works can be readily obtained at booksellers who deal in sporting works. A visit involving a short stay at a veterinary college will be of immense service in his practice.

In conclusion we must mention, as not the least important of a trainer's duties, that, in a moral point of view, he is bound to make the lads under his control as happy as circumstances will permit, to instruct them in knowledge fitted for their station, and to keep them from the temptations of bad examples which so much surround them. John and Isaac Day, and several of our most eminent trainers, were and are remarkable in these creditable particulars.

CLOTHING THE RACER.

In the article on the Turkish Bath, we have given incidentally the opinions of Admiral Rous on clothing, which we look upon as rather heterodox. Upon this point, and the routine of stable physic, we shall here say a few words.

Clothing forms an important article in the economy of the training stable, and is of the greatest utility to the trainer, as by its use in sweating his horses, he is enabled to reduce them to the necessary lightness of body, without running the risk of injuring their legs by extra strong gallops, or their constitutions by physic; these latter, and the hot-air bath, being the means of effecting his object.

The clothing in general use in the racing stable is made of a sort of kersey check, of much finer and lighter quality than that which is used for hunters or other horses. It may be of whatever colour the owner may fancy; and the initials of his name are commonly embroidered on it.

The clothing may be divided into the following parts, viz.:—the sheet, breast-cloth, quarter-cloth, pad-cloth and hood; the latter piece being generally used to throw over the horse's loins after he has been dressed, instead of what was formerly called the fillet cloth.

These different pieces are secured with proper rollers and strings; but as these and other details are perfectly understood by saddlers, it is not necessary to proceed with further particulars; a few general explanations and remarks are, therefore, all we propose to offer.

The clothes commonly called sweaters are made of swan's skin, a sort of woollen stuff. They consist of nearly the same pieces as those mentioned, and care should be taken that the sheet is of sufficient size to cover the whole body, shoulders and quarters of the horse, and to lap well over beneath his belly; for which purpose Mr. Darvill observes, that the centre part of it should be nearly two yards and a half long. According to the same authority, the breast-cloth or sweater should be made full three yards in length, and three quarters of a yard in breadth.

Judging from the prints of horses sweating, dated the middle of the last century, the hood was not then in use; nor are we aware when this article of clothing was introduced. Of those used in sweating, when only one hood is required, it should have ears to it; but in the case of more than one being required, the last only should have them, to enable the groom to put them on with greater facility. When the trainer deems it necessary to put additional clothing over the above, he should use old cloths for the purpose, having, of course, first seen that they are in proper repair, and that any necessary alterations have been made. Admiral Rous's condemnation of the hood, we have already noticed.

In the hottest part of summer, lighter clothing, made of serge, linen, or calico, may be used both in the stable and at exercise.

A proper supply of rollers, straps, boots, knee-caps, fetters, &c., should always be kept in the stable, in such order and

place as to be serviceable at a moment's notice. A list of these, and of all the other articles of saddlery used in the racing-stable, can be at all times obtained at the principal saddlers at Newmarket, York, Doncaster, Epsom, &c. The trainer should make it his business to inquire, from time to time, at these places, as to any inventions and improvements in these matters which may have been made, so as to avail himself of them if really serviceable.

It is not our purpose, in offering these details and remarks to the reader, to have it for a moment supposed that we are laying down a complete system of training racehorses. We are perfectly aware that it would require a reasonable-sized volume to do this fully and efficiently. Feeling, however, that a work of this nature might be considered incomplete were we to pass this subject entirely, we flatter ourselves that, to the general reader, at least, these remarks may not be found altogether barren of interest, as yielding him some little insight into the training and management of the horse in his highest form. Should fuller information be desirable, we would recommend the works of Messrs. Nicholas Hankey Smith, and Darvill, and a series of papers by "Cotherstone," in the *Sporting Review;* these gentlemen having written after much practical acquaintance and study of their subject.

Physic.—The next point to which we would direct the attention of our reader, is the use of physic in the training-stable; not as administered to horses labouring under serious diseases, and which require the services of the veterinary surgeon, but in those cases which come directly within the province of the trainer.

The occasions we refer to are, when at the end of the autumn, and in the spring, the animal has to undergo a regular course of physic, or, when in training, the state of his legs or any minor ailment may require the use of medicine. On the conclusion of the racing season, after being kept for some months on dry and highly nourishing and stimulating food, and constantly in work on the hard soils of the different race-courses and exercising-grounds, three or four doses of physic, administered with an interval of about ten days or a fortnight between each dose, will be found necessary to get rid of that worn and feverish state commonly known under the name of staleness, and will at the same time bring the horse's legs, which will almost always then be found swollen and inflamed, to their proper size.

In the spring, too, before the animal is again put in training, a repetition of the same treatment is desirable, in order to carry off the grossness of humour he contracts when "soiled." At these periods, it is not necessary that the physic should be of the same strength as that given in training; the preparation for it, however, is the same, that is to say, mashes of bran and oats for two or three days. The precautions and general treatment in use with horses of other descriptions when in physic, should be of course adopted with the racer, and are too well known to require mention in this place.

Horses in training are very liable to suffer from injuries in the legs, from blows while exercising, and other causes, and these cases require the utmost attention and skill on the part of the trainer. He must necessarily stop the horse from his work, as rest is indispensable to his cure. But this remedy is sometimes productive of, if possible, worse evils; for should the accident occur not long before the horse has to race, he may put up more flesh while idle than can be trained off again in sufficient time to bring him in proper condition to the post. It is now that the trainer calls in the aid of physic, and by its judicious use, keeps his horse from getting fat in his inside until his leg shall be sufficiently recovered to stand work. This of course should be gradual; in fact, too much caution cannot be exercised in this respect, and to prevent any risk from the thoughtlessness or trickiness of boys, the trainer should himself watch his first gallops and sweats, taking care to put one of his best and most steady riders on the horse.

Every training stable should be provided with a medicine chest, in which the following drugs, &c., should be kept; and to prevent accidents, as some of them are deadly poisons, the key should never be out of the possession of the trainer.

Aloes (Barbadoes),	Resin,
Alum,	Sal ammoniac,
Arrow-root,	Spanish flies (Cantharides),
Basilicon, yellow,	Sweet spirits of nitre,
Camphor,	Spirit of turpentine,
Castile soap,	Spirit of wine,
Ginger, in powder,	Salt, common,
Goulard's extract,	Soft soap,
Honey,	Tar, Barbadoes,
Hogs' lard,	Tartar, emetic,
Laudanum,	Tincture of myrrh,
Linseed meal,	Treacle,
Nitre,	Venice turpentine,
Oil of carraway,	Vinegar,
Oil, castor,	Vitriol, blue,
Oil of cloves,	Vitriol, white,
Oil of olives,	Verdigris,
Oil of origanun,	Wax,
Prepared ammonia,	White lead.

also apothecary's weights, a measure for fluids, an apparatus for compounding medicines, &c. In addition to these, the following instruments and articles should be kept, viz.:—fleam and blood-stick; tooth-rasp, with a guard; seaton and curved needles; abscess lancet; firing, searing, and budding irons, casting hobbles, improved balling-iron; drenching horn, flannel for fomentations and poultices, woollen and linen bandages, tow, &c

TRAINING THE HUNTER.

Training the hunter is a simple process, all that is required being to bring him into good wind, without, at the same time reducing him too low in flesh or injuring his sinews; since, on a long chase, more especially over a heavy country, a horse needs the aid of his full bodily strength and of his unimpaired tendinous and muscular powers. It is extremely dangerous to ride a horse over the country which is weak in its joints, or has the common hurt in the back sinews; but the danger is tenfold in taking a flying leap upon such a horse where the opposite descent is considerable, and the stress upon

his lower limbs in his landing, with a heavy weight upon his back, must be excessive. Training must commence with two or three doses of physic, should the horse be gross and not have been previously trained. A young horse in his first training will require most work; but it is an error of the surest side rather to underdo this business than exceed, because, if a horse come into the field rather under-worked, being full of good meat and heart, the easy remedy is to favour and ride him carefully the first week or two; but should your training-groom set you upon a horse harassed and weakened by too much exercise, he will get worse as the season advances, and perhaps be totally ruined by the end—exclusive of the probable disgrace of failing you in a long and important day. Old hunters from spring grass can scarcely be trained too lightly; the true test is, that their wind in its course be free and unembarrassed; to that point, however, their exercise must at any rate extend. The lighter the horse's clothing the better, in view of the heats and colds he must necessarily undergo in the chase. An early morning's gallop at a good steady stride, but not speedy, of a mile or two, with a canter after water in the afternoon, is sufficient for the hunter, and two months ought to bring him into good condition. A young horse may have once a week a tolerably sharp rally for one or two miles, a method which should never be practised with a seasoned hunter; with which, indeed, walking exercise may be substituted for the gallop.

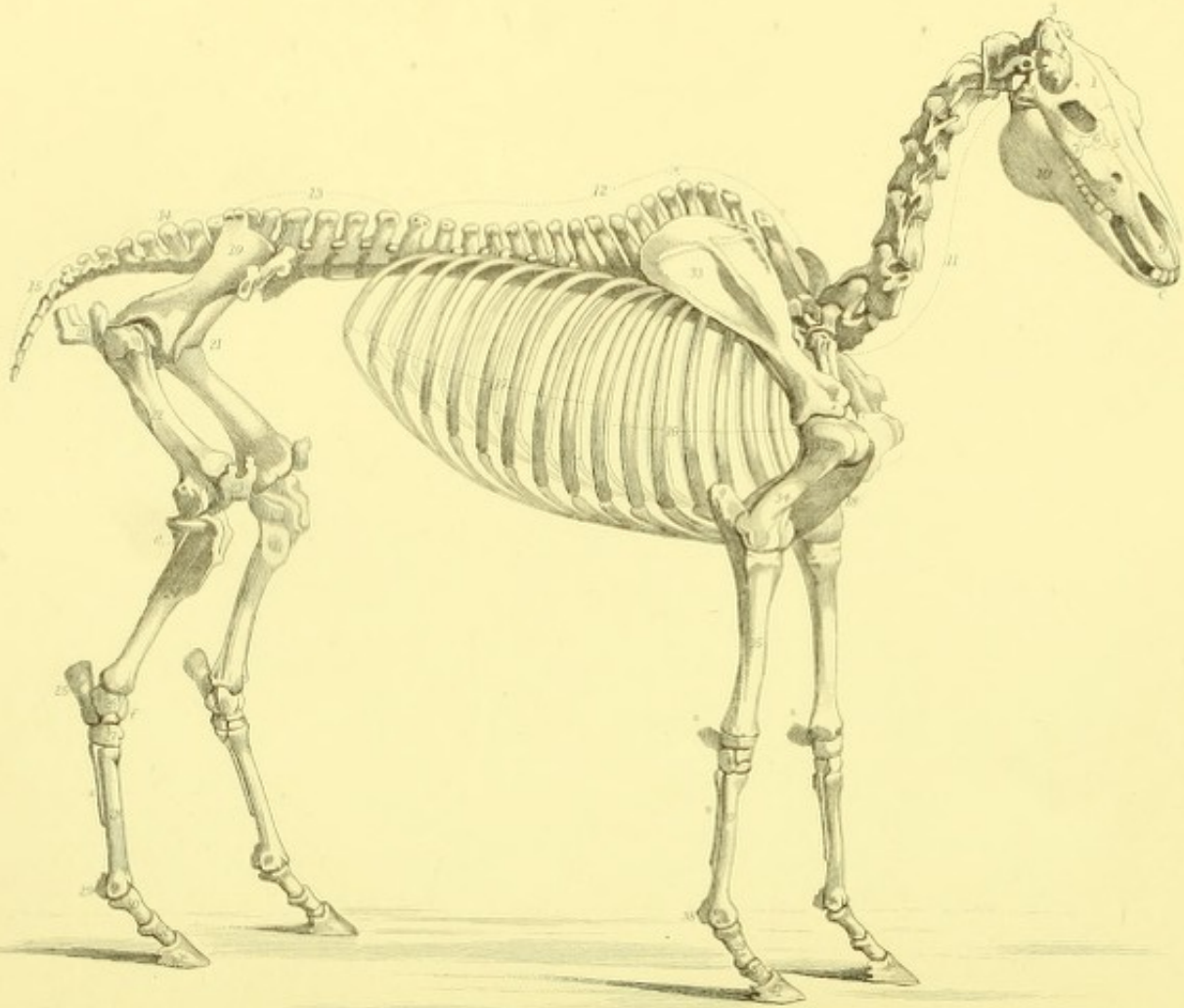
Some years since a wordy warfare broke out with respect to "summering the hunter," in which the disputants bespattered each other with much animosity. Fiery zealots arose on either side: the one maintaining the "old" or "natural" system—to wit, the turning out the hunter after his winter's work to a summer holiday in the grass. The other party, at the head of whom was the celebrated writer "Nimrod," (Mr. Charles Apperley,) contended that if we wished really to befriend and preserve the animal that has carried us gallantly through many a long day, we must keep him near us, confine him within doors, and feed him upon "hard meat." Mr. William Selby Lowndes, M.F.H., turns all his horses out during the summer months, and insists on its being most conducive to the strength, health, and endurance of his hunters during the hunting season,—a system, of course, like every other about which there is difference of opinion, to be tested by experience; but for ourselves, while considering "turning out" as both humane and advisable in cases of blistering, ill-health, fever, firing, &c., we must give our vote, from an extensive observation of cavalry and hunting stables, in favour of the in-door system.

Count Veltheim's opinion is strongly in favour of stable-summering the hunter: and he assures us that the cavalry of all continental countries, except Turkey, are no longer turned out in the summer. "I hope," he says, "I may be permitted to adduce something from my own experience, having for nearly thirty years, constantly had at my country seat, from seventy to eighty horses—partly saddle, partly coach, draught, and breeding horses and colts; and that, from predilection to horses, I have always bestowed particular attention upon them. For a long time it has not been customary on well managed estates in this part of the country, to turn horses to grass in summer, or to give them green food in the stable, with the exception of brood mares and their foals."

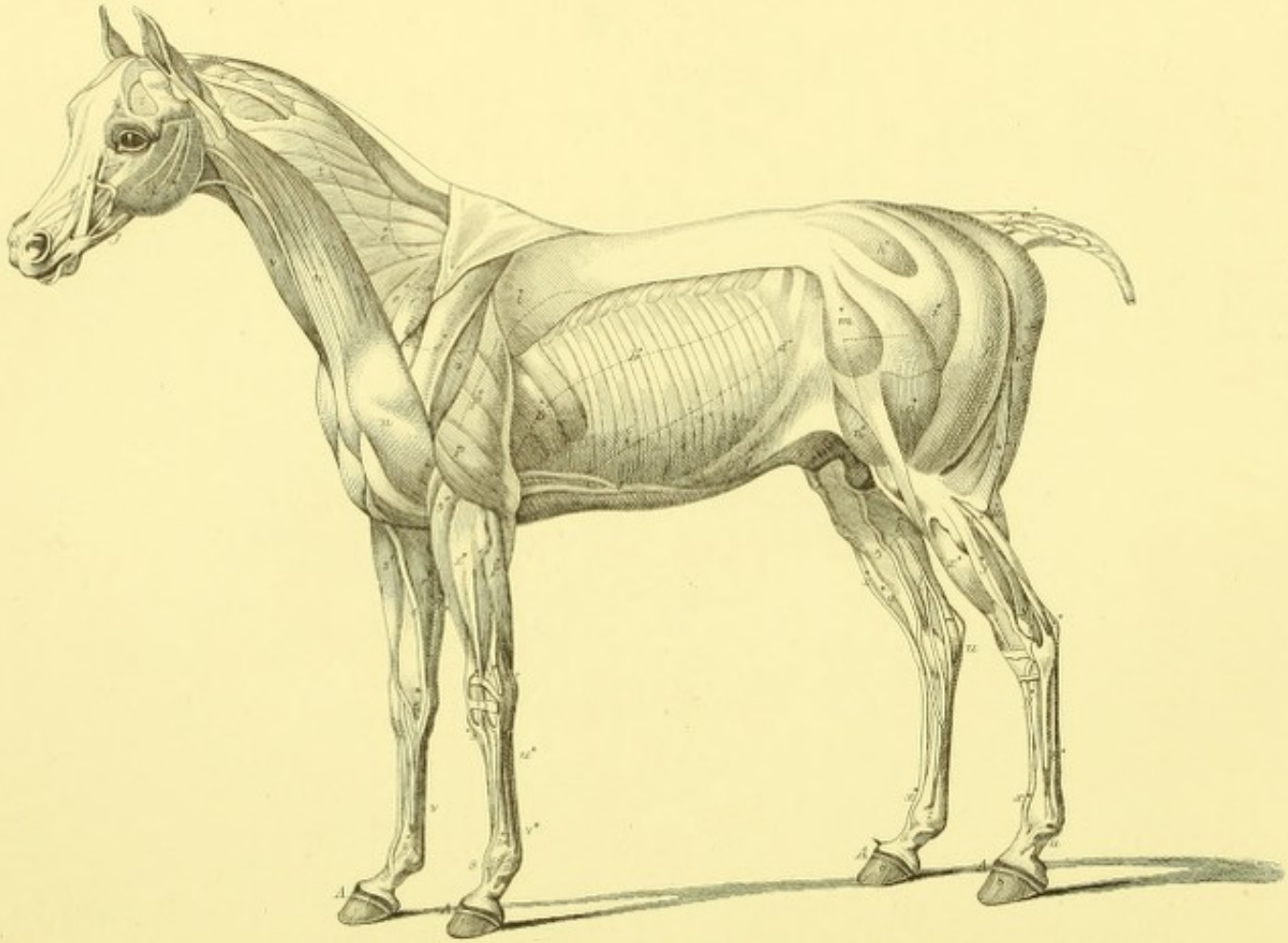
Mr. Apperley's method of summering the hunter is thus stated—"The first step I should take, would be to put the horse into a loose box, if convenient, and by degrees diminish his corn, giving him an hour's walking exercise as usual. I should then give him two doses of physic, which would not only cool his habit of body so as to prevent the danger of inflammatory attacks, but would have that effect on his legs as would enable me to see what injury had been done to them in his work—whether there were any ligamentary enlargements—any injury to the joints or sinews—any callous substances produced by blows—or, in short, anything going wrong. The clear state of his legs which this treatment will produce, would prevent the possibility of working in the dark, as they will become finer, to use the language of grooms, in three weeks than they would at the expiration of a three months' run at grass in the summer." (*Letters on Condition* p. 104.) We must not, however, do this ingenious writer the injustice to suppose, that he is so wedded to this system as never to relax from it when occasion requires; on the contrary, we find him observing, "so far from being averse to it, (*i. e.* to turning out,) I would strongly recommend it under favourable circumstances. In case of having recourse to blistering it is most serviceable; and, after firing, almost necessary: but then they (the hunters) should be turned out only at night, and into a place where there is but little grass, and have two, if not three feeds of corn a day, but nothing else to eat till they go out, unless it be a few vetches, for four or five days at a time, when they are young and tender, in the months of May or June; but these should not be repeated more than three or four times, as they tend to make horses very foul, and when *in pod* are most injurious to them."

Our labours have now come to an end, and trusting that our readers have found our pages at once useful and entertaining, we here bid them *Vale et Valete.*

THE END.



THE BONES OF THE HORSE



T. Cowan.

THE MUSCLES OF THE HORSE.

Drawn from Nature expressly for this work.

ANATOMICAL, SURGICAL,

AND

VETERINARY PLATES,

WITH LETTERPRESS REFERENCES.

PLATE I.—THE BONES OF THE HORSE.

BONES OF THE HEAD.—(1) The frontal (or forehead) bone. (2) The parietal (or wall) bone. (3) The occipital (or hinder skull) bone. (4) The temporal (or temple) bones. To these are attached the cartilages of the ears of the horse. (5) The nasal (or nose) bones. These contain the septum narium (division of the nostrils), a long cartilaginous plate. (6) The lachrymal (tear) bones. (7) The zygomatic (yoke) bones. (8) The superior maxillary (jaw) bones. These, the largest bones of the face, hold all the grinders of the upper jaw. (9) The superior or anterior maxillaries. These receive the nipping teeth (incisors), and the cartilage of the nostrils. (10) The posterior or inferior maxillaries, or great jaw-bones. These receive the lower grinders, tushes, and nippers. (*a*) 24 molars, or grinding teeth. (*b*) 4 canines, or tushes. (*c*) 12 incisors, or nipping teeth. (*d*) The orbits of the eyes. The os hyoides (letter-Y-shaped bone) is situate inside the head, at the root of the tongue, to support and attach the muscles of that organ.

BONES OF THE NECK AND TRUNK.—(11) The seven cervical (neck) vertebræ. (12) The eighteen dorsal (back) vertebræ. The five most elevated of these form the withers. (13) The six lumbar (loin) vertebræ. (14) The five sacral (haunch) vertebræ. (15) The coccygeal (cuckoo-beaked) bones, or caudal (tail) vertebræ. These vary in number, generally thirteen or fourteen. *There are eighteen ribs, thus divided:*—(16) Nine sternal (breast) or true ribs, articulated with the sternum, or breast-bone (18). (17) Nine false ribs, attached by cartilage. Sometimes eight are sternal and ten false. (18) The sternum (breast) bone. *The haunch, comprising:*—(19) The ileum (*eilco*, I turn), two in number. (20) The ischium (*iskion*, hip), two. (21) The pubis (share-bone), two. These and the two previously-named bones grow into one after birth. *The hinder legs, consisting of:*—(22) The femur (thigh-bone). (23) The patella (knee-pan), called by horsemen the stifle. (24) The tibia (leg-bone); *c*, the fibula (clasp or brace-bone). *Bones of the tarsus (instep) or hock (f):*—(and see an enlarged representation, Plate IX). (25) The os calcis (heel-bone), called point of the hock. (26) The astragalus (ankle-bone). (27) The cuboid and irregular bones of the tarsus. (28) and (28*) The metatarsal bones. The great metatarsal, cannon, or shank-bone, in front, and the small metatarsal, or "splint" bone, behind. (29) The sesamoid (grain-shaped) or fetlock-bones. (30) The os suffraginis, upper or larger pastern-bones. (31) The os coronæ, crown-bone, or lesser pastern. (32) The coffin-bone (behind this, and articulating with it and the smaller pastern, is the *os naviculare*, boat-shaped or shuttle-bone. It is not here visible, but will be seen in a section of the horse's foot. 30, 31, 32, are called by anatomists the first, second, and third phalanges. *Bones of the fore-limbs:*—(33) The scapula (blade), or shoulder-bone. (34) The humerus, or arm-bone. (35) The radius or fore-arm; the ulna, elbow, or cubitus (*g*). (36) The seven carpal (wrist) bones, popularly called the "knee-bones." (37) The metacarpus, cannon, or shank-bone, consisting of one large metacarpal bone and two smaller ones. (38) The two greater sesamoids. (39), (40), and (41) The larger and smaller pastern, and coffin-bone. The three phalanges of the digital-region; the os naviculare is not visible.

PLATE II.—THE MUSCLES OF THE HORSE.

MUSCLES OF THE HEAD.—*Motors of the Eyelids.*—(*a*) The orbicularis (a sphincter which shuts the eyelid). (*b*) Levator palpebræ superioris (lifter of the upper eyelid). And see Plate VII. THE EYE. *Motors of the Nostrils.*—(*c*) Dilatator naris lateralis. Draws the nostril upwards and sideways; rises from the external part of the inter-maxillary bone. (*d*) Contractor naris. *Motors of the Lips.*—(*e*) Orbicularis oris. The labial muscle; a sphincter to close the lips. (*f*) Levator labii superioris. (*g*) Levator anguli oris. (*h*) Retractor labii. (*i*) Zygomaticus. Runs from the zygomatic (ploughshare) process, and is the true retractor of the angle of the mouth. (*j*) Retractor labii inferioris. Pulls back the under-lip. *Motors of the Lower Jaw.*—(*k*) The zygomatic-maxillary, covered by the great masseter or chewing muscle of the lower law. (*l*) The temporal maxillary. *Motors of the Ear.*—(*m*) Attollens maximus. To bring forward the ears, and lift the triangular cartilage upward and forward. (*n*) Attollens medius. (*o*) Attollens inferior.

MUSCLES OF THE NECK, SERVING TO MOVE THE HEAD.—(*p*) The dorso-occipital tendon. (*q*) Complexus major (atloido mastoideus). (*r*) Trachelo-mastoideus (here the tendon cervico-mastoideus is seen). (*s*, *t*) The splenius, covered by fascia. (*u*) Levator humeri. (*v*) Sterno-maxillary (masseter externus). *Muscles of the Ribs and Abdomen acting in Respiration.*—(*a**) Latissimus dorsi (broad muscle of the back). (*b**) Intercostal (between the ribs) muscles. (*c**) Costo-abdominal muscles. (*d**) Ilio-abdominal ditto. *Motors of the Tail.*—(*e**) Sacro-coccygis superior (raiser of the tail). (*f**) Sacro-coccygis inferior (depressor of the tail). (*g**) Ischia-coccygis. *Motors of the Thigh and Leg.*—(*h**) Glutæus maximus. (*i**) Glutæus externus. (*j* o* s**) Triceps adductor femoris. (*k**) Biceps rotator tibialis. (*l**) The peronæus. (*m**) Tensor vaginæ. (*n**) Rotator femoris. (*o**) See (*j**). *Motors of the Tarsus and Metatarsus.*—(*q**) Flexor metatarsi magnus. (*r**) Extensor pedis posterior. (*s**) Flexor pedis accessorius et perforans. *Motors of the Foot.*—(*u* u**) Gastrocnemius, and its lower insertion into point of hock. (*v**) Flexor pedis perforans. (*x**) Extensor pedis. (*y**) Peroneus of fore pastern. (*z**) Tarso-phalangian muscle, back of near leg and inside pastern. (8) The foot and coronet.

MUSCLES OF THE FORE EXTREMITIES.—*Muscles moving the Shoulder.*—(*a*†) Dorso et cervico acromion. (*b*†) Sub-scapular cervical. (*c*†) Rotundus major (depressor of the shoulder). (*d*†) Pectoralis magnus. *Motors of the Arm.*—(*u*†) Levator humeri. (*e*†) Ante-spinatus. (*f*†) Postea-spinatus. (*g*†) Teres externus. (*h*†) Caput magnus triceps exterior. (*i*†) Dorso-humeral (trapezius). *Motors of the Fore-arm.*—(*k*†) Caput medium triceps exterior. (*l*†) Musculus biceps. (*m*†) Longus extensor. (*n*†) Radius internus. (*o*†) Cubitcus internus. *Muscles of the Carpus and Metacarpus.*—(*p*†) Ulnarius accessorius. (*q*†) Flexor metacarpus internus. (*r*†) Flexor metacarpus medius. (*t*†) Extensor metacarpi. *Motors of the Foot.*—(*u*†) The condylo-phalangian (profundus), or second bender of the pastern or coffin-joints. (*v*†) The cubito-phalangian tendon (sublimis), or first bender of the above. (*x*†) Extensor pedis. (*y*†) Flexor pedis externus. (†) Ligaments of pastern. (8, 8) Ligaments which cover the fore pastern.

PLATES III. AND IV.—(THE MOUTH),

Are inserted, with their explanatory text, at pages 106 and 108 of this volume.

PLATE V.—THE HEAD OF THE HORSE.

FIG. 1. BONES OF THE HEAD, AND THEIR SUTURES.—(*a*) The occipital bone. (*b*, *b*) The parietal (wall) bones of the skull. (*c*, *c*) The temporal (temple) bones. (*d*, *d*) The temporal fossæ. (*e*, *e*) The frontal (forehead) bones. (*f*, *f*) The zygomatic (yoke-shaped) arch. (*g*, *g*) The supra-orbital foramina. The small hole beneath (some horses have several) receives vessels which nourish the bone. (*h*, *h*) The lachrymal (tear) bones. (*i*, *i*) The orbits, containing the eyes. (*k*, *k*) The nasal bones. (*l*, *l*) The malar (cheek) bones. (*m*, *m*) The superior maxillary (upper jaw) bones. (*n*, *n*) The infra-orbital foramina (holes below the orbits), through which pass branches of nerves and blood-vessels to supply the lower portion of the face. (*o*, *o*) The openings into the nose, with the bones forming the roof of the palate. (*p*, *p*) The inferior maxillary (the lower jaw bone), which is a separate bone in quadrupeds, containing the incisors or cutting teeth and the upper tushes. (*q*, *q*) The upper incisors, cutting teeth, or nippers; the one next to these, on each side, are called the dividers, and the innermost ones on both sides are termed the corner incisors.

FIG. 2. THE BONES OF THE HEAD, FROM NATURE.

FIG. 3. SECTION OF THE HEAD, SHOWING ITS INTERNAL ORGANS.—(*a*) The crest, or ridge of the parietal bones. (*b*) The frontal bones; beneath are the frontal sinuses. (*c*) The nasal bones. (*d*, *d*) The septum narium, or cartilaginous division between the nostrils. (*e*) The occipital bones. (*f*, *g*) The atlas, first bone, and dentata (toothed), second bones of the neck. (*h*) The cuneiform (wedge-shaped) base of the occipital bone. (*i*) The sphenoid (wedge-like) bone, and its cavities. (*k*) The ethmoid (sieve-like) bone, with its cells. (*l*) The tongue. (*m*) The inferior maxillary. (*n*) The posterior maxillary. (*o*) The *os hyoides*, or bone of the tongue. (*p*) The thyroid (helmet-shaped) cartilage. (*q*) The epiglottis. (*r*) The arytænoid (funnel-shaped) cartilage. (*s*) The chordæ vocales; ligaments concerned in forming the voice. (*t*) Sacculæ laryngis, ventricle of the windpipe. (*u*) The palate. (*x*) The soft palate, which prevents vomiting. (*y*, *z*) The opening at back of the mouth, the fauces. (1) The cerebrum, or brain. (2) The cerebellum, or little brain. (3) The medulla oblongata, prolongation of spinal marrow. (4) The spinal cord. (5) The ligament of the neck, or "pack-wax," which chiefly sustains the head. (A) The gullet. (B) The larynx. (C) The trachea. (D) The nostrils, and the *dilator naris*. (E) The under lip, and the *depressor labii inferioris*.

FIG. 4. THE OCCIPITAL BONE, AND ATLAS DENTATA OR FIRST VERTEBRA OF THE NECK.—(*a*) Point of the occiput. (*b*) Spine running down the centre of the bone, roughened surface, for the attachment of powerful muscles, which turn the head in various directions. (*c*, *c*) The places where these strong muscles are inserted. (*d*) A large hollow called the *foramen magnum*, or great aperture, through which the continuation of the brain, called the spinal cord, passes out of the skull. (*e*, *e*) Two rounded protuberances, by which the head is connected with the atlas bone, and which fit into the condyloid, or cup-shaped processes of the occipital bone. (*f*, *f*) These two projections are an additional contrivance for the support of the great weight of the head. These are termed the ceracoid (beak-like) projections of the occipital bone.

FIG. 5. THE SPINAL CORD, ITS DECUSSATED NERVES AND GANGLIA.—(*a*) The spinal cord divided, consisting of six distinct columns. (*b*) A column giving out fibres (nerves) of sensation. (*c*) A bundle of these nerves of sensation and motion, cut off after passing through. (*g*) A ganglion (knot), or enlargement. These enlargements are called ganglia. (*f*, *f*) The general enveloping membrane, turned back.

PLATE VI.—THE HEAD, EAR, BRAIN, AND PALATE.

FIG. 1. THE INTERNAL EAR, TYMPANUM, BONE, ETC.—(*a*) *Meatus auditorius externus*, outer passage of the ear. (*b*) *Membrana tympani*, tympanum (drum), or membrane stretched over the hollow drum of the ear. (*c*) The *malleus*, or hammer. (*d*) The *ictus*, or anvil. (*e*) The *orbiculare*, or round bone. (*f*) The *stapes*, or stirrup. This bone rests on the membrane which covers the foramen ovale (oval opening), which leads into the labyrinth of the ear, called also *fenestra ovalis* (oval window). (*h*) The *vestibula*, porch, or entrance to the labyrinth. (*i*, *i*, *i*) The semi-circular canals. These form parts of the labyrinth. (*k*, *k*) Openings into the canals. (*l*) The tympanum, or drum. (*m*, *m*, *m*) The *cochlea*, or snail-shell-shaped portion of the labyrinth of the ear. (*n*) *Meatus auditorius internus* (internal passage of hearing), through which the soft portion of the seventh pair of nerves enters, and which is the auditory nerve, or nerve of hearing, and is spread over the *cochlea* and *vestibula*. The small curve below the lowermost letter *m*, is the Eustachian tube (so called from its discoverer), which communicates with the mouth.

FIG. 2. THE PALATE, BARS, PALATINE VEIN, NERVES, ETC.—(*a*, *a*) The incisors, or cutting teeth. (*b*) The palatine nerve. (*c*) The palate and its ridges. (*e*, *e*) The bars. A strip has been removed, in a curved form, round *D*, to show the nerve, artery, and vein. (*f*, *f*) The palatine artery. (*g*) The palatine vein, on each side of this letter. (*h*, *h*) The cheeks, divided, to show their longitudinal structure. (*i*, *i*) The tushes, or canine teeth. (*k*, *k*) The gums. (*l*) The upper lip (labium superius).

FIG. 3. THE BRAIN, SHOWING THE ARTERIES, AND ITS SEVERAL LOBES.—(*a*, *a*) The substance of the brain; hemispheres of the cerebrum. (*b*, *b*) The anterior lobes of the same. (*c*, *c*) The cerebellum, or little brain, in the posterior part of the skull. (See Section of Head, Plate V). (*d*, *d*) Inferior spinal, branches of, about to become single. (*e*) Basilar arteries. (*f*) Post cerebellar. (*g*, *g*) Basilar, with branches right and left. (*h*, *h*) Right and left communicating arteries, connecting the basilar with the circulus arteriosus. (*i*, *i*) Internal carotids. (*k*) Posterior transverse. (*l*, *l*, *m*) Posterior cerebrals and branches, forming part of the circulus arteriosus of Willis. (*p*, *p*) Ophthalmics, or eye arteries. (*q*) Anterior cerebral, dividing into—(*r*, *r*, *s*) Right and left anterior cerebral.

FIG. 4. ORIGIN OF THE NERVES, ETC.—(*a*, *a*) The posterior substance of the base of the brain. (*b*, *b*) The anterior ditto. (*c*, *c*) The cerebellum, or little brain. (*d*, *d*) The spinal cord. (*e*, *e*) The olfactory nerves (1st pair). (*f*, *f*) The optic nerves (2nd pair). (*g*) The infundibulum, or funnel. On each side is seen the severed trunk of the carotid artery, where it divides into branches. (*h*, *h*, *i*, *i*, *i*, *k*, *k*) Branches of the carotids, going into the substance of the brain. (*l*, *l*) The fourth pair of nerves (deep-seated), called the pathetic. (*m*, *m*, *n*, *n*) The fifth pair; the sixth pair. (*o*, *o*) Origin of the fourth pair. (*p*, *p*) The seventh and eighth pairs of nerves: the seventh pair being the auditory nerves; the eighth, the nervus vagus, or pneumogastric. (*q*, *q*) Seat of the ninth or lingual pair; the branches of the tenth pair (sub-occipitals) arise from the beginning of the spinal marrow.

FIG. 5. THE MUSCLES AND EXTERNAL BLOOD-VESSELS OF THE FACE AND NECK.—(1) Orbicularis (round) muscle, surrounding the eye and closing the lids. (2) Nasalis labii superior (belonging to nose and upper lip). (3) Dilator magnus (the great dilator of the nostrils). (4) Dilator naris lateralis (side dilator of the nostrils). (5) Outer portion of dilator magnus, part of the lateralis being cut away above it at S, to show vessels. (6, 6) Orbicularis oris (muscle around the mouth). 7. Depressor labii inferioris (depressor of the lower lip). (8, 9) The buccinator (trumpeter) muscle. (10). (11) The masseter (chewing), or chewing muscle, forming the cheek of the horse. (12) The sub-scapulo hyoides, from under the shoulder-blade to the root of the tongue, lies just behind these figures. (13) The sterno-maxillary (belonging to the breast-bone and jaw) muscle. (14) The levator humeri (lifter of the shoulder), arising from the back of the head (occiput), and going to the shoulder. (15, 16, 17, 18) The complexus major (larger complicated) splenius (splint-like) tendons, supporting the head, with the upper ligament of the neck. (*a*) The jugular (neck) vein, the two branches having united. (*b*) The submaxillary artery here passes, with a branch of the jugular and the parotid duct, under the angle of the lower jaw. The pulse is best felt here. (*c*) The facial artery and branches. (*d*, *f*) The nasal artery and veins. (*e*, *g*, *h*, *i*) Temporal artery; branches of carotids. The branches of the fifth pair (nerves of feeling of the face), and the main portion of the seventh pair (motor nerves of the face), are marked by a white band; its ramifications are easily traceable.



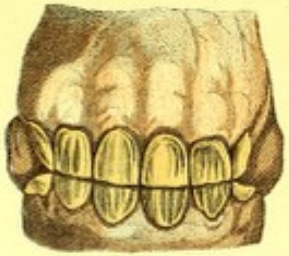
BIRTH.



6 TO 7 MONTHS OLD.



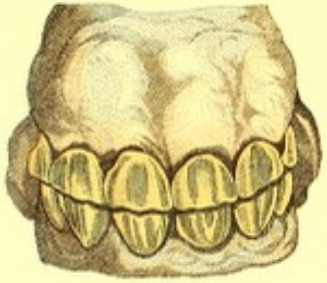
1 YEAR OLD.



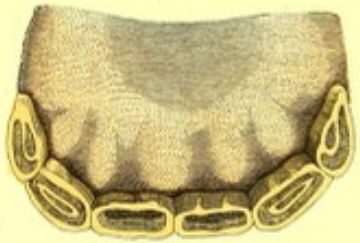
1 YEAR OLD.



2 YEARS OLD.



2 YEARS OLD.



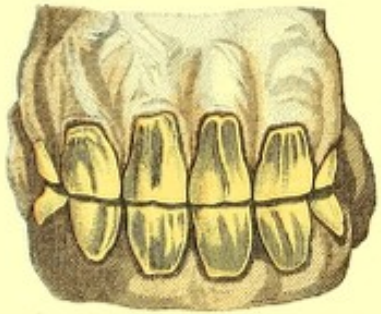
3 YEARS OLD.



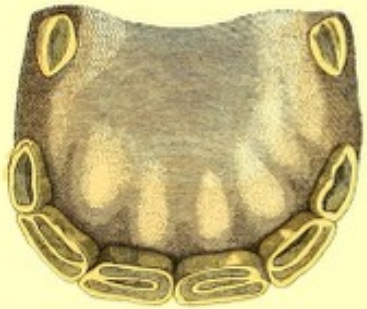
3 YEARS OLD.



4 YEARS OLD.



4 YEARS OLD.



5 YEARS OLD.



5 YEARS OLD.

THE AGES OF THE HORSE.

MAP, I.—FROM BIRTH TO FIVE YEARS OLD INCLUSIVE.



8 YEARS OLD.



6 YEARS OLD.



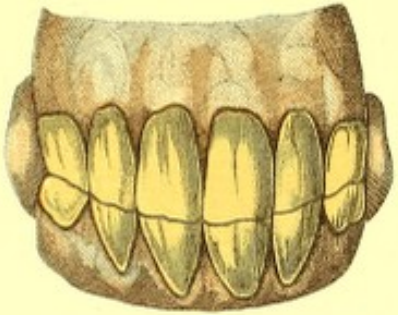
7 YEARS OLD.



7 YEARS OLD.



8 YEARS OLD.



8 YEARS OLD.



12 YEARS OLD.



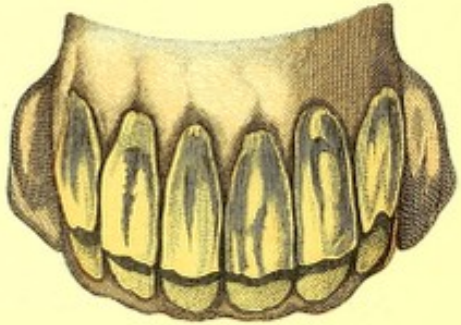
12 YEARS OLD.



20 YEARS OLD.



COLTS INCISOR. FRONT. BACK. TABLE OF UPPER MOLAR. TABLE OF LOWER MOLAR. TUSH.



EXTREME OLD AGE.

THE AGES OF THE HORSE.

MAP, 2—FROM SIX YEARS OLD TO EXTREME OLD AGE.

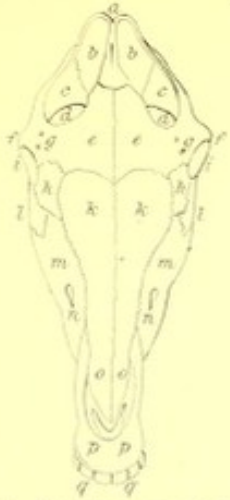


Fig. 1. The bones of the Head & their sutures.



Fig. 3. Section of the Head showing its internal organs.

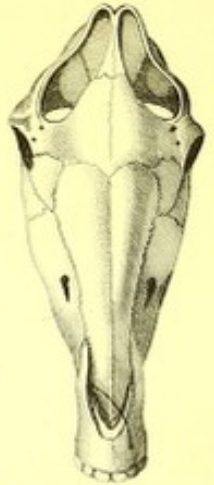


Fig. 2. The bones of the Head from Nature.



Fig. 4. Atlas dentata, or first Vertebra of the neck.

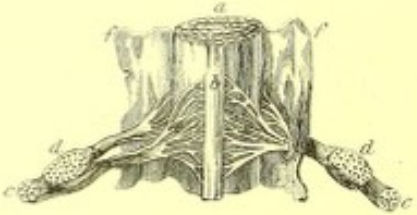


Fig. 5. The medulla or pith & spinal cord, divided, & showing the decussation of the nerves & ganglia.

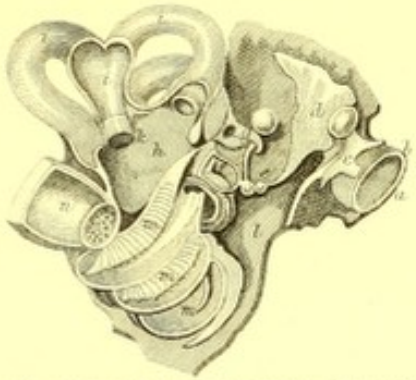
Ben Herring.

ANATOMY — THE HEAD OF THE HORSE.

ANATOMY.—THE HEAD. EAR. BRAIN & THEIR NERVES. MUSCLES & BLOOD-VESSELS.

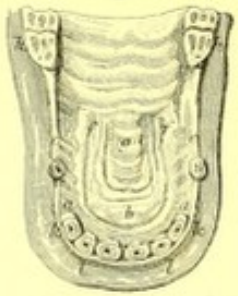
Drawn from Nature by Ben. Herring.

Fig. 1.



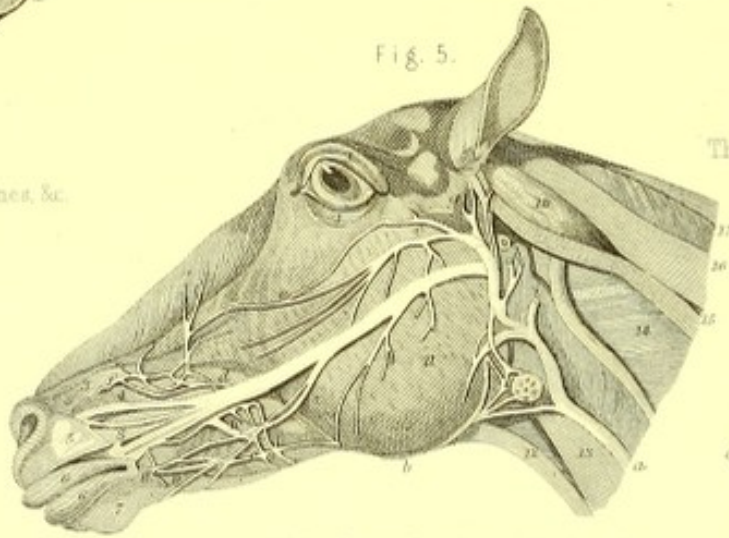
The internal Ear. tympanum, bones, &c.

Fig. 2.



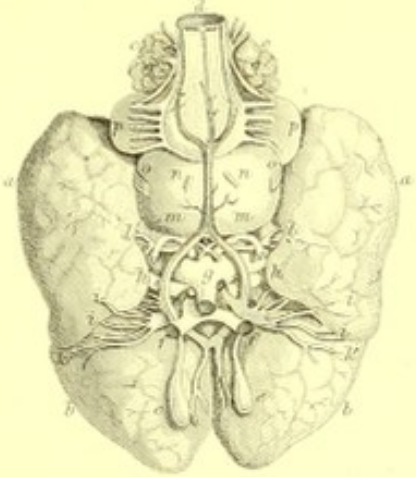
The Palate. bars. palatine. vein. nerve. &c.

Fig. 5.



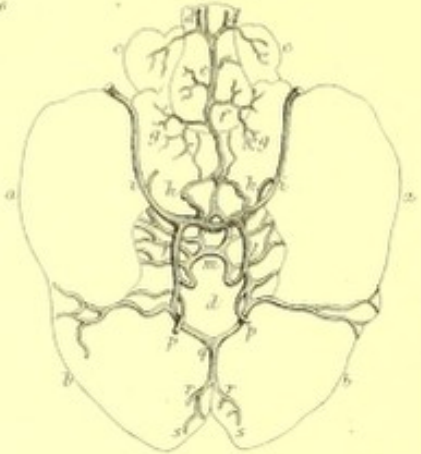
The Muscles & external blood-vessels of the face & neck.

Fig. 4.



The Brain. origin of the nerves. &c.

Fig. 3.



The Brain. showing the arteries & its several parts.

Ben Herring.

T. Cowan.

WILLIAM MACKENZIE, GLASGOW, EDINBURGH & LONDON.

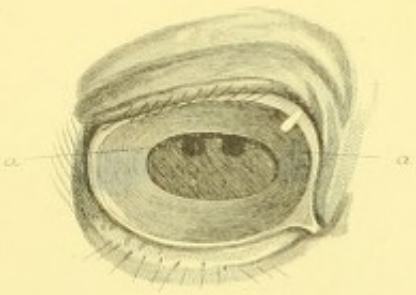


Fig 2. The Healthy Eye.
Showing the Pupil in moderate light.

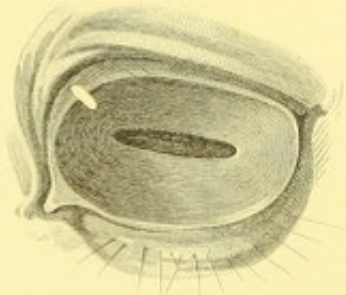


Fig 3. The Healthy Eye.
Showing the Pupil contracted under the influence of strong light.

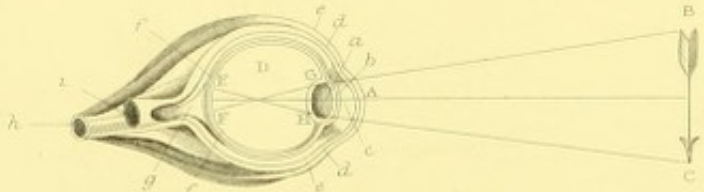


Fig 1. The Pupil, Retina, and Coats of the Eye,
Showing the Mechanism of Vision.

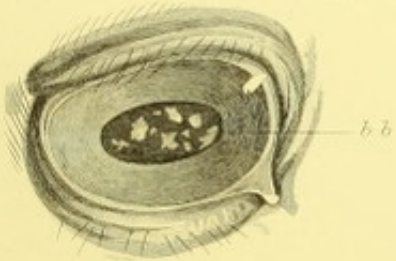


Fig 4. Cataract.
The disease has here made considerable progress.

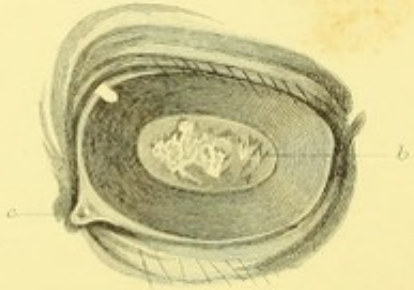


Fig 5. Complete Cataract.
Vision totally lost.

Ben: Herring

T Cowan

ANATOMY - THE EYE OF THE HORSE, IN HEALTH & DISEASE.

Drawn from Nature by BEN HERRING.



Fig 4 Muscles of inside of Fore-leg

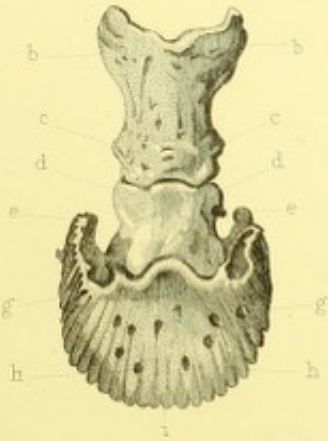


Fig 1 Bones of pastern & Fore-foot
(navicular bone, f. not seen)

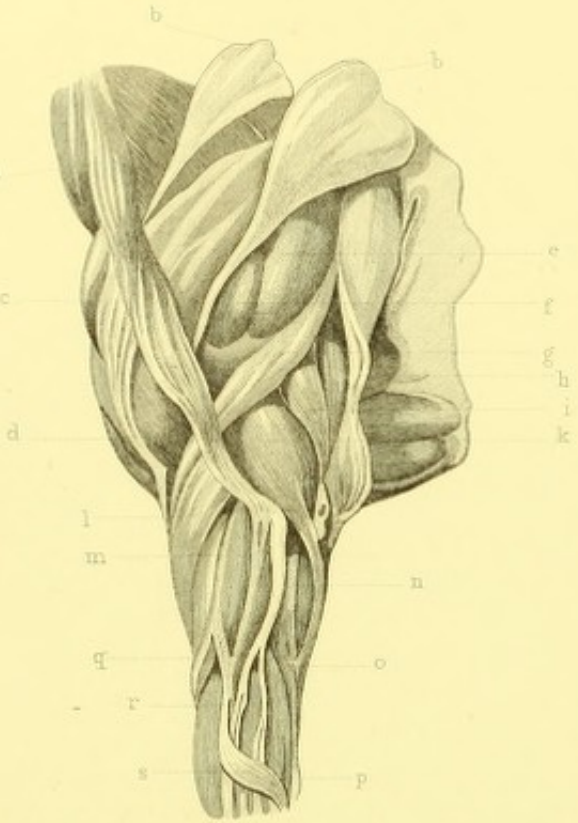


Fig 3 Muscles of Fore-leg & Shoulder



Fig 5 Situation of diseases of the Fore-leg

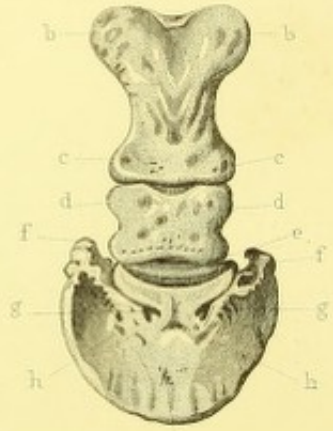


Fig 2 Bones of pastern & foot
(back view, showing navicular bone)

Bon. Herring.

T Cowan

ANATOMY—THE BONES, MUSCLES, AND ARTERIES OF THE FORELEG

(THE GENERAL VIEW OF THE MUSCLES IS GIVEN IN PLATE II)

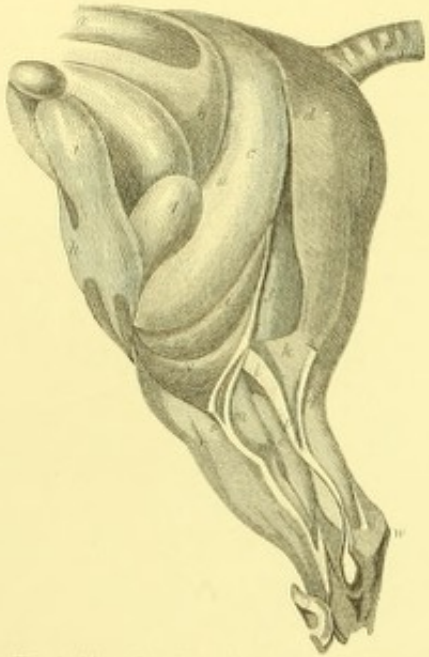


Fig 1 Muscles & arteries outside the thigh



Fig 3 The arteries & nerves of the hind leg



Fig 2 Muscles & arteries inside the thigh

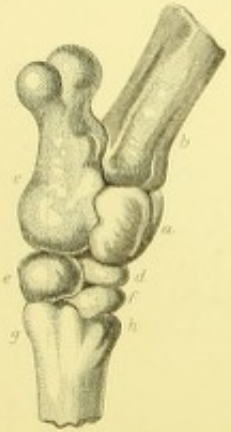


Fig 4 Bones of the hock, enlarged to show their articulations



Fig 5 The hock & hinder extremity, with the situation of their diseases

Ben Herring

T Cowan

ANATOMY_MUSCLES,ARTERIES,BONES &C OF THE HINDER EXTREMITIES

PLATE VII.—THE EYE OF THE HORSE IN HEALTH AND DISEASE

FIG. 1. THE PUPIL, RETINA, AND COATS OF THE EYE.—(A) The horizontal line of vision, from which B and C are equidistant. (B, C) Object seen by the animal, of which an inverted picture is repeated in the retina between E and F. (D) The vitreous (glassy) humour, filling the whole cavity behind the lens. (E, E) The ray passing through the cornea and lens, converging by the refracting power of the lens. (F, G) A similar ray from the upper part of the object, becoming the lower; between E, F, is the picture on the retina. (*a*) The crystalline (glassy) lens behind the pupil, and before the vitreous humour. (*b*) The iris (rainbow-coloured circular membrane) on which the colour of the eye depends. The iris floats in the aqueous humour. (*c*) The aqueous (watery) humour, filling the space between the cornea and crystalline lens. (*d*) The choroid (covering) coat, covered with a black secretion called the pigmentum nigrum. (*e*) The cornea (horny), transparent part of the eye, covered by the conjunctiva, which covers the eye, uniting the different parts. (*f*, *f*) The *retina* (net-like) expansion of the optic nerve, spreading over the whole of the choroid except the lens. (*g*) Muscles of the eye, and fatty cushion. (*h*, *i*) The optic nerve, or nerve of sight.

FIG. 2. THE HEALTHY EYE, SHOWING THE PUPIL IN A MODERATE LIGHT.—(*a*, *a*) The pupil expanded, showing the black pendulous bodies attacked to its upper margin.

FIG. 3. THE HEALTHY EYE, THE PUPIL CONTRACTED BY THE INFLUENCE OF STRONG LIGHT.

FIG. 4. CATARACT.—(*b*, *b*) The opaque specks formed in the pupil, or rather in the crystalline lens.

FIG. 5. COMPLETE CATARACT.—(*b*) The pupil and crystalline lens, wholly opaque, and out of shape, "Wall-blindness."

PLATE VIII.—THE BONES, MUSCLES, AND ARTERIES OF THE FORE LEG.

FIG. 1. BONES OF THE PASTERN AND FORE FOOT.—(*b*, *b*) The wings of the large pastern bone, with its cavities for the reception of the lower pulley-like head of the shank bone, and the sesamoid bones. (*c*, *c*) Rough surfaces of the large pastern, for the attachment of ligaments. (*d*, *d*) The small pastern (coronary bone). (*e*, *e*) Wings of the coffin bone. On their inner surface is a groove for an artery, which forms a semicircle within the substance of the bone. (*g*, *g*) The coffin bone, light, spongy, and perforated with numerous holes for the passage of blood-vessels. The upper surface concave for the reception of the pastern. (*d*, *d*) The lower, also concave, for the reception of the sensible sole. (*h*, *h*) The foramina, or holes, for the passage of blood-vessels and nerves. (*i*) The toe and horny laminæ. The nut, shuttle, or navicular bone, is situated behind the coffin bone, between its two wings, and not seen from the front.

FIG. 2. BONES OF PASTERN AND FOOT (BACK VIEW).—(*b*, *b*) Large pastern (as Fig. 1). (*c*, *c*) Projections, &c., as before. (*d*, *d*) Small pastern bone. (*e*, *e*) The navicular bone. Its upper surface is continuous with the articulated surface of the coffin bone; its lower rests on the perforans tendon. This is the seat of navicular disease. (*f*, *f*) The wings of the coffin bone. (*g*, *g*, *h*, *h*, *i*) Processes whereto the sensible sole and frog are attached.

FIG. 3. MUSCLES OF THE FORE LEG AND SHOULDER.—(*a*) Levator humeri, or raiser of the shoulder. It serves also to depress the head. This is in powerful action when the horse runs with his head projected forwards. In front is a portion of the sterno maxillaris connected with the lower jaw. (*b*, *b*) The trapezius, or four-sided muscle. It occupies the withers, and lifts the shoulder blade. Part is here turned back to show the muscle beneath, which is the *serratus major* (great tooth-shaped muscle). (*c*, *d*) Lesser pectoral, or breast muscle; it lies below the greater pectoral, and is attached to both breast bone and shoulder blade. (*e*) The *postea spinatus* muscle, extends to the lower bone of the shoulder. (*f*) *Ante-spinatus;* above it is the small pectoral muscle, connected with breast and shoulder bone. (*g*) Flexor brachii, fixed by strong tendons to the scapula, and by a flattened tendon below to the inner side of the radius. It throws the shoulder forward, and raises the fore arm. (*h*) A division of part of another muscle arising from the point of the scapula, and inserted by tendon in the elbow. (*i*) A deeper-seated portion of the same. (*k*) The middle flexor, passing down to the inner side of the knee. (*l*) The principal extensor, in front of the fore arm. (*m*, *n*) At these points are seen the artery, nerve, and vein of the fore leg, and the downward course of the *extensor pedis* muscle. (*o*) The perforans (perforating) flexor. (*p*) The perforatus (perforated) flexor. It arises from the lower portion of the inner head of the lower bone of the shoulder, and is intimately intermixed with the perforans flexor muscle. As it descends the bone of the arm it becomes tendinous, and extending to the knee, it is bound down by ligamentary bands (*r*, *s*), to prevent it from starting in sudden motions. (*q*) Descending arteries, vessels, and nerves. (*r*, *s*) Ligamentous bands.

FIG. 4. MUSCLES, ETC., OF INSIDE OF FORE LEG.—(*a*, *b*) Pectoralis transversus muscle, which crosses the breast. It binds the arm to the side of the horse, and keeps the legs straight before the horse in his gallop. Its point is the seat of capped hock. (*c*) Branches of the axillary artery, &c. (*e*) The internal flexor of the arm. (*f*, *g*, *h*) Branches of the extensor brachii, and blood-vessels. (*i*, *m*) Descending radial artery and nerve. (*l*) The knee joint.

FIG. 5. SITUATIONS OF DISEASES OF FORE LEG.

(*a*) Seat of sand-crack. (*b*) Ring bone; false quarter. (*c*) Point of breaking down, rupture of fetlock. (*d*) Seat of windgall. (*e*) The tendinous band in which the flexors work, with vein and nerve descending to the pasterns—the last is divided in neurotomy. (*f*) Sprain of back sinews. (*g*) Seat of splint. (*h*) Tied in below the knee. (*i*) Seat of mallenders. (*k*).

PLATE IX.—MUSCLES, ARTERIES, ETC., OF HINDER EXTREMITIES.

FIG. 1. MUSCLES, ETC., OUTSIDE THE THIGH.—(*a*) The gluteal muscle (glutæus maximus). (*b*) The outer gluteus (buttock) muscle (gluteus externus). (*c*) The triceps femoris (three-headed muscle of the thigh). It rises high up in the bones of the spine, and is inserted in the upper part of the lower bone of the thigh. Its office is to draw back the thigh, and so throw forward the trunk of the body. (*d*) This muscle descends from the sacrum, and runs behind the triceps femoris, forming the hinder part of the haunch. It is greatly developed in the thorough-bred horse, and is another important agent in propulsion. (*e*) The root of the tail, with its muscles. (*f*) The tensor vaginæ. (*g*) The *flexor metatarsi*, which bends the hocks. (*h*) *Extensor pedis*, on the front of the thigh. It is attached above to the outer condyle of the thigh bone (femur), and below to the coronet of the foot, and to the upper end of the bone between the lateral cartilages. It extends the foot, fetlock, and pastern joints. (*i*) The poplitæus, or *femoro-tibialis obliquus*, a short thick muscle, seen again at *p*. It bends the stifle, and turns the limb inward. Just at this part the principal nerves appear before entering or underlying the muscle, they pass under *c* to the spinal marrow. (*k*) This muscle extends the hock; it ends in a flat tendon below *l*, *p*. (*l*) See preceding letter. (*m*, *n*) The peroneus, another extensor. It arises from the fibula and becomes tendinous before reaching the hock. It accompanies the great extensor in the same sheath, half-down the shank-bone, and with it attaches itself to the coffin bone. It raises the foot and brings it under the body. (*o*) *Flexor pedis*. It originates in the tibia, and becomes a large round tendon in a groove at the back of the hock, and continues down the leg to the foot, assisting to bind the pastern and coffin joints. (*p*) See above at *i*. (*q*) A layer of *d*, entering hock at *w*. (*r*, *s*) Tendinous fasciæ binding muscles of the thigh.

FIG. 2. MUSCLES, ETC., INSIDE THE THIGH.—(*a*) Muscle descending from the sacrum (*d*, fig. 1). (*b*) Continuation of ditto. (*c*, *c*) Gracilis, or slender muscle. (*d*) Course of the principal arteries and veins. (*f*, *g*) Sartorius, or tailor's muscle. (*h*) Fasciæ. (*i*) The glutæus externus. (*k*) The peroneus, ascending to the coronet of the *os pedis*. (*l*) The *poplitæus*. (*m*) The flexor metatarsi (tendon of the leg). (*n*) Extensor pedis. (See letter *h*, fig. 1.) (*o*) Inside view of the perforans muscle; *h* is lifted up. (*p*, *p*) Mark the course of the principal blood-vessels of the inside of the thigh. (*q*, *q*, *r*, *s*) Principal nerves and vessels of the hinder part of the thigh and hock. (*t*) The large cutaneous vein. (*u*) Muscle below the vein, and a layer of fleshy fibre to the front of the hock. (*v*) The ligamentary bands which confine the hock. (*w*) Supplementary fibres, to

brace the tendon and prevent its compression when the hock is bent. (*y*) See *y* above in figure, whence, downward to (*z*) The nerves and vessels of the fore-part of the thigh are traced.

FIG. 3. ARTERIES AND NERVES OF THE HINDER LEG.—(*a, a, a*) The femoral (thigh) artery. (*b*) A branch of the same. (*c*) Continuation of the femoral trunk. (*d*) The anterior tibial artery. (*e, e*) The femoral vein. (*f, f*) The posterior tibial artery. (*g, g, g*) The metatarsal artery. (*i*) A branch of the femoral vein. (*j, j, j*) The femoral vein. (*k, k, k*) Anterior tibial veins. (*l*) The metatarsal vein, ascending. (*m*) The large metatarsal vein. (*n, n*) The inguinal (groin) artery.

FIG. 4. BONES OF THE HOCK ENLARGED, TO SHOW THEIR ARTICULATIONS.—(*a*) The astragalus, or knuckle bone. (*b*) The lower end or base of the tibia (thigh bone). (*c*) The *os calcis*, the hinder projecting part, called "the point of the hock." (*d*) The *os cuneiforme magnum* (great wedge-shaped bone) immediately under the astragalus. (*e*) The *os cuboides* (cube-shaped bone) on the outer side of the hock. (*f*) The *os cuneiforme*, middle wedge-formed bone, immediately under the cuneiforme magnum. (*g*) The splint bone. (*h*) Upper head of shank bone. These are all connected with powerful ligaments, to prevent dislocation.

FIG. 5. THE HOCK AND HINDER EXTREMITY, AND SITUATION OF DISEASES.—(*a*) Seat of thoroughpin; (*b*) Capped hock; (*c, d*) Curb; (*e, e*) Seat of "rat-tails"; (*f*) Splint; (*g*) Windgalls; (*h, i*) Grease, thrush, &c.; (*k*) Tread; (*l*) Seedy-toe. All which are noted under their several titles in the work.

PLATE X.—THE HORSE'S FOOT, AND NEUROTOMY.—PLATE I.

FIG. 1. SECTION OF THE FOOT, PASTERN, AND SHANK.—(*a*) The shank bone. (*b*) The large pastern bone. (*c*) The smaller pastern bone. (*d*) The coffin bone. (*e*) The navicular or shuttle bone. (*f*) The sesamoid bone. (*g*) The small hard ligament tying down the sesamoid to the large pastern bone. (*h*) The tendon of the perforatus, inserted into the coffin bone after passing over the navicular bone. (*i*) A continuation of the suspensory ligament inserted into the small pastern bone. (*k*) Continuation of the suspensory ligament. (*l*) The extensor tendon inserted in both pasterns and coffin bone. (*m*) The sensible laminæ to which the crust, *p*, is attached; and position of the coronet. (*n*) The inner or sensible frog. (*o*) The cleft of the horny frog. (*p*) The toe and crust. (*q, r*) The sensible sole and frog, in front the horny sole. (*s, t*) A long ligament, reaching from the pastern bone to the knee.

FIG. 2. BONES AND LIGAMENTS OF FORE-FOOT.—(*a*) Lower part of shank bone. (*b*) Sesamoid bone. (*c*) Upper pastern. (*d*) Lower pastern. (*e*) Suspensory ligament and shuttle (navicular) bone, dissected back. (*f*) Coffin bone. (*g, h, i*) Branches of suspensory ligaments uniting with suspensor tendon.

FIG. 3. LIGAMENTS OF THE UPPER AND LOWER PASTERN.

FIG. 4. THE BLOOD-VESSELS OF THE FOOT.—The greater and lesser metacarpal arteries, having joined, continue down the inside of the leg, under the nerve, and at the lower part of the cannon divide into the two plantar arteries; one of these passes on each side of the pastern bone. When they reach the foot they are at the back of it, and each sends a branch to the fatty frog. They are marked at *b, b, c, d*, and at *g, h* some of these ramifications are seen. The main trunks pursue their course along the inner wings of the coffin bone, and are not seen here; they unite with each other, and thus form an arterial circle inside the substance of the bone of the foot. From this circle are sent off various small branches, which penetrate the coffin bone, and, bending downwards, unite and form the circumflex artery, which runs round the margin of the bony sole (Fig. 7), to which blood from the circumflex artery is transmitted. It is seen, in the figure just referred to, that numerous twigs are sent to nourish and supply every part near which the arteries run. The radial vein, which forms a venous circle just behind the knee, becomes, lower down, the internal metacarpal, and divides just above the fetlock into the two plantars, which are immediately concerned in bringing the blood from the fore feet. These vessels originate from the capillaries, and bring back the blood to the heart. *a, k, l, m, n, o*, mark their anastomoses, or openings into each other. *r* The spongy bone of the foot, with the points or ends of blood-vessels.

FIG. 5. THE FROG AND SOLE (HORN REMOVED).—In this and the two following figures, 6 and 7, the letters indicate the same parts. (*a, a*) The sensitive bars. (*b, b*) The reflection of the coronet, forming the bars. (*c, c*) The cleft or fissure of the frog. (*d, d*) The sensitive frog. (*e, e*) The sensitive sole.

PLATE XI.—THE HORSE'S FOOT, AND NEUROTOMY, PLATE II.

FIG. 1. FOOT OF FOAL A FEW WEEKS AFTER BIRTH.—The cylindrical and upright form of the hoof, and largeness of the upper part at the coronet, are yet observable. The limbs are upright, the fetlocks little bent, and the toes dig in the ground.

FIG. 2. HALF-GROWN FOOT.—The ragged appearance of the inflections spreading over the sole is here very remarkable. In this and the two following figures (3 and 4), the letters denote the same parts. (*a, a*) The sensitive bars. (*b, b*) The heels. (*c, c*) The fissure of the frog. (*d, d*) The sensitive frog. (*e*) The sensible laminæ within the horny hoof.

FIG. 3. THE NATURAL FOOT.

FIG. 4. THE FOOT AS CHANGED IN FORM BY SHOEING.

FIG. 5 SENSIBLE FOOT (HOOF REMOVED).—(*a*) The sensible laminæ. (*b*) The sensible sole. (*g*) The secreting coronet.

FIG. 6. NEUROTOMY, THE HIGH AND LOW OPERATIONS.—*The High Operation.*—(*a*) The metacarpal or pastern nerve, raised by the probe. (*b*) The vein. (*c*) The artery. (*d, f*) The white cellular membrane divided and turned back. (*e*) The back sinews, or flexor tendons. (*g*) Flesh-hook, holding back the skin and tissues. *The Lower Operation.*—(*a*) The artery. (*b*) The nerve. (*c*) The tendon. (*d*) The vein. (*e, f*) Cellular tissue, lining the skin.

PLATE XII.—ANATOMY.—THE THORACIC VISCERA.

FIG. 1. THE CHEST AND ITS CONTENTS.—(*a*) Ribs sawn off from sternum. (*b*) Rings of the trachea (wind-pipe). (*c, c*) Common carotid artery, dividing right and left, from (*d*) Its main trunk. (*e*) The heart. (*f, f*) The lobes of the right lung. (*g, g*) The lobes of the left lung. (*h, h*) Posterior lobes of right and left lungs. (*i*) The midriff divided.

FIG. 2. THE HEART; *showing the right ventricle, tricuspid valve, &c.*—(*a*) Orifice of the coronary vein. (*b*) The tricuspid valve, admitting the blood to the right ventricle, and preventing its return. (*c*) The carneæ columnæ, and cortina tendinea, or fibres which fasten the ends of the valves to the substance of the heart. (*d*) The ventricle cut open lengthwise. (*e*) The septum or division. (*f*) The opening of the pulmonary artery. (*g*) The opening of the aorta.

FIG. 3. THE HEART; *the right ventricle, &c.*—(*a*) The substance of the muscular coat divided. (*b*) (*c*) The pulmonary artery. (*d*) The tricuspid valve. (*e*) The left auricle. (*f*) The cortina tendinea.

FIG. 4. THE LUNGS.—(*a*) The substance of the lungs. (*b, b, b, b*) The lobes of the lungs. (*d*) The trachea (wind-pipe). (*e, f*) Bronchial tubes.

FIG. 5. THE PULMONARY ARTERY AND VEINS, *as ramified in the lungs.*—(*a*) The pulmonary artery cut off close to the right ventricle of the heart. (*b*) The pulmonary vein cut off from the left ventricle of the heart. (*c, c, c, c*) Branches accompanying the ramifications of the bronchiæ, spreading through the whole substance of the lungs. (*d, d, d*) The capillary extremities of the blood-vessels.

PLATE XIII.—THE ABDOMINAL VISCERA, KIDNEYS, &c.—THE ŒSTRUS EQUI (BOTS).

FIG. 1. THE INTESTINES.—(*a*) The cœcum. (*b, b, b*) The colon. (*c*) The rectum. (*d*) The small intestines. (*e*) The outer integument (epidermis, cutis, and panniculus carnosus) divided.

FIG. 2. THE KIDNEYS, BLADDER, ETC.—(*a*) Part of a lobe of the liver. (*b*) Part of the intestines. (*c*) Part of the stomach and caul (omentum). (*d*) The kidneys. (*e, e*) Ovaries, with branches of spermatic arteries and veins. (*f*) The descending aorta and vena cava. (*g*) The

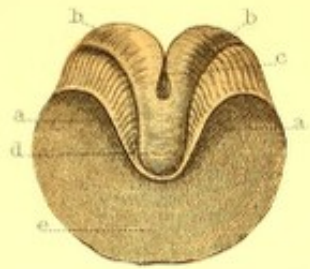


FIG. 5, THE FROG & SOLE.
(HORN REMOVED)

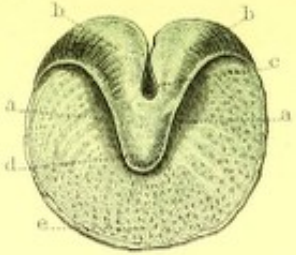


FIG. 6, BLOODVESSELS OF THE
SOLE & FROG.



FIG. 7, ARTERIES OF DITTO.



FIG. 2, THE BONES & LIGAMENTS.



FIG. 3, LIGAMENTS OF THE
UPPER & LOWER PASTERN.

FIG. 4, THE BLOODVESSELS OF THE FOOT
& PASTERNS.

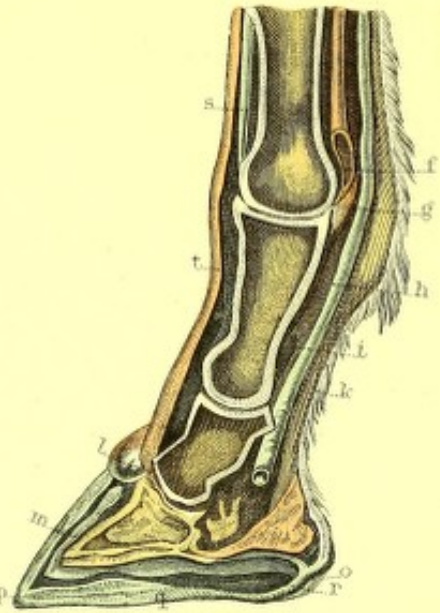


FIG. 1, SECTION OF THE FOOT, PASTERNS & SHANK.

ANATOMY — THE HORSE'S FOOT.

WILLIAM MACKENZIE, LONDON, EDINBURGH & GLASGOW.



FIG. 1. FOOT OF FOAL.

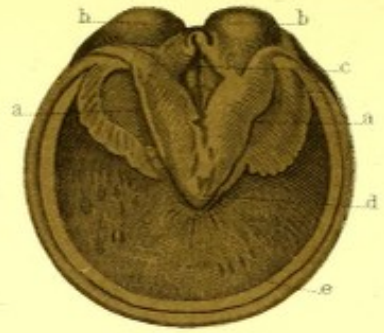


FIG. 2. HALF GROWN FOOT.



FIG. 4. THE FOOT AS CHANGED IN FORM BY SHOEING.

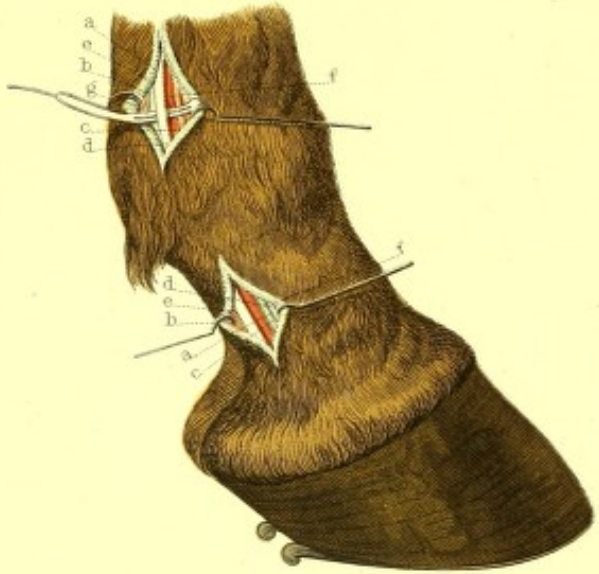


FIG. 6. NEUROTOMY, HIGH & LOW OPERATIONS.

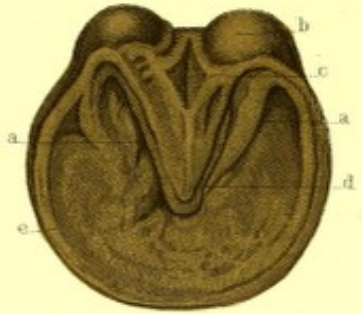


FIG. 3. NATURAL FOOT OF UNSHOD HORSE.



FIG. 5. SENSIBLE FOOT (HOOF REMOVED)

THE HORSE'S FOOT & NEUROTOMY.

WILLIAM MACKENZIE, LONDON, EDINBURGH & GLASGOW.

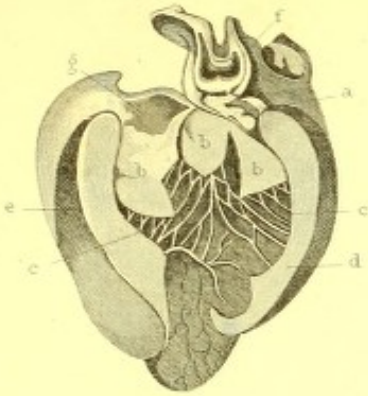


Fig 2. The Heart dissected to show the interior of the right Ventricle, tricuspid valve &c

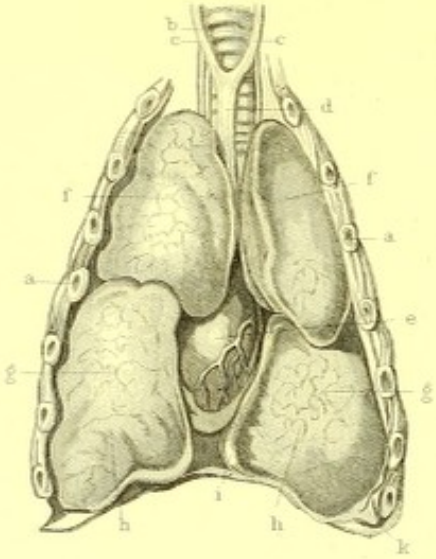


Fig 1. The Thoracic Viscera.

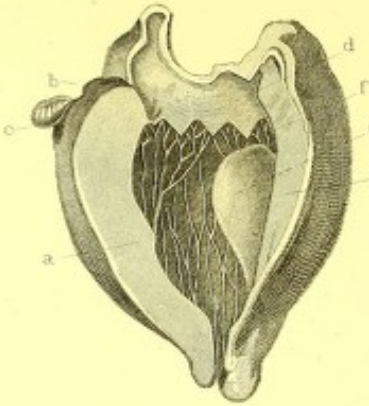


Fig 3. The Heart, showing the left Ventricle, Auricle, &c.

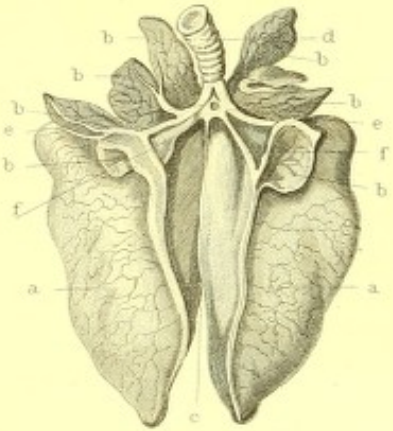


Fig 4. The Lungs.

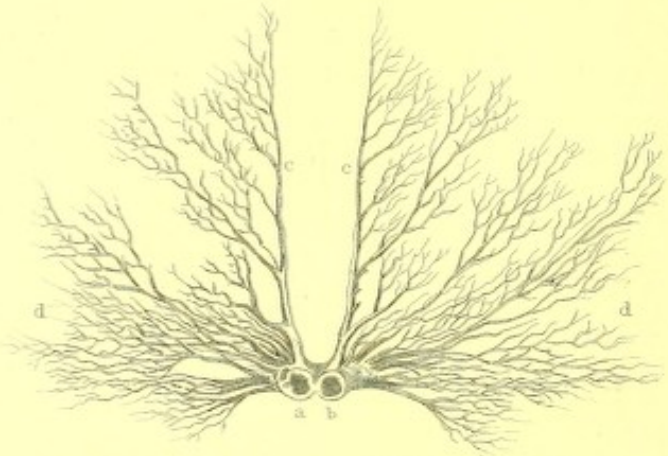


Fig 5. The pulmonary Artery & Veins, with the ramified blood-vessels of the Lungs.

Ben. Herring.

T. Cowan.

ANATOMY OF THE HORSE. THE THORACIC VISCERA

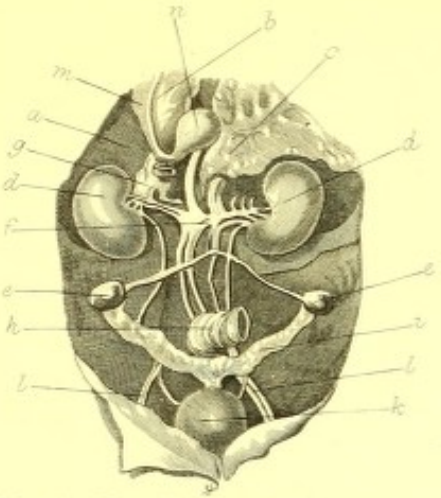


Fig. 2.— The Kidneys, Bladder, & other vessels, in situ, the abdomen being deprived of the intestines

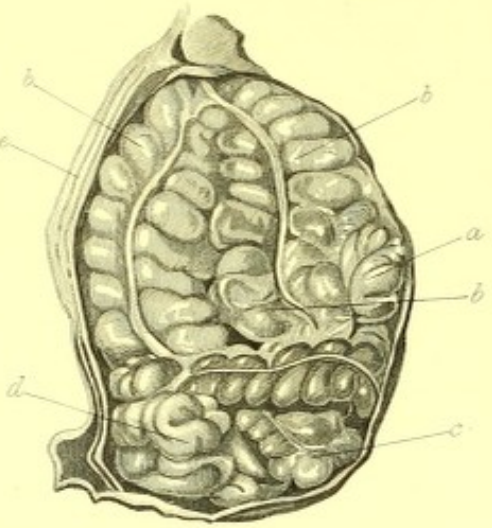


Fig. 1.— The large intestines, as seen when the abdomen is first laid open.



Fig. 4.- Larva of the Gadfly (the Bot), detached from the membrane.



Fig. 3.— Ova of the Gadfly attached to a hair.

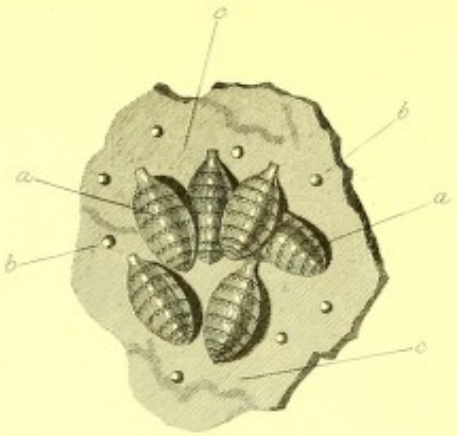


Fig. 5.— Larvæ of the Gadfly (Bots) adhering to the lining of the Stomach



Fig. 6.— The Œstrus Equi (Gadfly), the parent of the Bot (Female).

Ben. Herring

T. Cowan.

ANATOMY. - THE ABDOMINAL VISCERA, KIDNEYS, &c.

THE ŒSTRUS EQUI (GADFLY), OVA, LARVÆ, (BOTS), &c.



Fig 1. The fœtus, enveloped in its membranes, removed from the uterus.



Fig 4. The Fœtus, with its abdomen laid open, & Fœtal circulation shown by untwisting the four vessels of the umbilical cord: one vein, two arteries, & the urachus cut off.

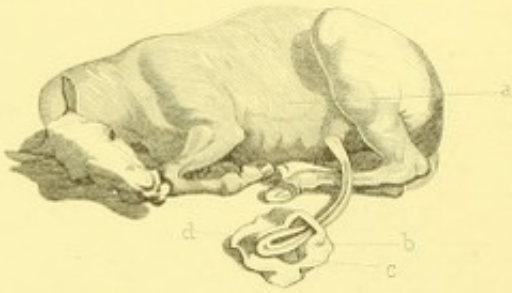


Fig 2. The Fœtus denuded of its membranes, showing the umbilical vessels untwisted.



Fig 3. The Fœtus, in situ with its surrounding fluids & membranes.

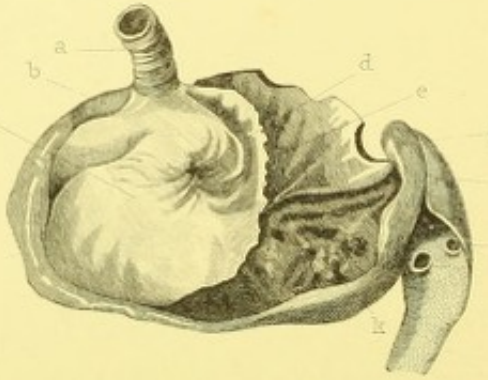


Fig 1 a (of Plate XIII) The stomach with its orifices, &c.

Ben. Herring

T. Cowan.

ANATOMY - GESTATION, THE FŒTUS & FŒTAL CIRCULATION.

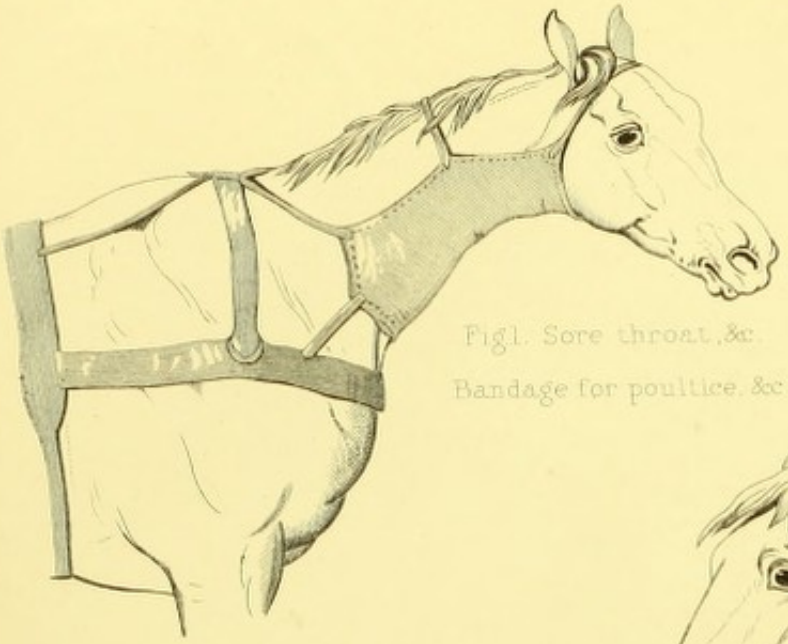


Fig 1. Sore throat, &c.
Bandage for poultice, &c.

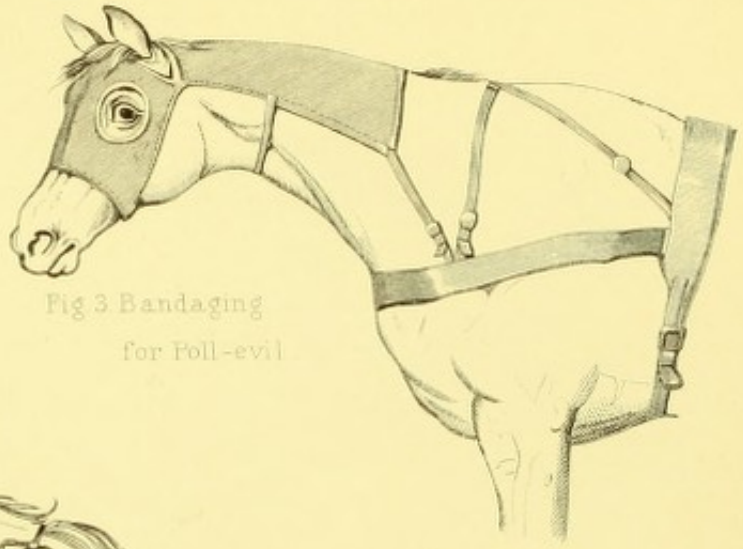


Fig 3 Bandaging
for Poll-evil

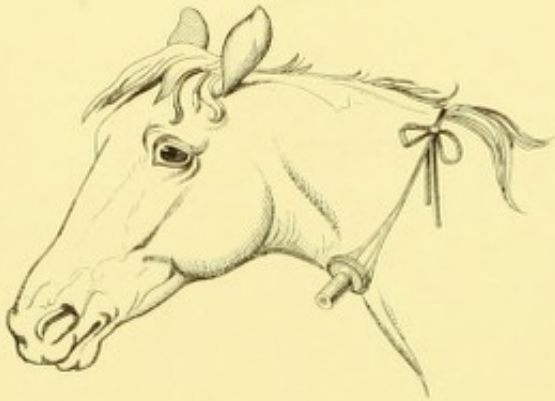


Fig. 5. Bronchotomy with
the tube in position.



Fig 2 Bandage for Critical Abscess

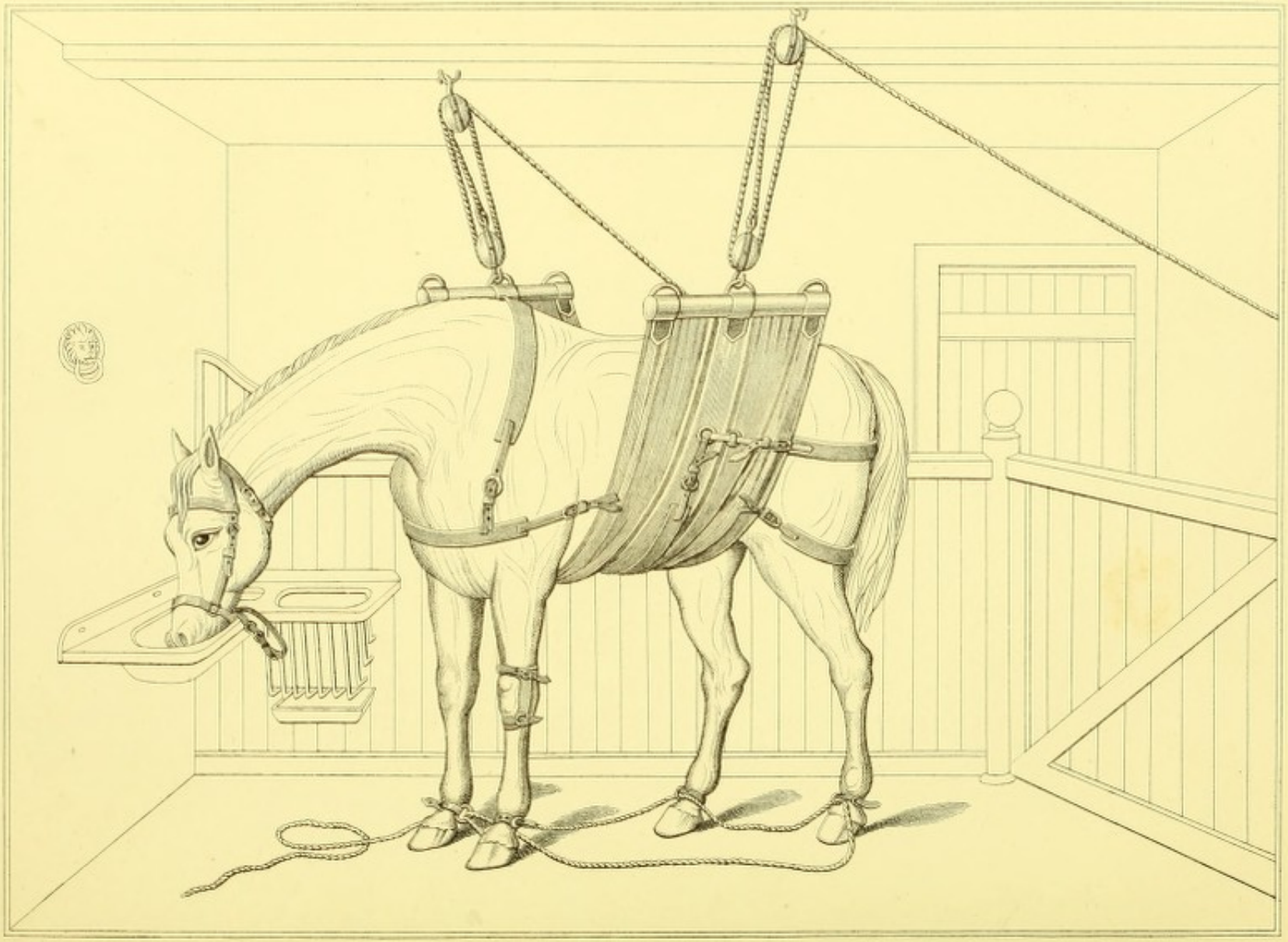


Fig 4 Bandage for Shangles

Ben Herring.

T. Cowan.

BANDAGING & BRONCHOTOMY



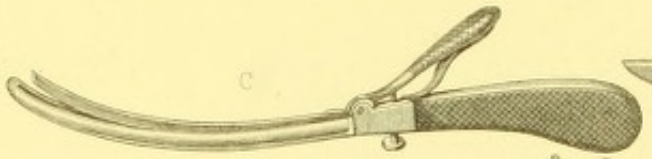
METHOD OF SLINGING THE HORSE.

SHOWING ALSO THE HOBBLES FOR CASTING.

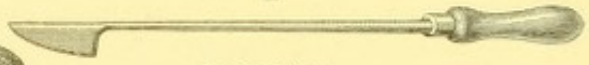
WILLIAM MACKENZIE, LONDON, EDINBURGH & GLASGOW.



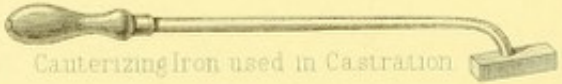
Neurotomy Knives



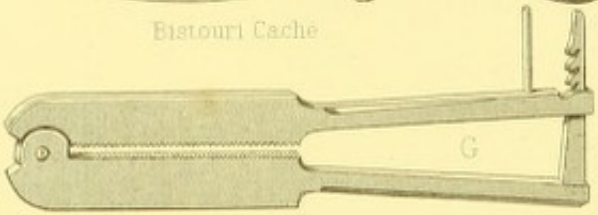
Bistouri Cache



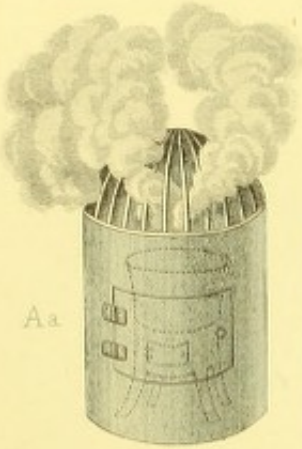
Firing Iron



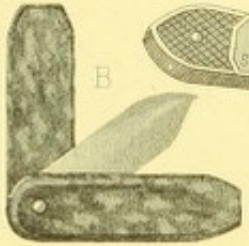
Cauterizing Iron used in Castration



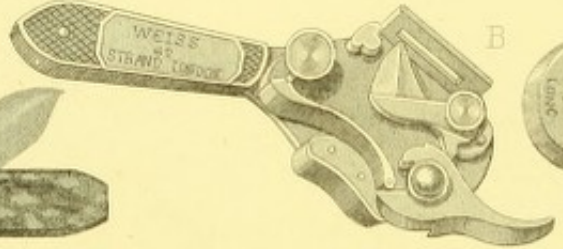
Clams used in Castration



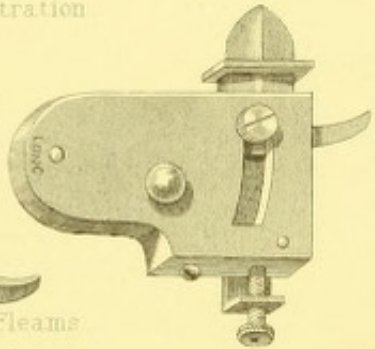
Steaming Apparatus

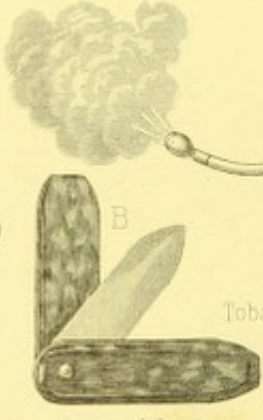


Abscess Lancet



Patent Fleams

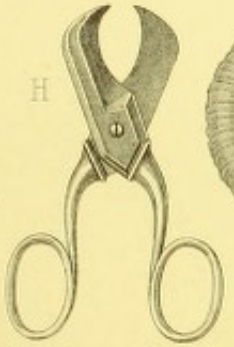




General Lancet

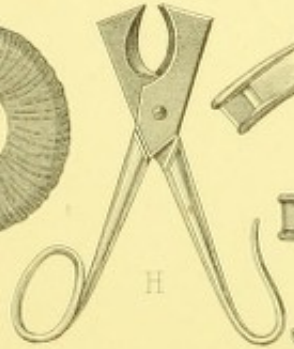


Tobacco Smoke Enema



Rowelling Scissors & Rowel





Rowelling Bistouri



Side-curved Frog



Frog Seton



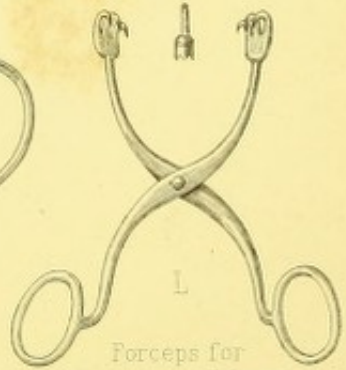
Hook Needle



Seton Needle in shifting Handle
I



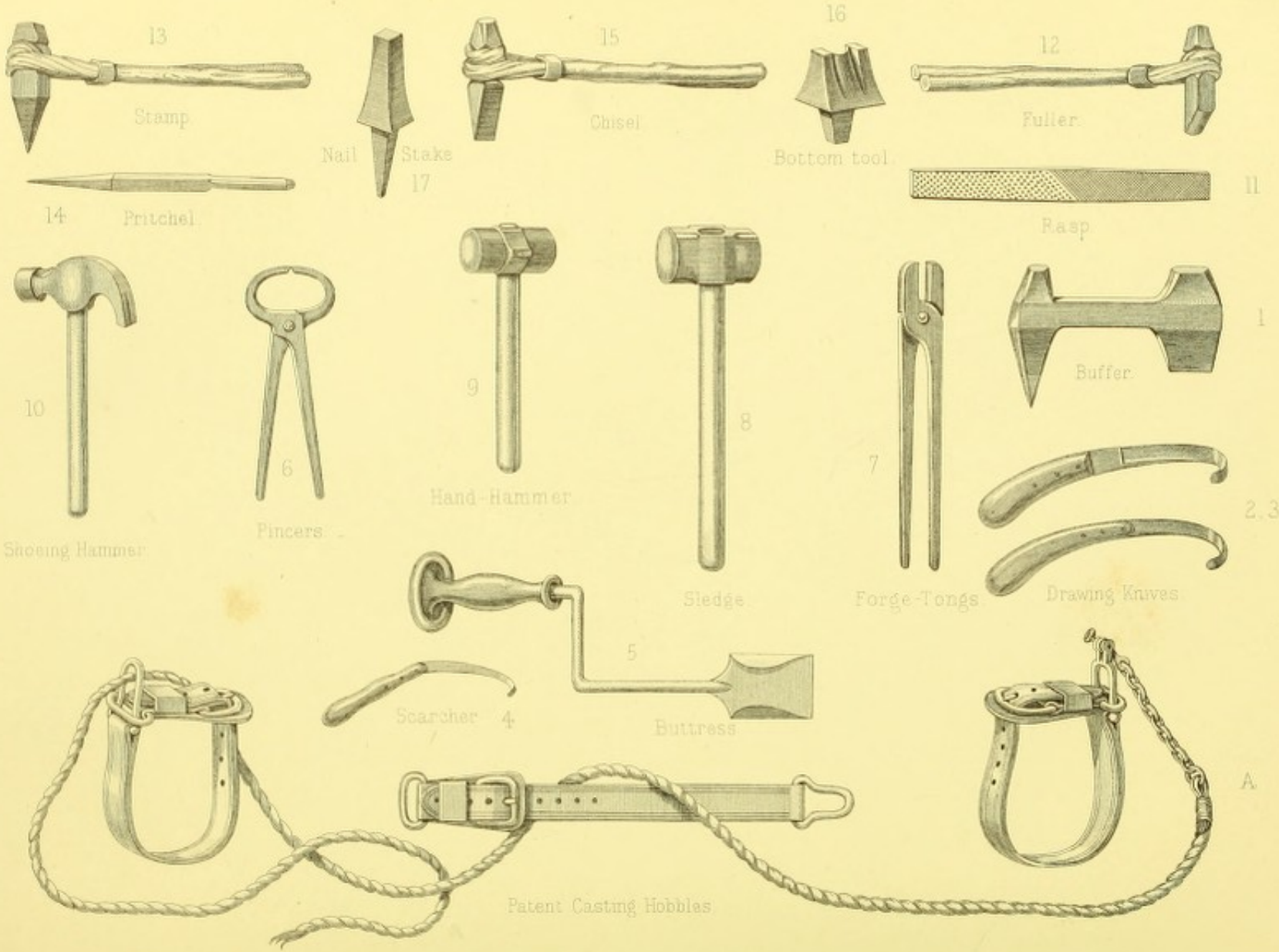
Suture Needle
fixed



Forceps for
Extirpating Polypus

VETERINARY INSTRUMENTS AND APPARATUS.

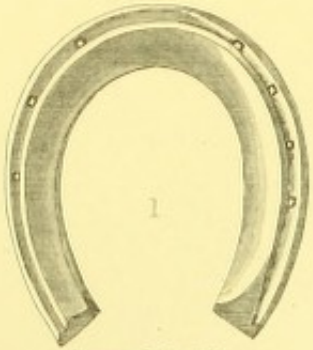
WILLIAM MACKENZIE, LONDON, EDINBURGH & GLASGOW.



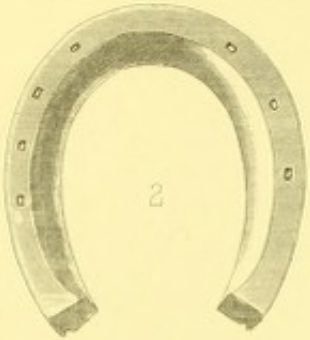
C.J Mackenzie. del

FARRIERS TOOLS & IMPLEMENTS.

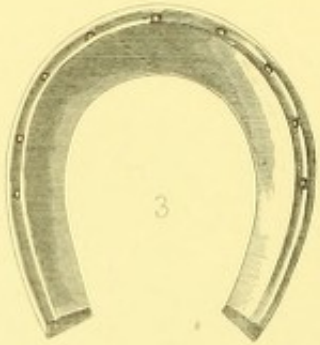
Common Seated Shoes.

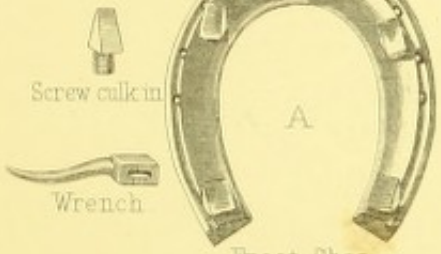


Ground Surface.

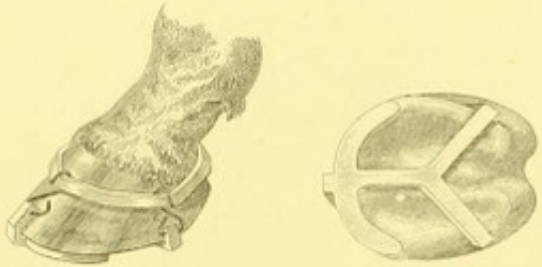


Foot Surface.

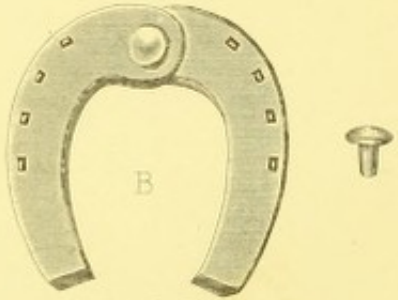




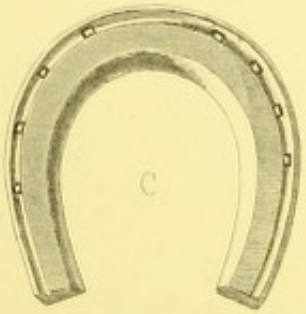
Frost Shoe.



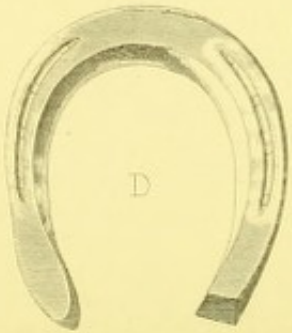
Sandal Shoe.



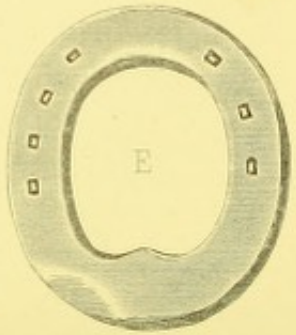
Jointed Shoe.



English Hunting Shoe.



Stewarts Shoe.



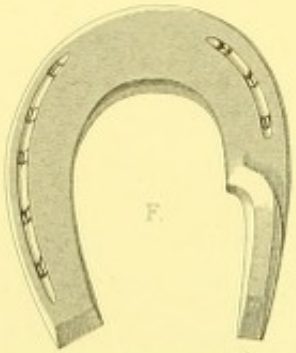
Bar Shoe.

C.J. Mackenzie. del.

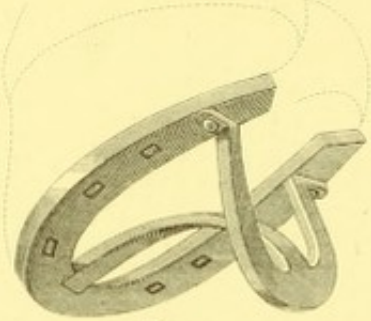
FARRIERY._VARIETIES OF SHOES._PLATE. I.

WILLIAM MACKENZIE, LONDON, EDINBURGH & GLASGOW.

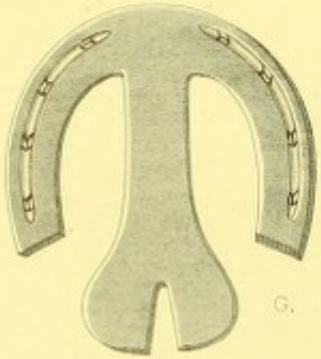
Shoe to prevent cutting.



Patten Shoe.



Frog-pressure Shoe, (Clemans.)



Poultice Boot.



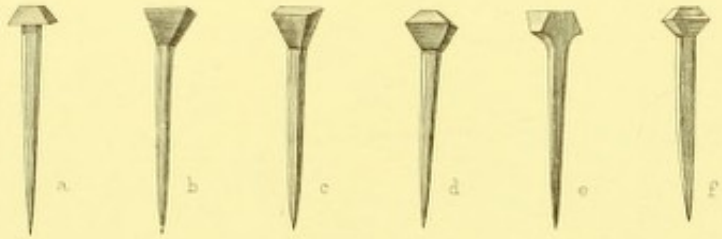
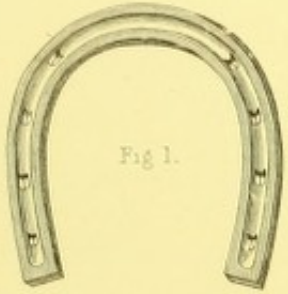


Fig 4. Various forms of Horse-shoe Nails.

French Shoe.



Ground line.



Fore plate full.



Three-quarter plate.



Hind plate full.

Racing Plates.

C.J. Mackenzie del.

T. Cowan sc

FARRIERY. VARIETIES OF SHOES, &c.

emulgent veins leading to the vena cava, and emulgent arteries to the aorta. (*k*) Part of the rectum. (*k*) The bladder. (*l*) Spermatic cords. (*m*) Gall-ducts. (*n*) The duodenum.

FIGS. 3, 4, 5. THE LARVÆ AND OVUM OF THE ŒSTRUS EQUI (GADFLY).—The deposit of the ovum, its maturing, and remedies for its expulsion, will be found at p. 450. The figures are sufficiently explanatory to the eye.

PLATE XIII. A.—GESTATION, THE FŒTUS, AND FŒTAL CIRCULATION (and see pp. 218—219.)

FIG. 1. THE FŒTUS ENVELOPED IN ITS MEMBRANES.—(*a*, *a*) The chorion. (*b*) A fold of membrane enveloping, (*c*) The hinder extremities of the fœtus.

FIG. 2. THE FŒTUS DENUDED OF ITS MEMBRANES.—(*a*) The body of the foal, with the common sheath of the four umbilical vessels taken off, and the cord untwisted. (*b*) The umbilical vein. (*d*) The umbilical arteries. (*c*) The common covering of the umbilical vessels laid open.

FIG. 3. THE FŒTUS, WITH ITS SURROUNDING MEMBRANES, IN SECTION.—(*a*) The fœtus in situ. (*b*) The fluid (liquor amnion) in which the fœtus floats. (*c*) The amnion (from the Gr. *amnios*, a vessel or skin used to receive the blood at sacrifices), or inner covering of the fœtus. (*d*) The chorion (Gr. *chorion*, covering, protection), or outer membrane of the fœtus. Between the amnion and chorion lies the allantoid (Gr. *allas*, a sausage, *eidos* like), containing the urine of the fœtus, or sacs in which the urachus terminates. These sacs are filled with the fœtal urine, as the fœtal bowels are with the yellow pultaceous mass called meconium (Gr. *mecon*, inspissated poppy-juice.) (*e*) The umbilicus or navel cord. (*f*, *f*) Blood-vessels of the umbilicus dispersed on the amnion. Those of the urinary vessel, urachus, are spread on the chorion, which is the more vascular of the three membranes, and is intimately connected with the inner mucous lining of the uterus, by minute vascular projections, which fit into correspondent cavities on the thickened lining of the womb.

FIG. 4. THE FŒTUS, WITH ITS ABDOMEN LAID OPEN.—(*a*) The umbilical vein. (*b*, *b*) The umbilical arteries. (*c*, *c*) The urachus, (urine-vessel), here divided for clearness. Its origin is the fundus of the bladder at *c*, passing out at the navel with the vein and arteries just described, and as soon as it has passed through the amnios it spreads into the cavity allantois. (*d*) The placenta. (*e*) The intestines.

FIG. 1. (*a*) (of Plate XIII.)—*The Stomach, with its orifices.*—(*a*) The œsophagus, its cardiac opening into the stomach. (*b*) (*c*) The portion of the stomach covered by cuticle or insensible skin. (*d*) The entrance of the gullet into the stomach, the cardiac orifice. (*e*) The margin which separates the cuticular from the villous portion. (*f*, *g*) The communication between the stomach and first intestine. (*h*) The common orifice through which the bile and pancreas pass into the first intestine. (*i*) A smaller orifice through which a portion of the pancreatic secretion passes into the intestines. (*k*) Mucous, or villous portion of the stomach.

PLATE XIV.—BANDAGING AND BRONCHOTOMY.

For General Description, see p. 369. (Fig. 1.) Sore Throat. See p. 287. (Fig. 2.) Bandage for Criteral Abscess. See p. 332. (Fig. 3.) Bandage for Poll-evil. See pp. 334, 335. (Fig. 4.) Bandage for Strangles. See p. 290. (Fig. 5.) Bronchotomy. See p. 364.

PLATE XV.—METHOD OF SLINGING THE HORSE, SHOWING ALSO THE HOBBLES PUT ON FOR CASTING.

In Chapter XXVIII., pp. 358, 359, will be found remarks upon the best form of Hobbles; and on Plate XVII. our artist has given an excellent representation of so-called "Patent" Hobbles, which are the nearest to perfection of any we have seen in use. From the representation of the Horse slung, which faces this page, we presume, with a reference to the text, pp. 359, 360, the eye will sufficiently instruct the reader.

PLATE XVI.—VETERINARY INSTRUMENTS AND APPARATUS.

(A, *a*) Steaming apparatus for throat and head diseases. (A) Tobacco-smoke enema. See SPASMODIC COLIC, p. 303, &c. (B, B, B) Lancets and fleams. See BLEEDING, p. 360. (C) Bistouri caché. See HERNIA, p. 313. (D) Neurotomy knives. See pp. 365, 366. (E, F) Canterizing irons. See p. 367. (G) Clams used in castration. See p. 326, where the reference should be to Plate XVI. (H) Rowelling scissors and Rowell. (I) Seton needles, various. (K) Suture needle. (L) Forceps for Polypus. See p. 282.

PLATE XVII.—FARRIERS' TOOLS AND INSTRUMENTS.

(A) *Patent Casting Hobbles.* See remarks on Plate XV. (Fig. 1.) Buffer. See p. 372. (Figs, 2. and 3.) Drawing knives. See p. 372. (Fig. 4.) Searcher, for examining for foreign substances. (Fig. 5.) Buttress. See p. 372. (Figs. 6 and 7.) Pincers and Forge Tongs. (Figs. 8 and 9.) Sledge and Hand Hammers. See p. 374. (Fig. 10.) Shoeing Hammer. (Figs. 11 and 12.) Rasp, and Fuller: the latter makes the groove or channel in the shoe. See p. 374. (Fig. 13.) Stamp. (Fig. 14.) Pritchel. See p. 374, note.

PLATE XVIII.—FARRIERY.—VARIETIES OF SHOES, PLATE 1.

Figs. 1, 2, and 3. SEATED SHOES.—1 and 2, present the ground and foot surfaces of the best sort of shoe for general purposes. It gives as many points of bearing as possible. The web is of uniform thickness throughout, and the nail-heads, well sunk in the fullering, are soon level. The seating is on the foot side, and the bearing widens at the heels. It is usually made with nine nail-holes—five inside and four outside the foot. Fig. 3 is a shorter-heeled modification of the shoe, with all-round nailing, and a broader web.

A. FROST SHOE.—This shoe (condemned by Bracy Clark as expensive and complex) was known as the American ice-shoe. Instead of mere calkins, by turning down the heels, screw clips of steel, corresponding with a female screw in the shoe, are inserted by means of the wrench. Made of Bessemer-tong steel, these will stand well.

B. POINTED SHOE.—This (with an expanding steel tablet at the toe, and a dozen modifications) is, in the main, Bracy Clark's Expanding Shoe, which was to bring comfort to all horses and horsemen. Healthy feet go none the better for them, and they cost 10*s.* a set.

C. ENGLISH HUNTING SHOE.—The heels of the Hunting Shoe are somewhat shorter than those for hacks. They are not so much bevelled off as the common-seated shoe; leaving only space enough for a picker between the sole and shoe, lest clay should tamp in and tear off the shoe on heavy soils.

D. STEWART'S SHOE.—This shoe has the inner circumference forged or filed away; and is advantageously adopted with horses who "strike" or over-reach in galloping. The edge, it will be seen, is rounded or bevelled off.

E. BAR SHOE.—This shoe, applicable in tender heels, quarters, corns, &c., is improved by the introduction of a sole of soaked leather between it and the suffering animal's foot. The nail hobs are here, foot-surface, four outside and three in; they should be far nearer to the outer edge than drawn.

F. SANDAL SHOE.—A useful resort in case of shoe-casting. It may be looked upon as a resuscitation and improvement of the earliest form of shoeing. The celebrated Percivall reintroduced it, and warmly advocated its adoption as a temporary pedal protection in emergencies. Its form suggests its use.

PLATE XIX.—FARRIERY.—VARIETIES OF SHOES, &c.

Figs. 1, 2, 3. RACING PLATES.—The shoes of race-horses, called plates, are of two kinds, "full" and "three-quarter." The training-groom is best judge of the plate required. Full plates are used where the crust is undeniably strong and healthy. Eight nail-holes are usual in the thin ring of deeply fullered iron, which is just wide enough to defend the wall of the hoof. The "three-quarter plate" has six nails only, and is used for weaker feet. In the olden days racers' feet were sadly battered by long travel from place to place. Vanning and railroads

have changed all that. Darvill says:—"The plate must not be put on nearer the end of the horse's heels than there is sound horn for it to rest upon; and that the hoof hold be sufficiently strong to give the two last nails a secure bearing, so that the plate may not spring at the heels when the horse is running." In the forging of either of these varieties of plating shoes, it is very necessary that reference be had to the size and powers of the horse that is to wear them. For one of a medium size and weight the breadth of the plate need not exceed three and a half eighths of an inch; but these dimensions may be somewhat increased for a tall and heavy horse. The fullering is in the middle of the plate. The hinder plate may be turned up a little in long-striding horses, especially if the race-course has sharp curves.

Fig. 4. Horse-shoe Nails. (*a*) French horse-nail. (*b*, *c*) Countersunk nails. (*d*) German horse-nail. (*e*) Fine-head nail for safety-shoe. (*f*) Rose-nail for frost.

F. Shoe to Prevent Cutting.—This is Moorcroft's shoe. The *outer* branch thickened and narrowed. White also says he has found it successful. The blow being struck *inside* the fetlock joint; the common method is to make the *inner* branch of the shoe narrower and thicker, increasing from toe to heel.

G. Frog-pressure Shoe (Coleman's). This old-school result of a whim of a clever theorist has still its adherents. There is nothing (but mischief) in its use which a common bar-shoe, judiciously modified in the leather attached, cannot effect.

H. Patten Shoe. The utility of this form of shoe in "Clap" or Strain of the Back Sinews, and Rupture of the Back Sinews, is noted at pp. 345 and 346.

I. Poultice Boot. The Poultice or Water Boot is made of leather, defended with iron plating. A linen drill-top is sufficient for poulticing; but if cold or warm water is to be constantly applied, felt, or two or three thicknesses of box-cloth, with a bottom of the same, are requisite, wetting the top of which, the moisture will descend to the bottom within the boot. With water, the boot must be removed every two days, and an unguent applied, or the water will "crumble" the hoof. If the horse paws much when the water-boot is off, put on a felt or rope boot as a defence.

K. The French Shoe. This highly-extolled system of shoeing, in which the toe and heel are curved upwards, and the nails driven *low* round the hoof—despite the elaborate praises of M. Jauze and a crowd of Continental writers, and of the clever Mr. Goodwin—proves a bad shoe for any but clumsy, coarse horses, and with them the curvature at the heel is bad. The only merit of the shoe is its not being nailed towards the heels, as our English shoes used to be formerly.

PLATES ILLUSTRATIVE OF "THE DISEASES OF CATTLE, SHEEP, AND PIGS."

PLATE.—THE AGE OF THE OX AS INDICATED BY HIS TEETH.

Fig. A. Portion of upper jaw. (1, 1) Dental pad. (2) Stenonian ducts. Fig. B. Portion of lower jaw, taken from a heifer one year old. (1, 1) Eight temporary incisor teeth. Fig. C. Portion of lower jaw taken from an ox one year and eleven months old. (1, 1) The central permanent incisors, having replaced the deciduous teeth on each side of central incisors, the three temporary teeth appear. Fig. D. Portion of lower jaw taken from an ox two years and five months old. (1, 1) Central permanent incisors. (2, 2) Second pair of permanent incisors, having replaced temporary teeth, on each side of which two deciduous teeth remain. Fig. E. Portion of jaw taken from a heifer two years and eleven months old. (1, 1) Central permanent incisors. (2, 2) Second pair of permanent incisors. (3, 3) Third pair of permanent incisors having replaced the milk teeth, on each side, the remaining temporary tooth exists. Fig. F. Portion of lower jaw taken from an ox three years and four months old. (1, 1) Central incisors. (2, 2) Second pair of permanent incisors. (3, 3) Third pair of permanent incisors. (4, 4) Corner pair of permanent incisors, which have replaced their temporary precursors. Fig. G. Portion of lower jaw of full-mouthed ox. (1) First permanent molar. (2) Second permanent molar. (3) Third permanent molar. (4) Fourth permanent molar. (5) Fifth permanent molar. (6) Sixth permanent molar. (7) Permanent incisors.

Incisor Dentition. The calf is usually born with four temporary incisors, being the central and second pairs. At 10 to 14 days old the third pair of incisors appear. At 1 month corner incisors cut the gums. At 1 year and 9 to 11 months, the central permanent incisors replace deciduous teeth. At 2 years and 3 to 6 months, the second pair of permanent incisors replace milk teeth. At 2 years and 9 months to 3 years and a quarter, the third pair of permanent teeth occupy the places of the forerunning temporary incisors. At 3 years and a quarter to 4 years old the ox completes his incisor dentition, by the permanent teeth displacing the corner temporary incisors.

Molar Dentition. The calf is born without molars. At 1 month old, the first, second, and third have made their appearance, three on each side of either jaw, twelve altogether. At 6 to 9 months, the fourth permanent molar is *in situ*. At 15 to 18 months the fifth permanent molar appears. At 2 years to 2 years and three months the molar dentition is completed, by the cutting of the sixth permanent molar. At 2 years and a half to 2 years and 8 months, the two anterior temporary molars are replaced by two permanent ones. At 2 years and 8 months to 3 years and 3 months, the third temporary molar falls out, and its place is occupied by its permanent successor, when the molar dentition of the ox is completed.

PLATE.—AGE OF SHEEP AS INDICATED BY THE TEETH.

Fig. A. Portion of lower jaw of a sheep eleven months old. (1, 1) Eight temporary incisors. Fig. B. Portion of lower jaw of a sheep one year and a month old. (1, 1) Central pair of permanent incisors having replaced deciduous ones, on each side, three temporary incisors exist. Fig. C. Portion of lower jaw of a sheep one year and eight months old. (1, 1) Central pair of permanent incisors. (2, 2) Second pair of permanent incisors *in situ* having removed temporary teeth on each side, of which two temporary teeth remain. Fig. D. Portion of lower jaw of a sheep two years and seven months old. (1, 1) Central permanent incisors. (2, 2) Second pair of permanent incisors. (3, 3) Third pair of permanent incisors having replaced milk teeth, on each side of which the corner temporary incisors appear. Fig. E. Portion of lower jaw of a sheep three years and four months old. (1, 1) Central permanent incisors. (2, 2) Second pair of permanent incisors. (3, 3) Third pair of permanent incisors. (4, 4) Corner pair of permanent incisors. This change from temporary to permanent teeth completes the incisor dentition of the sheep. Fig. F. The nose of a sheep. Showing cleavage in upper lip. Fig. G. Portion of upper jaw of a sheep. (1, 1) Dental pad. (2, 2) Stenonian ducts. Fig. H. One side of the lower jaw of a full mouthed sheep. (1) First permanent molar. (2) Second permanent molar. (3) Third permanent molar. (4) Fourth permanent molar. (5) Fifth permanent molar. (6) Sixth permanent molar.

Incisor Dentition.—The lamb is usually born without incisor teeth. At 1 week old the central and second pair of incisors are cut. At 10 days old the third pair appear. At 5 weeks, the fourth or corner pair cut the gums, and complete the temporary incisor dentition. At 1 year, and from 1 to 2 months, the central pair of temporary incisors are displaced by permanent teeth. At 1 year and a half to 8 months, the second pair of deciduous teeth are replaced by permanent ones. At 2 years and a quarter to 8 months, the third pair are similarly displaced. At 3 years and 3 to 9 months, the sheep completes its incisor dentition by the permanent teeth displacing the corner temporary incisors.

Molar Dentition.—At 1 month old the three anterior temporary molars have made their appearance. At 3 months old the first permanent

THE AGE OF THE OX AS INDICATED BY HIS TEETH.

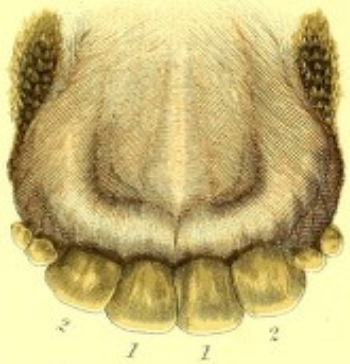
B.



C.



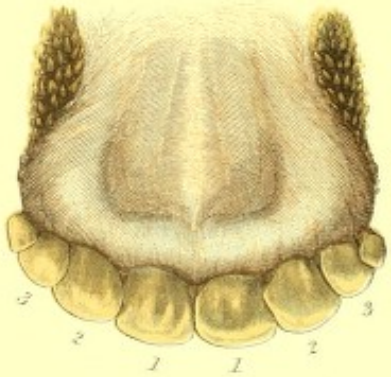
D.



A.



E.



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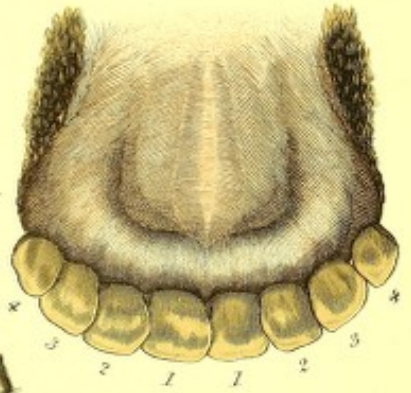

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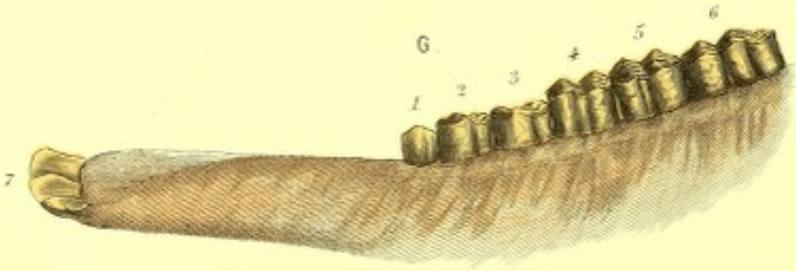

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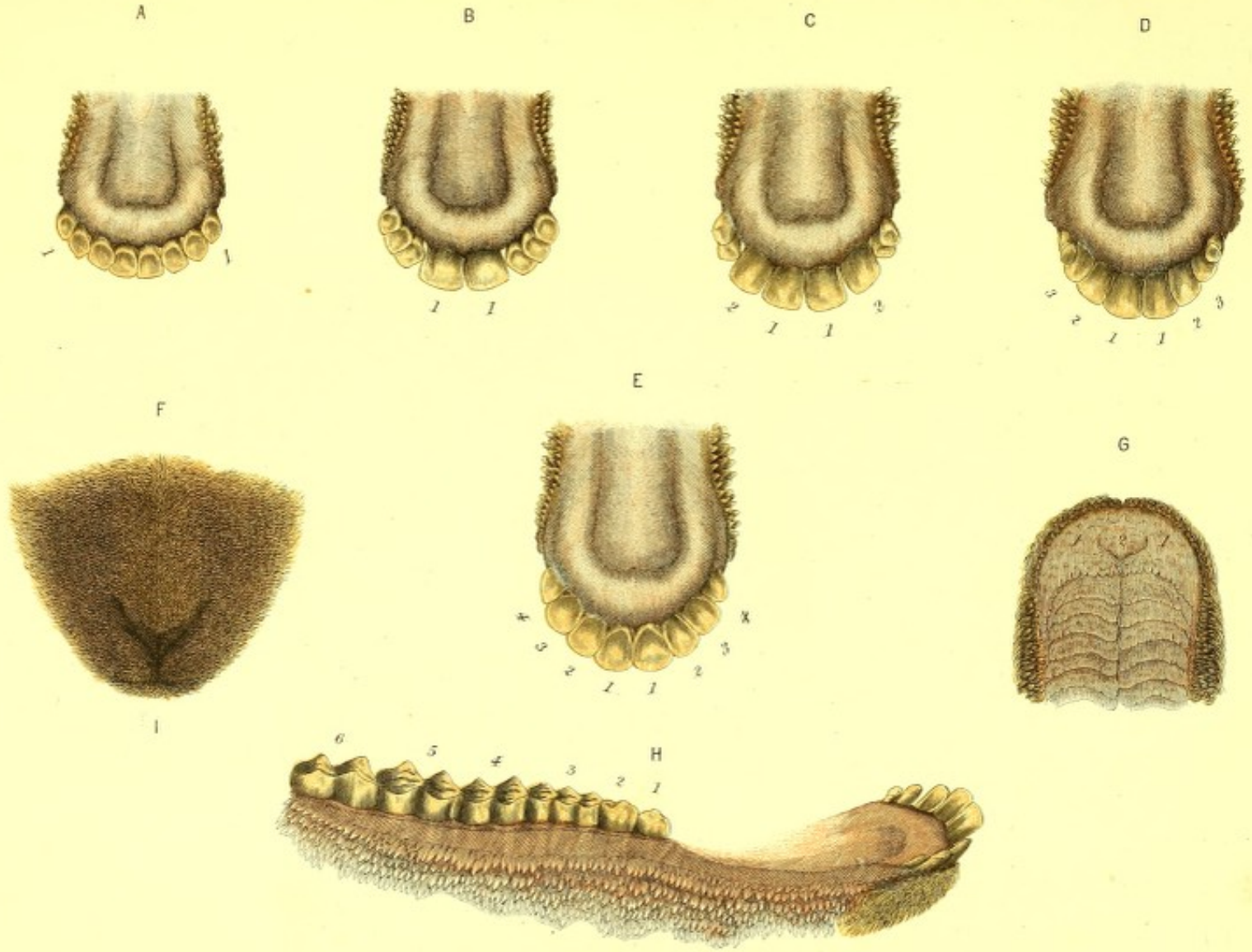
THE AGE OF THE SHEEP AS INDICATED BY THE TEETH.

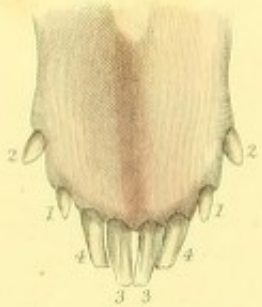


THE AGE OF THE PIG AS INDICATED BY THE TEETH.

A



B



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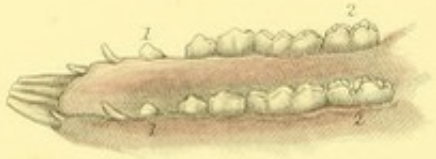

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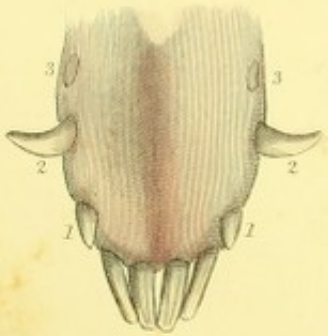

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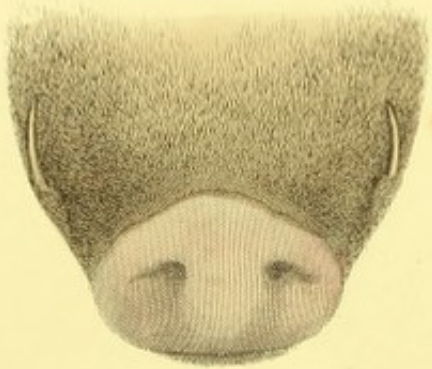

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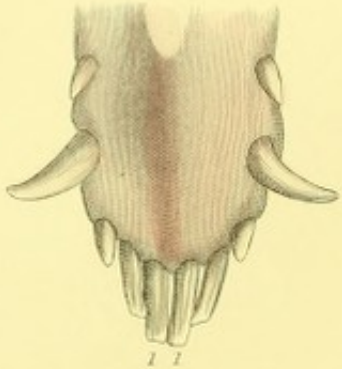

G



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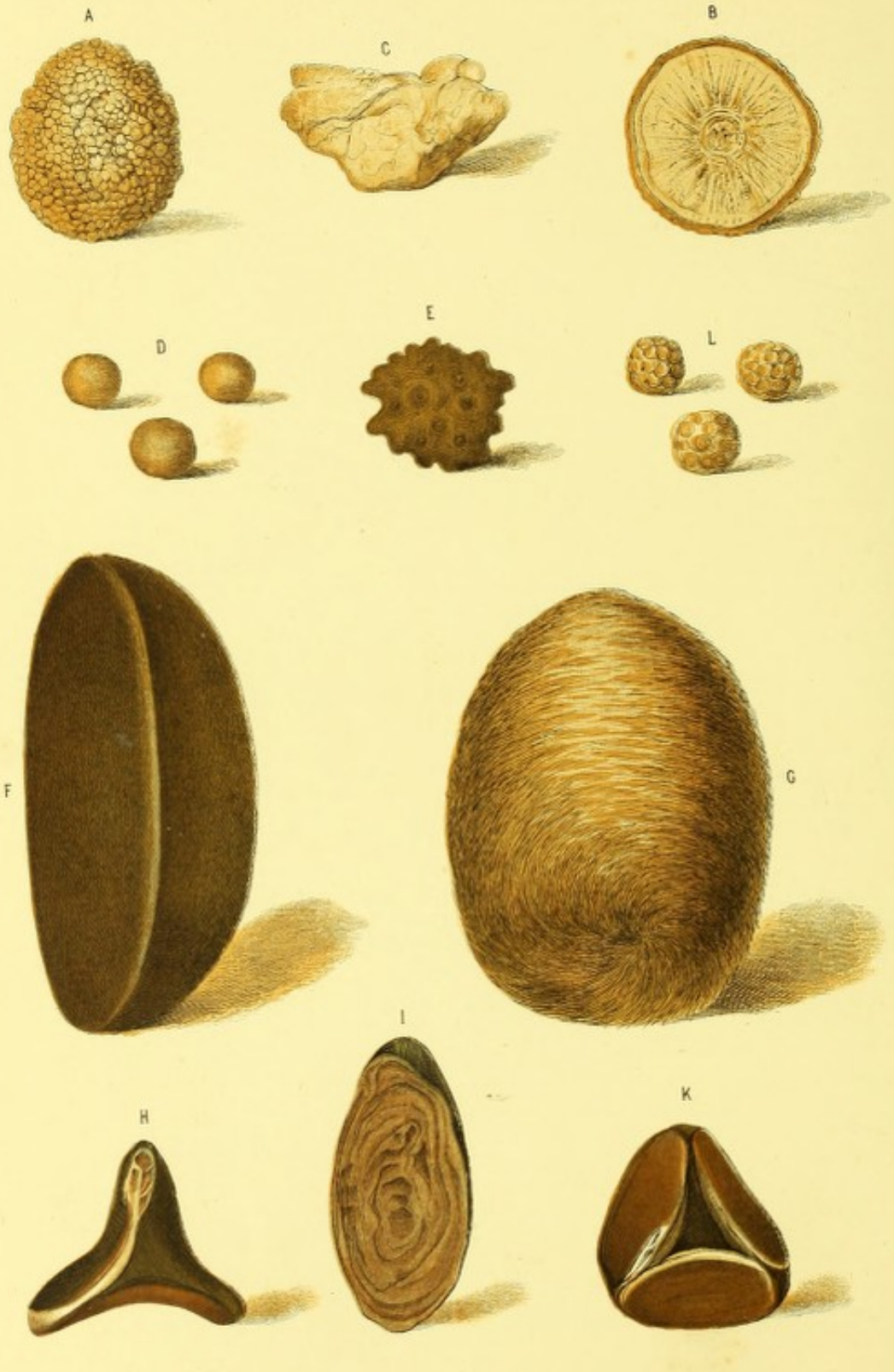
SHEEP'S HEAD WITH SMALL POX.

CALCULOUS CONCRETIONS COMMON TO OX, SHEEP & PIG.



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molar, fourth in position, escapes through the gum. At 9 to 10 months old the fifth permanent molar appears. At 18 to 19 months old the sixth permanent molar escapes from its socket. And from 2 years to 2 years and a half the three anterior temporary molars are replaced by permanent ones, and thus the molar dentition of the sheep is completed.

PLATE.—THE AGE OF THE PIG AS INDICATED BY HIS TEETH.

Fig. A.—The mouth of a pig one month and three days old. (1, 1), Fœtal incisors; (2, 2), fœtal tusks; (3, 3), middle temporary incisors; (4, 4), three temporary molars. Fig. B.—Anterior part of lower jaw of a pig three months old. (1, 1), Fœtal incisors; (2, 2), fœtal tusks; (3, 3), middle temporary incisors; (4, 4), lateral temporary incisors. Fig. C.—Lower jaw of a pig about six months old. (1, 1), Præmolars; (2, 2), fourth permanent molar. Fig. D.—Part of lower jaw of a pig ten months old. (1, 1), Permanent corner incisors have replaced temporary ones; (2, 2), permanent tusks have replaced temporary ones; (3, 3), præmolars. Fig. E.—Snout of a young boar. Fig. F.—Part of lower jaw of a pig about thirteen months old. (1, 1), Permanent middle incisors have replaced deciduous teeth. Fig. G.—Lower jaw of a pig nineteen months old. (1, 2, 3), First, second, and third permanent molars have replaced temporary ones; (4, 4), fifth permanent molar—this tooth replaced temporary one when the animal was about thirteen months old; (5, 5), sixth permanent molar, which has replaced temporary tooth; (6, 6), lateral permanent incisors, which have displaced the deciduous or milk teeth.

Incisor Dentition.—The pig is born with eight teeth—four temporary incisors, and four temporary tusks. At 4 to 5 weeks old the deciduous middle incisors make their appearance. At 3 months old the lateral incisors escape through the gums. At 9 to 10 months old the corner incisors and temporary tusks are replaced by permanent teeth. At 1 year to 13 months old the central deciduous incisors are displaced by their permanent successors. At 18 months old the pig completes his incisor dentition, by the permanent lateral incisors replacing their deciduous forerunners.

Molar Dentition.—The pig is born without molars. At 4 to 5 weeks old twelve temporary molars, anterior in position, appear, namely, 1, 2, 3 in each jaw. At 6 months old the præmolar (permanent tooth) is cut, holding a mid position between the corner incisors and tusks. At 9 months old the first permanent molar, fourth in position, makes its appearance. At 1 year to 13 months old the second permanent molar, fifth in position, is *in situ*, and the deciduous molars are replaced by their permanent successors. At 18 months old the molar dentition of the pig is completed, by the appearance of the last permanent molar, being the sixth in position.

PLATE.—SHEEP'S HEAD WITH SMALL-POX.

This Plate was copied, by Professor Simond's kind permission, from a drawing in his work on Ovina Variola; the picture depicts the appearance the face of the sheep assumes during the crustaceous and ulcerative stages of small-pox. The ulceration noticed has been largely produced by external injury inflicted on the parts, by the sheep rubbing the scabs off before the healing process had been effected; this injury always retards the progress to recovery.

PLATE.—CALCULOUS CONCRETIONS FOUND IN THE INTERNAL ORGANS OF THE OX, SHEEP, AND PIG.

Fig. A.—Carbonate of lime calculus taken from the bladder of the pig. Fig. B.—Section of the same calculus. Fig. C.—Calculus taken from the kidney of the ox. Figs. D and L.—Calculi, consisting of carbonate of lime mixed with carbonate of magnesia, taken from the bladder of the ox. (D) represents calculi presenting a smooth exterior; (C), a tuberculated aspect. Fig. E.—Calculus, consisting of the oxalate of lime, taken from the ureter of a boar. Fig. F.—Section of a hair ball, consisting of the phosphate of ammonia and magnesia, taken from the intestine of a cow. Fig. G.—Hair-ball calculus taken from a cow. Figs. H, I, K.—Three different forms of biliary calculi taken from the ox.

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THE

DISEASES OF CATTLE, SHEEP, AND PIGS.

INTRODUCTION.

During the earliest days of the world's history, flocks and herds constituted the chief wealth of individuals; for payments and presents were made in kine, and afterwards the prosperity of nations was indicated by their large possession of stock. With the fall of man came "death and all our woe;" one of which was disease, both that appertaining to man and the lower animals. But to man was given dominion over every "beast of the field and fowl of the air," or, in other words, superiority of intelligence, rendering him capable of ascertaining how, first, to provide for the wants and necessities of the inferior animals in health; and, secondly, to protect them against the attacks of disease; and, thirdly, how to tend them during its progress. Owing to this providential gift, we learn that, from the days of the Egyptian magicians to the present time, the prevention and cure of disease has been a topic upon which wise men have thought and written. Among those who have handed down their works to posterity on this subject, we meet with philosophers, historians, and poets—ever-living names, ranking highly among the immortal dead. The pens of many of these men were called in requisition by the existence, at the time, of diseases which devastated the stock of their respective countries, and in some instances nearly produced national ruin; so injurious pecuniarily as to have caused legislators, in attempting the conservation of their countries, to seek advice, and in so doing have brought to light the works of Hippocrates, Virgil, and all such persons who by their wisdom have prevented and cured disease.

Many authors, in treating the subject before us, wrote jointly upon the cultivation of the soil and care of stock. The poet Virgil evidently considered the two subjects inseparable, for in the Georgics he has devoted equal consideration to both; as the first two books treat of crops and trees, the last two upon the management and diseases of cattle and bees, the last-named creatures being at the time Virgil wrote an important item in Italian agriculture. What circumstance led to the foundation of the first veterinary school in Europe? Why, the inseparability of agriculture and veterinary science; and at the same time proved the importance of that art by the results which it developed; for Bourgelat, a French barrister, observing that certain maladies were devastating the French herds, forsook the bar and devoted his time and energies in seeking out a remedy for the then pest, which resulted in his founding a veterinary college at Lyons in 1760, from which establishment he despatched students, with weapons in their hands all-necessary for combating disease by science with practice; and in a short time from this period the plague was stayed and the health of stock restored, through the assistance rendered to agriculture by veterinary science and art.

INFLAMMATION.

As the medicines to be mentioned hereafter are alone of benefit to animals when in a diseased state, it is my intention to briefly enumerate those maladies to which the ox is liable, the most important of which certainly is inflammation, for with it some diseases commence and others terminate; and, moreover, this pathological state has not until very recently been properly understood, and consequently has been improperly treated.

John Hunter wrote on diseases of the fluids, and drew particular attention to blood diseases, but never accounted for the causes of the blood's coagulation. This was left for Dr. Richardson, who asserted that blood remained fluid both inside and outside the body, so long as it was in association with the volatile alkali ammonia, and that immediately on its escape the blood coagulated. This theory, it was contended by Professor Lister, of Edinburgh, did not fully account for the cause of the blood's coagulation, but that blood remained fluid so long as it was in contact with living tissue, and coagulated immediately that tissue became devitalized, or died.

In order that I may clearly explain my views as to the causes which bring about inflammation, it will be necessary for me to explain why inflammation cannot take place unless the nerves be first involved in diseased action, and the experiments which led to the elucidation of the true nature of inflammation.

Professor Lister, whose lectures on pathological anatomy and practical surgery I had the good fortune to attend at Edinburgh, performed the following experiments:—He applied, previous to slaughter, two bandages firmly around and above the knee joints of a sheep. The animal having been killed, both legs were amputated just above the bandages, when the skin was carefully dissected up from the leg, taken off the right side, viz. A, in order to expose the metacarpal or leg vein. This being done, the external coat of the vein was

painted with liquor ammoniæ, and the skin was again replaced, and this leg, together with B (the one taken from the left side), was laid aside until the following day. After a lapse of twenty-four hours the legs were reproduced, and B was now placed on the table, and the leg vein was exposed, which, be it remembered, had undergone no treatment with ammonia, or otherwise. The vein was now opened, and from it the blood in a perfect state of fluidity was poured into a plate. The coats of the bloodvessel whence this fluid was obtained had not been killed or devitalized by the application of caustics, blisters, or any other compound, calculated to destroy the integrity of or paralyse tissue; but with the leg A the case was different. This had been dressed with ammonia. By it the coats of the bloodvessel had been paralysed, and therefore the blood within had coagulated, because it was in contact with devitalized tissue. A was opened, and from it a thin thread of coagulated blood was obtained.

A small piece of mustard applied to the web of a frog's foot causes the coagulation of blood, not only underneath, but around the mustard. A burn, intense cold, the persistent application of pressure to parts, as caused by the pressure of a hat against the forehead, causes coagulation of blood, because they temporarily destroy the vitality of the part by removing nervous influence from it. Further experiments and microscopical investigation have proved how the nerves, primarily affected, involve surrounding tissue in pathological results; how by irritating the spinal chord of a frog temporary congestion will take place over the body generally, markedly so in the web, which is easily noticed by the aid of the microscope. From this and other experiments, too complicated to be amusing to any save those engaged in physiological research, we learn how beautifully nature works both to protect animals from disease, and to set up curative processes when it exists.

The blood—the vital fluid—is from the moment of birth to the day of death continually and rapidly passing through the bloodvessels, and by this means supplying the various organs of the body with nutrition. Let the blood for a moment carry in its current deleterious or poisonous compounds, and immediately an impression is made upon the nervous system, which sometimes involves the brain also in diseases. Inject pus (bad matter) into the blood, and abscesses will ultimately make their appearance in various parts of the body. Administer to an ox through the medium of his mouth, or inject into his veins, white hellebore, and the symptoms of vomiting will be produced. To a person unacquainted with physiological inquiry the above may appear strange, but not so when we consider the beautiful provision nature has made to purify the blood. First, by supplying a chamber (the lungs) in which to receive a purifying gas wherein chemical decomposition of a very important nature may be carried on; these important functions being that a certain or fixed amount of oxygen shall be conveyed during each inspiration to the lungs, in order to keep up animal heat, decarbonize the blood, and thereby sustain life, and that carbonic acid during expiration shall be expelled from the lungs It will now be readily understood that if oxygen deficient in amount be inspired, an unnatural state of things will be produced; and further, that if carbonic acid gas sufficient in amount be not expired, a certain amount of poisonous gas must be thrown back on the system, and as a consequence the blood will become too strongly impregnated with carbon, and the nervous system will suffer. But should disease occur to the lungs—should certain tubes become blocked up, or should the bloodvessels therein be implicated in disease—the due amount of oxygen, owing in the latter case to mechanical obstruction, cannot be inspired; and therefore oxygen is not present in the lungs in sufficient quantity to unite with the carbon existing in the blood to form carbonic acid, and the consequence is, the circulating arterial blood contains carbon in excess, and the brain becomes affected, owing to the fact that a too highly carbonized blood is determined to that organ. In the next place, it will be my humble endeavour to explain how nerves, being paralysed or involved in diseased action, produce a baneful effect on parts:—

Firstly, mechanical injury produces local inflammation; scarcely an individual lives who has not noticed around the edges of a wound, caused by the cut of a penknife, an inflammatory blush. This state is brought about by mechanical injury to the nerves of the part, when by direct impression their integrity is lost, their action impaired, and so they cease to exert their all-necessary influence upon the coats of adjacent bloodvessels, and the consequence is that local inflammation is manifested.

Secondly, the mechanical application of pressure causes congestion. The long-continued and repeated pressure of the saddle or collar impairs nervous power, and creates inflammation, noticed in the sore neck and galled back of colts during the period of breaking. In these cases nature often effects a cure by hardening or thickening the cuticle or outer skin. By long-continued exertion on hard roads inflammation of the feet is brought about, noticed in Laminitis.

Thirdly, mechanical impressions cause inflammation. The persistent application of a piece of ice to a part interferes with nervous action, and intense congestion supervenes, observed in men suffering from frost-bitten feet. Great heat, blisters, caustics, &c., all bring about local inflammation—*i.e.*, cause coagulation of blood in the parts over which they have been applied.

Fourthly, external influences calculated to devitalize living tissue produce inflammation by involving the nerves in pathological states. How many horsemen during a run with hounds have been compelled to pull up, in order, as they call it, to save their horse from suffocation. When the rider alights he observes the following symptoms:—The forelegs out, the nostrils dilated, and he hears a deep, stertorous, and laboured breathing. The animal at this time is suffering with congestion of the lungs, caused by his being galloped at a racing pace, during which period the lungs have been compelled to dilate and collapse with unusual rapidity; and thus

by long-continued and excessive physical exertion the nerves become devitalized, the lung tissue weakened by the withdrawal of nervous force, and the blood, being in contact with injured tissue, begins to coagulate, and congestion of the lungs results. The application in medical practice and surgery of the law suggested in the above remarks on the theory as to the cause of inflammation in the treatment of diseases, and particularly so in cases of fever; the adoption of the rules which this teaching necessarily involves—has rendered medicine rational, and has been very conducive to successful treatment, by causing practitioners to discard the depletive system of purging and blood-letting, and in its place to adopt that of supporting with stimulants animals affected with maladies once considered to be the result of too exalted general or local systemic force, but now proven to be of a depletive nature: and for this reason an article has been devoted to the consideration of the theory of inflammation.

ANÆMIA AND PLETHORA.

That cattle, and especially those exhibited at shows, are over-fattened, has for years past been recognized as a fact by physiologists, who have equally described fat men and fat oxen to be subjects of disease. That such is the case I will attempt to prove. As anæmia, or the bloodless state, is caused by imperfect assimilation, or by an insufficient supply of blood to the various organs of the animal body, so, on the other hand, plethora or redundancy of blood is produced by an excess or an undue appropriation of that fluid. In the latter case, the bloodvessels become distended, and the heart labours heavily under inordinate pressure. But although such is the case, yet the plethoric subject considers himself, and is said to be, in robust health: for he eats and drinks well and sleeps soundly, proving that the functions of digestion and assimilation are actively performed. But unfortunately this very excess of health is constantly, although insidiously, working onwards to his destruction; for as the blood-forming process is always in advance of the assimilative, does it not naturally follow that if too much blood is supplied to the organism, that such excess must sooner or later mechanically break through its barriers by rupturing some important organ?

Plethora nearly always places the subject of it in dangerous case; in which state he remains until bleeding at the nose or some unimportant hæmorrhage relieves the system from the high pressure imposed on it, or some ailment, such as gout or bilious attack, &c., when the remedial measures demanded necessitate the giving up of indulgences, and insist on a course of living calculated to reduce the system generally, and primarily the supply of blood. But often no warning as above detailed is given; for apoplexy, structural disease of the heart, or rupture of some organ, as the liver or important blood-vessel, cause death; instances illustrative of which have lately occurred among fattening cattle in a malady known as splenic apoplexy, where oxen, after six or eight weeks' stall-feeding, have become the subjects of plethora, and as a result, of ruptured spleen. Usually, the plethoric state is followed by that of obesity (the end the stock feeder has in view); but sometimes, as with the disease in question, the system refuses to deposit the superfluous material, fat, yet cannot prevent the redundancy of blood, and consequently rupture of the spleen results, and death supervenes. The cause of this affection has been investigated by Dr. Crisp and several eminent veterinarians, who consider that splenic apoplexy is the result of plethora brought on by overfeeding, "whether it be in the stalls or from too luxuriant pastures;" and in answer to the question, "Is splenic apoplexy of malarious origin?" we read, "It has been observed in malarious districts, but then only among plethoric cattle, whereas lean ones have escaped." This last sentence is significant; for in what position, or under the operation of whatever baneful influences oxen may be placed, it has been proved beyond doubt that the plethoric have contracted the disease, whereas the "lean ones have escaped."

Nature, ever economical in her means and wise in her ends, is always attempting to avert fatal affections, and in acting for the safety of the plethoric, brings about, as before stated, minor diseases, which necessitate self-discipline, or self-remedying hæmorrhages, or sometimes causes fat to be stored up in the system, as a means by which the excess of blood may be diverted from the over-distended vital organs to the nourishment of this superfluous material. Lucky it is; for Dives by that indigestion is occasionally warned to seek medical advice, to swallow his antibilious mixture and dinner pill: but the dumb ox cannot inform his owner of these minor ailments, although doubtless they often occur, until devastating inroads have been made upon the system, until disease occurs easily recognizable by a ploughboy; consequently the plethoric man, to a certain extent, owing to his gift of communication by speech, has at hand the means by which to avert fatal results, which are denied to over-fed cattle. Obesity in man requires, in many instances, years for its production, but in the lower animals it is obtained rapidly; and why? Because the former takes exercise and occasionally medicine, which tends to check, for a time at any rate, the progress from plethora to fatness; whereas the latter is fed upon aliment highly charged with those constituents calculated to produce fat, and, moreover, is placed in a yard or tied up in a stall, where no exercise is allowed from the time he enters until the day on which he is removed to the slaughter-house, and even then is constantly conveyed to the shed in a van. But whether the formation of fat be rapidly or slowly developed, the same evil occurs to both. The man groans, complains, and if he attend to medical advice is relieved; and, on the other hand, the ox endures his position without a murmur, and, as his owner wills it, goes on from bad to worse, until the pole-axe terminates his sufferings.

From the foregoing, therefore, it will be readily understood that if we have the means at our disposal for the production of fat, we, on the other hand, must necessarily know how to prevent its accumulation, by denying ourselves that food

which is capable of forming it. The first remedy usually presenting itself is partial starvation; but such a system, although it may effect the desired end, will, as experience proves, in nine cases out of ten injuriously affect the well-being of those adopting it, and consequently must not be resorted to, especially by those who have previously lived generously. But in the further investigation of this matter, it has been discovered, and practically proved, that certain foods are fertile in fat-generating products, whereas in others they only sparingly exist; therefore common sense suggests the propriety of discarding the former from our bill of fare, and in their place substituting the latter. To prove this assertion that certain foods are fertile in fat-generating products, it will be necessary to consider, first, of what compounds fat consists; and afterwards, the composition of those foods which cause its development.

Fat is a chemical mixture in variable proportions of three compounds—viz., stearine, oleine, and margarine, in association with a sweet principle named glycerine—and when resolved into its ultimate elements contains in 100 parts, according to Chevreul—

Carbon,	79·98
Hydrogen,	11·148
Oxygen,	9·256
Total,	100

It therefore will be observed that fat persons are themselves in part hydrocarbons; when it follows, as a matter of course, that if such people deny their systems hydrocarbonaceous foods, that obesity will vanish: in the same manner as when fuel is added to the fire it burns, but when the supply is stopped it goes out; so if fat-producing materials be given to the body it accumulates therein, but if such diet be discontinued, then no more collection of fat can possibly take place.

The food that contains hydrocarbonaceous fat-producing compounds in large quantities, are those usually drank and eaten by us daily—viz., potatoes, bread, pastry, butter, sugar, alcoholic fluids, such as beer, wines, and spirits. Now all these are made up with starch, sugar, oil, or alcohol, or both, and are consequently fat-generators: for instance, starch and sugar enter into the composition of potatoes, bread, and pastry; and in butter glycerine and oil are found; and in beer, wine, and spirits sugar and alcohol, one or the other, are always present. Starch and sugar consist of the same chemical elements, and nearly the same equivalent numbers: for instance, the formula of starch is carbon 12, hydrogen 10, oxygen 10; that of sugar, carbon 12, hydrogen 11, oxygen 11; from which it appears that the addition of one atom of hydrogen and oxygen to starch changes it into sugar, and during fermentation (the process of distillation) starch becomes dextrine, dextrine sugar, and lastly, sugar is converted into alcohol; and if this process be carried still further, alcohol degenerates into acetic acid (vinegar); but in the obtainment of alcohol this last operation is of course avoided. Similarly, as fermentation can be conducted without, so it can within, the living organism under the guidance of certain vital functions; but this internal distillation, if it may be so called, during its operation is hidden from the eyes of men, and is involved somewhat in mystery, and therefore the varied changes effected and how they are brought about are left for physiologists to discover by experiment; but although such is the case, still it is a well established fact that starch, when within the system, during the functions of digestion, &c., becomes sugar, and is finally deposited throughout the tissues of the body in the form of fat. That sugar existed naturally in the liver, and was more abundant during digestion, was long since proved by Magendie; but it remained for Bernard and Hensen to discover the existence of a sugar-producing substance in that organ, which, under the influence of saliva, blood, &c., possessed the power of converting starch and similar compounds into sugar; and from the experiments of Bernard and Lehmann on dietary, we learn that this sugar-producing material is obtained from nitrogenous food, such as meat, eggs, &c., but is greatly increased in amount by a non-nitrogenous diet, such as potatoes, beer, bread, &c.; which amount of increase Dr. Parry estimated at nearly double—viz., with the former, 6·97 per cent., with the latter, 14·5. Bernard, moreover, considers this transformation of starch into sugar the result of fermentation; and, consequently, views this sugar-generating material as a disease.

FELLON, EPIZOOTIC COLD, OR INFLUENZA.

The observations most worthy of notice in all diseases relate to their causes. Cold generally proceeds from the sudden change of the atmosphere—from a warm to a cold, but more commonly from a cold to a warm medium. Long prevailing north or north-easterly winds at the spring time often produce dangerous and sometimes fatal symptoms, by injuriously affecting the whole animal frame, by shutting up the pores of the skin, and in a great measure putting a stop to perspiration. In cases of this kind the hide becomes thickened, the hair becomes pen-feathered, and stands the wrong way on the animal's back. Heifers in calf, and cows, are more subject to this malady than other stock, owing to their being more tenderly managed, by being housed during the winter.

Influenza will often in a few days reduce such animals from the greatest state of perfection to mere skeletons. In such cases the secretions generally are deranged, associated with constipation, and sometimes fœtid diarrhœa. Local congestions may also set in and involve the stomach, intestines, kidneys, bladder, and very frequently, symptomatically, the brain. Hence arise diseases of different descriptions, which will be discussed under their proper heads in different parts of this treatise. The first symptoms that are produced by taking cold are heaviness of the head, tardiness in motion, suspension of milky secretion, weak pulse, with weeping eyes, and if the hand be pressed in the region of the spine, the animal will immediately crouch on the application of such

pressure. This state of disease was called in Clater's time "Chine fellon," and was understood by that name in the country. At other times, when the joints became more particularly affected, the disease was denominated "Joint-fellon." Cows are most subject to this latter complaint, especially a short time before calving. It is attended with considerable pain and weakness; if the animal lie down she is seldom able to rise without some assistance, until after calving. In other respects they appear well, and eat their food as usual. In order to cure colds, the first attempt must be to attack the cause, by giving the patient a warm cordial drink, which, acting as a stimulant on the stomach and intestines, will give fresh motion to these parts, and will thus enable nature to resume her former functions. The following drinks may be given with benefit—assafœtida and carbonate of ammonia, of each one drachm, and half an ounce of nitrate of potash. Give this in a pint of warm ale. In the course of two or three hours, after administering the above drink, let the animal have a good mash, made of scalded bran or ground malt. In cases of cold during the summer the above drink may be given to cattle while they pasture; and where it can be made convenient let them fast two hours afterwards, and then graze as usual. It is also necessary to examine the sick animals every day, to watch while they both dung and stale, and see whether the body be of a healthy heat, and the nose or muzzle of a natural breeze. If these be regular there is not much danger. If, however, feverish symptoms should appear, and the animals should become costive, give the following aperient drink:—Epsom salts, half a pound; Ginger in powder, one ounce. Put the ingredients into a pitcher, and pour upon them two pints of thin and hot oatmeal gruel; when new-milk warm, give the whole for one dose. If either of these drinks fails in operation, after twenty-four hours let one-half of the above be repeated. By the above simple means a fever may be prevented, and the patient speedily restored. After the effects of the aperient draught have passed away, the cordial drink may be repeated daily, until the unfavourable symptoms have disappeared. In all cases of the above, and if occurring in the winter, the patient should always be placed in a warm shed, where good ventilation is secured. This, together with a warm cloth thrown over the loins, and plenty of clean litter, will greatly assist nature in her attempts to cure.

PNEUMONIA, OR INFLAMMATION OF THE LUNGS.

Pneumonic diseases are produced by a variety of causes:—First, by the powerful effects of the elements upon the animal frame—by dry, harsh, and north-easterly winds, which, in shutting up the pores of the skin, check the transpiration of it, the due performance of which is so essential to the life and health of the animal. Secondly, it has been brought on, in the ox, after drinking cold water when overheated; or it may result from too severe labour at plough or elsewhere. In such cases the system becomes overtaxed, when the nervous system refuses to send its all-important influence to the lungs, and inflammation of the lungs results. Thirdly, at other times it has attacked those which have been turned out into fresh pastures, when their stomach has been overcharged with herbage. Here, again, the digestive organs have been overworked—have been asked to assimilate food beyond their power—which has resulted in the withdrawal of nervous force from the stomachs and lungs, thus causing inflammation of them, which is manifested by difficulty of breathing, attended with a troublesome cough and hoosing. These symptoms indicate the lungs to be considerably affected. While the discharge from the nose and mouth continues, the disease does not make such rapid progress as when it is dry. Symptoms of an inflammatory character taking place are discovered by the body becoming alternately hot and cold; the extremities for the most part cold, especially the ears and horns. Clater states—"If the beast be in low condition, weak, and much debilitated, bleeding is seldom necessary; but if, on the contrary, the animal be in high condition, the fever begins to increase, and the body feels of a hot, dry, and parching heat, and the breath the same—further, if the white of the eyes appears to be much inflamed and tinged with a yellow hue, *bleeding will become highly necessary in this stage of the disease. From two to four quarts of blood may be taken away, and a small quantity may be taken every day, or every other day, according to the violence of the symptoms.*" In prescribing the treatment of blood-letting, Clater has evidently considered that in the disease under notice exalted action has to be counteracted. Now, it will be readily seen, from the symptoms above detailed, that the opposite—namely, the devitalized or depressed state—demands our remedial measures; and if so, certainly the depletive treatment must be banished *in toto a mensa et toro*, and in its place we must attempt to rebuild the injured fabric, and this must be accomplished with the exhibition of stimulants, and perhaps afterwards by giving tonics.

Sometimes this disease puts on a flattering appearance, the fever and heat appear small and scarcely perceptible; at other times it seems rapid in its progress. The cause of this disease appears in a great measure to proceed from a deficiency in the animal's nature of performing its regular course in carrying on a due circulation through all the vessels. The redundant state of the blood in the lungs becomes surcharged, the liver ceases to secrete bile, which is not poured into the intestines, but finds its way into other tissues, and into the blood. Hence is produced jaundice, which is recognized by yellowness of the eyes and on different parts of the body.

It is well known that in 1812 and subsequently the system of blood-letting was resorted to in almost every case of disease; even those of debility were compelled to lose quarts of blood, and that, too, repeated at intervals of three or four days. Since such times physicians, both human and veterinary, in most cases of disease have discarded the use of the lancet, and in its place have substituted more rational treatment. In cases of congestion of the lungs, if the breathing be

laborious and the pulse high, it is good practice to immediately administer, in a quart of warm ale—

Carbonate of Ammonia,	2 drachms.
Ether,	1 drachm.

And this must be administered every two hours, until the symptoms have somewhat abated in intensity. The sides of the chest should also be clipped, and over it a mustard plaster can be applied, confined to this region by a blanket. As the bad symptoms subside, it will then be advisable to administer half an ounce of nitre in solution, to be followed about three hours afterwards with three drachms of powdered aloes in a pint of water. This latter dose acts very beneficially after the stimulating, in correcting and in rousing to action the animal secretions. The above treatment I have found generally successful, and very often good nursing, without more medicine, effects cure. Sometimes, however, the patient evinces signs of weakness and loss of appetite, when daily drachm doses of the disulphate of quinine usually succeed in restoring the animal to health.

THE YELLOWS, OR JAUNDICE.

This malady is frequently a sequent to the former, in which the secretions of the body are vitiated, and in this case are diverted from performing their particular functions. This is so with the bile. In jaundice this fluid is diffused throughout the whole body, and is favoured by everything that obstructs its passage into the first intestine or duodenum. This disease is first observable in the white of the eyes, which appears of a yellow hue, and as it increases the whole skin becomes impregnated with the same yellow tint; the ears, tail, eyes, and mouth are the parts where it is most conspicuous to the sight. In every stage of the disease the animals are attended with weakness and great lack of nervous force, a listlessness to move, and want of appetite. When in the pasture, they wander about by themselves by the side of hedges or fences in a dejected manner. These appearances sufficiently indicate the malady. Milch cows are most subject to it in the spring and fall of the year, although they are liable to it during other seasons. The most dangerous state is when a scirrhous liver is the cause; little hope can then be entertained of a permanent cure. The fluctuating state of the weather has a powerful effect upon the animal frame in retarding or promoting the cure; care should also be taken to house them during unfavourable weather. As soon as this disease makes its appearance administer—

Barbadoes aloes, in powder,	6 drachms,
Castor oil,	2 ounces;

and six hours afterwards give, in a pint of warm beer, two drachms of carbonate of ammonia; let this latter drink be given thrice daily. Should, however, the aloes, as above prescribed, fail to relieve the secretions, administer in a pint of gruel—

Calomel,	20 grains,
Aloes,	2 drachms;

and repeat this dose every other day, not omitting, at the same time, to continue the draught containing the two drachms of carbonate of ammonia thrice daily. During this treatment the patient should be kept in a loose box; and, if possible, a Turkish bath, allowed twice weekly, would act as an adjuvant in securing recovery; as also food easy of digestion, such as bran mashes, boiled carrots, and cut fresh grass, or, if in winter, hay previously soaked in warm water. The patient should also have easy access to water impregnated with nitre, about two drachms of the latter to a bucketful of the former.

PLEURO-PNEUMONIA.

Pleuro-pneumonia (commonly called lung disease) is a malady, as its name suggests, involving in inflammation and its results the lungs and their tissue, and the membrane investing them. But although such is the case, yet the disease in question is a specific *per se* common to the bovine tribe, and differs (if we may so express ourselves) from pleuro-pneumonia, indicating merely inflammation of the pleura and lungs, by its assuming chronic and typhoid characters, and its tendency to exudation from, and to the ultimate consolidation of, the lung tissue. This affection for centuries has raged in Europe, but never made its appearance in Great Britain until 1841, where it has prevailed more or less ever since.

That it is of a highly contagious nature no one can deny, if he considers, first, that it never was known in this country until after foreign stock were imported; secondly, its being satisfactorily and clearly traced to cattle imported from the Continent; thirdly, its prevalence amongst stock replenished from open markets, where cattle, both foreign and British, healthy and diseased, congregate; and fourthly, its comparative absence from those farms and localities which are isolated, and upon which stock are bred and sold, but rarely, if ever, are bought in. These reasons, if circumstantial evidence avails anything, prove that pleuro-pneumonia spreads through the medium of contagion, and such being the case, we may conclude that a remedy is within our grasp for its suppression and its ultimate eradication. But more of this hereafter.

Symptoms.—The disease progresses rapidly, and makes, generally, very injurious ravages long before the herdsman notices "that anything is amiss;" and if a milch cow, his attention is first drawn to the fact that the secretion of milk is diminished, and on examination he discovers that the udder is tender and flaccid. These indications of disease are sufficient to cause him to investigate matters still further, when he discovers that the function of rumination is irregular or suspended, that the extremities are sometimes hot and sometimes cold, that the breathing is laboured, and the pulse beats rapidly. A veterinary surgeon is called in, who immediately diagnoses in his patient the disease under notice; and on examination he discovers the right lung, rarely the left, to be involved in disease, which auscultation makes manifest by a crackling sound called a crepitus,

which becomes louder as the disease progresses, and ultimately, when the lung consolidates, becomes inaudible. At this period the breathing is laboured; the animal constantly grunts and coughs; sometimes the mouth is dry, sometimes a copious discharge is emitted from it (the latter being usually the case in the London dairy sheds); the body wastes away; constipation, and sometimes the opposite, viz., diarrhœa, sets in, and death terminates the scene.

Treatment.—Separation from the healthy must be immediately obtained by placing the patient in a well-ventilated and perfectly-drained loose box or clean shed, either having been well littered down with clean straw, over which chloride of lime should be carefully sprinkled. Having by this means a necessitated cleanly lodging, and an atmosphere productive of health, our treatment, as follows, can be commenced under somewhat favourable circumstances:—During the early stage of this malady it has been our practice to administer a mild saline purgative, combined with nitre, carbonate of ammonia, in order to cleanse the system and set up, if possible, healthy action. The murmur heard in the lung (usually only one lung is involved in disease) is a clear metallic noise, called a crepitus, which, to a practised ear, indicates to how great an extent the lung tissue and bronchial tubes are affected; when it is good treatment to clip the hair closely off the sides of the chest, and apply blistering ointment, made up with biniodide of mercury and turpentine; this application must be repeated thrice during the week, both in mild and severe cases, and after the effects of the purgatives have passed off, administer, twice daily, drachm-doses of the valerianate of iron, which we have given with great success. Professor Lessona, of Turin, advises the exhibition of daily drachm-doses of the disulphate of quinine in a quart decoction of anchona. The decoction is made with three ounces of bark to a quart of water. Mr. Finlay Dunn recommends from twenty-five to thirty drops of the tincture of aconite three or four times daily; and all the various treatments advised both by British and foreign veterinarians differ merely in the selection of drugs, but not in the principle of treatment, which consists in the exhibition of stimulants and tonics, viz., carbonate of ammonia, liquor ammoniæ acetatis, sulphuric, nitric, and hydrochloric acids, sulphate and iodine of iron, &c.; and many other compounds could be named, differing only very slightly from one another in the effect produced upon the system. It therefore follows that these medicinal agents should be placed under the control, and in the hands of qualified veterinarians; and we are sure that the agriculturist and stock-owner will always consult their interests best by employing, not the farrier with his specific, but the veterinary physician. Another very important curative adjunct, and which has been highly extolled by eminent writers, is the careful use of the Turkish bath, which produces a very beneficial effect upon the grand emunctory, the skin, by causing profuse perspiration; through the medium of which much of the poison existing in the blood is carried off. We have seen several good effects result upon the use of the bath, but have not ourselves been able to test it as a remedial measure in treating pleuro-pneumonia; still we feel sure that its action is calculated to be of great benefit. During the progress of the disease and the period of treatment we have often alternately severe constipation, and diarrhœa, and loss of appetite, to contend with, and sometimes by attempting to remedy one evil, we, by so doing, produce the other; therefore, great care must be exercised in avoiding this Scylla and Charybdis. Never give hard or dry food to pneumonic cattle, but moist mashes, and all provender easy of digestion, and of that only a little, because the power of secretion and assimilation is very feeble; and if your patients eat too freely dangerous indigestion is nearly certain to supervene.

The premonitory sign of returning health is the appetite, together with the function of rumination, being restored, but even now do not feed too lavishly; still give mash food, to which add a little treacle and oil-cake, and also attempt to remove the products of inflammation by administering three or four ounces of nitre and common salt, and one drachm carbonate of ammonia; the two former act upon excretory organs, and the latter stimulates the organs to increased action. By this treatment, together with early separation of the diseased to a well-ventilated and healthy place at some distance, even on a farm, the ravages of pleuro-pneumonia can be stayed, health can be restored, and, in many instances, the disease be cured.

Post Mortem Appearances.—On removing the lungs from the thorax it will be seen that one or both, as the case may be, have been involved in severe inflammation and its results, which the physical fact of the lungs being heavy, and, if placed in water, of their sinking to the bottom instead of floating on the top, as is the case with healthy ones, clearly manifests. On making an incision the lung tissue presents a marbled and consolidated appearance, intersected with patches of hepatisation, sometimes associated with ulceration and abscess, and extensive adhesions between the pleura appertaining to the sides of the chest, and that proper to the lungs themselves, together with copious effusion, is the constant result of this affection

Preventive Measures.—Dr. Williams, of Hasselt, in 1850, proposed the inoculation of the virus of pleuro-pneumonia, in order to produce a mild form of the disease, and by this means prevent its occurring naturally with all its virulence.

The operation is performed as follows:—A portion of a diseased pneumonic lung is selected, into which the point of a lancet or large needle is plunged in such a manner as to remove with it the lung-consolidating material, and this is immediately plunged into the end of the tail; when the animal operated upon is said to be inoculated. The operation should always be performed with lymph that is recently obtained, and that is not putrid; if the latter be the case, extensive inflammation of the tail and dock supervenes, which often involves the dock, rectum, and abdomen in induration and suppuration, terminating nearly always in the loss of

the tail, and oftentimes in death. But sometimes, even with all care, the same results occur as when putrid matter is used. When the question occurs, "Is inoculation useful as a preventive of pleuro-pneumonia? we most distinctly aver that it is useless; and why? because, in the first place, a milder form of the disease is not produced; secondly, no external symptoms nor internal sign follows, which would lead us to believe that a disease in the slightest degree similar to the one in question was produced—and consequently the only benefit that can (which we deny) possibly result from inoculation is of a derivative nature, or, in other words, an injury to the tail might have the power of detracting from the lungs a specific disease of them. The bulk of scientific evidence, and of our practical experience, leads us to the conclusion that the operation of inoculation is utterly useless and very cruel. What were the results? Sheds full of cows with only two inches of tails, and in answer to an inquiry relative to the stumps, the owner tells you he has inoculated them, and the tails "have come off." To what suffering must these poor creatures have been subjected, and most uselessly! for pleuro-pneumonia is a malady affecting the lungs, but inoculation only involves intense inflammation of the tail and abdomen, and does not, in the slightest degree, produce lung disease, not even a mild form of it: consequently, if a milder form be not produced, but only inflammation of a distinct and distant organ, how is it possible, therefore, that this operation can insure an immunity from pleuro-pneumonia? We agree fully with Finlay Dunn, who writes, "Inoculation, where fairly tried, is found quite ineffectual." We shall recur to the matter on a future occasion, but shall leave it for the present by repeating that in inoculating for pleuro-pneumonia, a milder form of the disease is not produced, and, moreover, that the pneumonic virus possesses no protective power against this malady.

Some years ago, "Old Scratch," in a letter to the "Field," insisted upon the necessity of bi-weekly inspection of stock at which each animal was to be carefully auscultated, when he averred that any deviation from health would be discovered; and particularly so in the case of pleuro-pneumonia, which even in apparently healthy cattle could be detected by the indicative murmur or crepitus occurring to the lungs in this malady even at its commencement; which, if taken early, was amenable to treatment, but which, if allowed to progress, proved usually fatal to the subject of it. This system has been adopted in many instances, and has met with success; and even allowing that its preventive influence cannot always be relied upon, yet the frequent inspection of stock by experienced persons must lead to beneficial results, by their being able to detect disease not perceived by the uninitiated, and by adopting treatment and suggesting plans which, if carried into operation, are calculated in some instances to cure, and in others to prevent disease. The same remarks made about the propagation and extension of epizootic aphtha, relative to the travelling of cattle in railway trucks, and their association at fairs, is equally applicable to lung disease. One pneumonic ox once visiting a fair or travelling in a car, becomes in these positions a centre for the spread of contagion; consequently great care should be taken, or power given, to qualified veterinarians to prevent diseased animals from entering trucks, fairs, and markets.

We feel assured that as years pass on the services of the veterinarian will be sought to prevent, more often than to cure, cattle maladies, and then upon a large scale in prescribing hygienic measures for large flocks and herds, when the farmer will hail the veterinarian as his friend in having suggested plans which, he having carried into effect, have warded off disease; and he will then own that the agricultural and veterinary sciences are inseparable. If the inspective system sends from the fair, or elsewhere, the cattle of A, it, on the other hand, removes contagion and consequently disease from B's stock: therefore in legislating for this important subject, the immediate benefit of individuals must not be taken into consideration; but the ultimate service to be rendered to the nation, and to the agriculturists and stock-owners at large, must be the grand principle upon, and from which, veterinary cattle inspectors must take the initiative.

The Turkish bath, not only as a medicinal agent, but also as a preventive of disease, deserves consideration; and we cannot help thinking the hot-air chamber is almost as necessary an adjunct to the extensive stock-keeper as to the veterinary surgeon, and for the simple reason that in it we have an agent which exerts a more powerful influence than any derivative, ox-purge, or blister, without lowering vital power; for it carries off, or at any rate diminishes, the amount of any virus that may circulate in the blood, and by this means cleanses the system, and renders it better able to throw off disease, and to resist the attack of it.

FOOT AND MOUTH DISEASE,

named by Professor Simonds Eczema epizootica, and by Professor Gamgee, Aphtha epizootica, is an affection of a highly contagious nature, and consists of a vesicular eruption on the tongue, mouth, teats, and between the digits of the feet, which if neglected runs on to suppuration and ulceration that, if occurring on the feet, causes sloughing of the horn. It is, moreover, communicable from one animal to another of a different species, as numerous experiments have proved. For instance, it has been communicated to the pig through the medium of food previously insalivated in the trough of an aphthous ox. Calves and pigs have died after drinking milk drawn from affected cows. Hertwig, Villain, and Maun, for the sake of experiment, drank the warm milk from an aphthous cow, and produced upon themselves an eruption similar to that of epizootic aphtha. This fact earnestly demands our consideration, as, at the present moment, hundreds of persons probably are daily consuming milk taken from aphthous cattle, which is calculated, as above

shown, to produce disease, and, under certain circumstances, capable of operating fatally. Fortunately, from the knowledge we possess of this disease, relative to its contagion, we have the means within our grasp of cutting short its further progress. For instance, the disease must be communicated from one ox to another until it has involved so many in disease as to become epizootic. Animals, if placed in sheds in which aphthous cattle have been previously located, are nearly sure to become affected; and for this reason we find many animals conveying disease from the railway trucks in which infected ones have been placed; or it may occur from the intermixture of healthy with diseased stock in trucks during one and the same journey, and often afterwards contact at fairs or on farms leads to its still further propagation. This disease, which runs its course in about nine or ten days, usually easily yields to treatment, which consists in washing the mouth twice daily with a weak solution of sulphuric acid and water, and the affected feet with carbolic acid and water. The lotion which we are in the habit of prescribing for the diseased teats is composed of nitre and water. Sometimes the vesicles are broken down during the operation of milking, and sores are created, in which case it is good treatment to keep the sores clean, and to dress, after every milking, with glycerine. Mild aperients and diuretics should be given every other day during the progress of this malady. During the last few years this disease has existed throughout Great Britain, and in some instances has caused considerable loss to stock-owners. I have above asserted that young pigs have died after drinking warm milk obtained from aphthous cows. Such unfortunately has occurred; though during a recent outbreak Professor B—— gave warm milk taken from cows, the subjects of foot and mouth disease, to young pigs, and failed to produce in them any symptom of this malady; but at the same time such has happened, and therefore may happen again. Pigs have undoubtedly been affected with the complaint, and death has resulted. It is consequently wise "to be on the safe side," which warns us to make away with milk taken from cows when suffering with epizootic aphtha.

RED-WATER AND BLACK-WATER.

This disease is common among neat cattle of every description, but more particularly attacks milch cows than any other kind. Red water and black seldom occur separately. The former, doubtless, is the original disease, and the latter is occasioned by the retention of part of the blood about the orifice of the leaky vessel, which coagulates, and in a short time the beast stales, and constitutes what is termed black-water. The origin of this disease is ascribed by different authors to different causes: for instance, the taking of cold when turned into low pasture-grounds at the spring of the year. Others attribute it to change of pasture or scarcity of water in a long dry summer, and some to the changeable state of the atmosphere. In some animals it appears to be more hereditary than in others. "Clater" has known some animals to have been attacked with this complaint once or twice for two or three successive years, and at last literally bled to death, defying all the powers of medicine and change of diet. It will be difficult to point out the exact seat of this disease, but the following observations will in some measure enable the practitioner to form his judgment in this respect:—If red water proceed from external injury—such as a violent strain across the loins, in consequence of other beasts jumping on them, or from a severe blow on the part—our treatment will be of a local nature; but when this disease proceeds from other causes, as already mentioned, it produces a different effect. An inflammation takes place about the neck of the bladder, and produces the two different kinds above mentioned. When the change takes place from red to black water, the animal generally stales free from either for several times. In slight cases, where the blood is passed away with the urine, the beast does not appear to be much affected by it; if a cow, she holds less quantity of milk, and seems no worse. But when the blood passed away is considerable, and continues for a length of time, it reduces the quantity of milk, and likewise the animal, to a very low state. The chief symptom, therefore, of this affection is the admixture and consequent evacuation of certain constituents of the blood with the urine. The cause of this blood disease is attributable to the defective state of the assimilative system, which indirectly exerts an injurious influence on the blood-forming process, produced by bad feeding, or more properly by feeding upon substances in which the elements of nutrition do not sufficiently abound—such as coarse grass, watery turnips, and all roots that have grown upon cold, damp, and badly-drained lands; and, on the other hand, it is scarcely known upon farms where the lands are well drained, and where the stock are allowed to partake only sparingly of turnips. The symptoms usually evinced are loss of appetite, cessation of or irregular rumination, diarrhœa, followed by constipation, when bloody urine is evacuated. Treatment:—By all means avoid blood-letting, for in this malady support must be given to the patient, by administering, three or four times daily, carbonate of ammonia, one drachm; warm ale, one pint. If constipation be persistent, use warm-water clysters, and give a pint of linseed oil. Allow plenty of water, and let the patient have access to common salt. If diarrhœa sets in, and the urine be very abundant and black in colour, half a drachm of powdered opium may be given daily. Roots must be withheld, and gruel, mashes, and good hay given.

There is a totally different disease, known by the name of black-water, which is very clearly described by Professor John Gamgee, and which we transcribe—"It has been believed due to the wild anemone by some, by others it has been ascribed to the poisonous influence of *Lolium temulentum;* but my experience proves that it constantly occurs on pastures in the immediate vicinity of woods, and where cows can partake of the astringent shoots of young trees, especially of the oak. The symptoms are very similar to simple red-

water, but we sometimes find a discharge of blood by the bowels. There is constipation at first, but diarrhœa towards the latter stage—generally colicky pains and evident indication of intestinal irritation. There is great tenderness over the loins, the urine is deeply tinged with blood, the general disturbance is very considerable, particularly when diarrhœa, with hæmorrhage from the bowels, sets in. The secretion of milk emits a bad odour, and is scanty in quantity. Occasionally convulsions occur, and the animal dies, in three or four days to a fortnight, in a state of great prostration. Treatment:—Very similar to red-water, with more active recourse to purgatives. Camphor may be used as a stimulant when the prostration is great."

INFLAMMATION OF THE BRAIN—PHRENITIS.

This disease is one of the most distressing to which cattle are subject, and is most prevalent during the hot months in the summer season. It is sometimes idiopathic, or a primary disease, and at other times it is symptomatic. Phrenitis sometimes results as the sequent of other affections, particularly those of the stomachs. This malady is usually ushered in with a shivering fit, bounding pulse, laborious breathing, and listlessness. These symptoms are rapidly followed with a kind of madness; the animal appears in a very fierce state; the eyes are much inflamed and ready to start from their orbits; the beasts often fall suddenly down to rise again as rapidly, until nature becomes exhausted, when constant trembling of the muscles, with a dry harsh skin, a suppression of urine, and grinding of the teeth, give evidence of a fatal result. Phrenitis is sometimes occasioned by wounds or contusions on the head, that are attended with intense inflammation of the local vessels, which, if not speedily relieved, may terminate in mortification. The administration of a brisk cathartic, consisting of—

Epsom salts, ...	1 pound,
Nitre, ...	1 ounce,

cold applications of ice to the head, and bleeding from the jugular vein, will in most cases reduce the intensity of the symptoms.

Sometimes, after the recovery of the patient from phrenitis, swellings take place upon the jaws and different parts of the head. In cases of this kind there is a difficulty in swallowing; as the inflammation increases the jaws become gradually closed. This state of disease is termed locked-jaw, the treatment of which will be discussed under that heading. Professor John Gamgee, in his book on "Dairy Stock," mentions a case of phrenitis in a cow, which resulted from the presence within the auditory meatus of a concrete mass of wax, which induced inflammation of the ear, communicating with the brain and killing the animal with that affection.

BLACK-LEG, QUARTER EVIL, OR BLACK-QUARTER.

This disease is called by a great number of other names, but as they indicate the same disorder, it would be no advantage here to repeat them. Quarter evil does not appear to be either infectious or epizootic in its nature, and is almost wholly confined to young cattle from one to two years old, and chiefly affects such as are in the best condition; milch cows and lean cattle of all descriptions are seldom the subjects of this malady, and during the winter it is unknown. This disease, like many others, has received in some localities the name of murrain. Quarter evil is a blood disease common to young stock; it prevails both at the rise and fall of the seasons from over-feeding. At the former because the young cattle, who generally have been ill fed during the winter, are unable to resist the effects produced upon the powers of digestion and assimilation by the too luxuriant pasture that then springs up; and in the autumn because, when removed from scanty pastures to stall food, consisting of turnips and oil-cake, &c., plethora is produced, blood is formed too rapidly, the tissues instead of gaining strength lose power, the coats of the bloodvessels are rendered incapable of supporting the circulating blood within them, which in depending positions, at the legs and joints, exudes, swellings result, and paralysis and stupor supervene. So rapidly does this affection run its course to a fatal termination that many of a herd in blooming health at night may be found dead on the following morning. The symptoms manifested are usually dulness, failing strength, stupor, a quick and weak pulse, associated with extensive swellings of one or more parts of the body. These external signs are, of course, modified according to the extent of disease to which the patient is subjected.

It has been stated that too luxuriant food, whether it be obtained by the animal itself from a rich pasture, or exhibited to it when stall fed, is the fruitful source of this malady, by its producing plethora; but although such is the case, yet we must take into consideration the quality of the soil and food taken from it, and upon which the subject of quarter ill has been fed. It occurs, for instance, more frequently upon farms "where the land is undrained, the herbage coarse, rough, and innutritive, and has entirely disappeared from others where drainage, top dressing, and better cultivation has improved the quality of the pasture." These circumstances, therefore, which at first sight appear contradictory, remain to be accounted for; but in attempting to explain this seeming incompatibility, luckily physiology comes to our assistance by asserting that undue labour never can with impunity be imposed upon the digestive apparatus; for by so doing the function of digestion is but inadequately performed, the assimilative power is impaired, and, as a consequence, the blood-forming processes do not thoroughly pass under the operation of nature's laboratory; or the system as a result becomes devitalized. "Est modus in rebus;" nature cannot be compelled to overtask the animal organism; she can proceed thus far, but no farther, without necessitating the occurrence of baneful results. If the stomach is persistently overloaded with an excess of highly nutritive food, even then the functions become overtasked and some part of the organism gives way; but if animals are supplied

with an innutritive and coarse grass, and allowed to feed at pleasure, then to the evil of overfeeding is added that of overstuffing: for be it remembered, we may overfeed with a highly nutritious food, produce plethora, and afterwards black-quarter; and so we can by overstuffing our cattle with innutritious food, in which case such animals eat twice as much of the latter before they can obtain the elements of nutrition in abundance so great as to produce the plethoric state, the dominant cause of this malady. Moreover, in attaining this end, consider how much extra work has been imposed upon the digestive and assimilative powers; so great, indeed, as to devitalize the whole system, and with it the coats of the bloodvessels, to such an extent as to permit the escape of blood through them, forming externally soft diffused swellings, which crackle with the gas eliminated from the decomposing blood within them. It is, therefore, readily seen that this affection is attributable to a faulty dietary system, which overfeeds, and in so doing upsets the due balance between waste and supply, causing an excess or deficiency of those albuminous constituents and saline compounds all-necessary to the formation and elaboration of that healthy blood demanded to resupply waste and to develope corporeal size; but if these items be obtained with alimentary substances, as above considered, then, for a certainty, disease must occur. Such are the causes of this fatal blood disease. Therefore, to prevent it, we must abstain from placing our stock under the operation of circumstances which experience has taught us to be productive of it. For example, when taking animals up from grass to stall food, it is never wise to commence feeding largely at first upon roots, meal, &c., but little by little to increase the amount from day to day, until the necessary maximum is obtained. It will be good treatment, also, to administer a dose of Epsom salts. A similar system can be brought into operation with stock that have been turned out to grass in the spring, by placing them for the first two or three weeks on pasture where the herbage is scanty, before putting them upon a fuller and richer one. The adoption of this plan alone will often prevent the occurrence of black-quarter.

Treatment.—In the early stage, before the swellings have appeared, and whilst the pulse is full, the abstraction of a little blood is advisable; at the same time administer half a pound of Epsom salts, and one ounce of nitre; feed upon a sloppy food, and by no means give any that is not easy of digestion. In the more advanced stages treatment is almost useless; the exhibition of a mild purgative and diuretic draught, to be followed with two-drachm doses of carbonate of ammonia, twice daily, may act beneficially. Local relief can be afforded by lancing the swellings, and by this means evacuating the decomposing blood. But in these and all other similar diseases the cause should be treated, and not the effect, as the former prevents, whereas the latter constantly destroys. To a herd, among which some have been attacked with this malady, give nitre and rock salt in the food, and at all times allow pure and fresh water, and plenty of it; in short, adopt hygienic measures, and consult common sense, for by so doing you will prevent disease, save your cattle, and perhaps fill your coffers.

DIARRHŒA.

This disease shows itself with frequent and copious stools, which, according to the appearances they present, often leads us to detect the cause. Its cause may arise from various circumstances—from the eating of young and luxuriant spring grass; by the presence in the intestines of acrid and indigestible food; by perverted secretions and imperfect quality of the gastric juice; by blood poisons, and from irritation of intestinal mucous membranes. The diarrhœa, when of long-standing, is always attended with danger; the frequent motion of the intestines to eject their contents quickly reduces the animal to a very weak and debilitated state, attended with loss of appetite; in consequence of which the foundation of an incurable disease will be laid unless timely removed. It is supposed by some authors to be occasioned by severe effects of the north and north-easterly winds at the spring-time. The time when cattle are most liable to be seized with diarrhœa is in the months of April and May, especially if the season be wet and cold, grass plentiful, and of a sappy nature. The relaxed powers of the animal nature are not able to perform the office of digestion, as they are too apt to overload the stomach. Thus a large quantity of acid is formed in the stomach, and is conveyed from thence through the intestines, which produces slimy stools. Here nature, by her own effort, endeavours to check its progress by an effusion of bile, which function is to correct acidity and assist digestion. But in many cases it fails. Cows, after calving, are liable to take cold when exposed in wet situations in severe weather, which frequently causes this malady. The following are the unfavourable symptoms:—The animal loses her appetite; the dewlap hangs down and has a flabby appearance; her dung runs off with a putrid and offensive smell, and as it falls on the ground, rises in bubbles; the coat is staring. Cattle thus affected should be taken from grass and placed in a large cow-house or open yard, where they can be sheltered from the weather, and be kept on dry meat—such as hay, ground oats, and beans. A proper quantity of the above should be given three or four times daily; but if they are much reduced, and their appetite is quite gone, a stiff gruel made of the same should be horned into them three or four times daily. A strict attention to this method of diet will convey a sufficient quantity of nutriment to the animal, so as to enable it to undergo the operation of medicine. The cure of this affection must first be attempted by evacuating the stomach and intestines of those juices and unhealthy secretions which irritate, and in some instances destroy, the mucous membranes of these parts. This method may appear inconsistent to the judgment of some; but its good effect will soon be perceived if we consider that, unless the offending irritant be removed, the same effort to remove

it—viz., diarrhœa—will remain. Administer in a pint of warm gruel—

Aloes,	4 drachms,
Castor oil,	4 ounces,
Ginger, in powder,	half an ounce.

About twelve hours after the administration of the above, the following may be given twice daily in a pint of gruel, made up with oatmeal—

Opium, in powder,	3 drachms,
Ginger, in powder,	half an ounce,
Alum, in powder,	half an ounce,
Bicarbonate of potash,	4 drachms.

Should the above treatment, after some days' continuance, prove successful, tonics—such as daily drachm doses of the disulphate of quinine in strong ale—will tend greatly to produce strength, and with it good condition.

INFLAMMATION OF THE LIVER.

This malady frequently takes place. It does not seem to be confined to any particular part of the liver. This organ is a glandular substance, and the largest to be met with in the animal body; its chief use is to secrete bile. Inflammation of the liver may proceed from various causes; sometimes from external, at other times from internal, but mostly the latter. Fat beasts, or such as are in good condition, are most liable to be attacked with this disease, particularly in hot weather, when over-heated with driving, or from running about the pastures on very hot days; drinking cold water, or being exposed to sudden chill after the body has been so heated. Inflammations occasioned by external causes chiefly occur as the result of cattle goring one another with their horns, or from violent blows or bruises inflicted by foreign objects. The symptoms of this malady, especially when the result of full condition, consist in violent pain and swelling about the short ribs on the right side, attended with difficulty in breathing, loathing of food, great thirst, with jaundice. If the inflammation run high, induration and purulent deposits are likely to occur; and, moreover, it is a fact worthy of notice that cattle, apparently in perfect health, after slaughter have been discovered to be the subjects of the above hepatic depositions. During the year 1869 I saw a case in Richmond Park of a buck which died suddenly, previously to which Mr. Sawyer, the head keeper, had never noticed anything amiss. On opening the animal the liver was discovered to be three times its natural size, and indurated; on its right side an abscess occurred. This malady in hot climates often rages as an epizootic. Lessona, of Turin, points to the fact that in 1827 it assumed this type in Italy.

Treatment.—Apply mustard poultices over the region of the liver, and use clysters; and administer daily in a quart of warm water—

Barbadoes aloes, in powder,	3 drachms,
Epsom salts,	6 drachms,
Carbonate of potash,	2 drachms.

Feed on bran mashes and roots, with a very limited supply of hay.

INFLAMMATION OF THE KIDNEYS

is of frequent occurrence among cattle, and is often attended with very fatal consequences. Small as the kidneys are, they are all-important organs; if their functions are interfered with the life of the animal so attacked is in jeopardy. The quantity of blood which passes through them is very great; and whatsoever may obstruct the renal circulation, or impede the workings of the renal organism in transmitting the urine into the bladder, and to its after destination, or whatever cause may come into operation to affect the constituents of the urine or the structure of the kidneys, will invariably bring on disease.

Inflammation of the kidneys may proceed from violent blows inflicted across the loins, or a sprain to the part (in which cases the treatment of the cause will usually cure the effect); or from violent action, or from any circumstance which will too forcibly drive the blood into the kidneys. The first symptom the subject of this malady manifests is straining to void urine, which only escapes in small quantities; the loins are hot, and on the application of digital pressure to the part the patient flinches. As the disease progresses the difficulty to urinate increases; the animal becomes dull, and refuses food; the urine now assumes a high colour—sometimes nearly red, and often mixed with blood; shivering of the whole body, cold, clammy sweats, and the extremities grow cold.

The sudden cessation of nephritic pains, and urine dribbling away in small quantities, of a black and fœtid character, and weakness, if not paralysis, of the hind quarters, are signs of an unfavourable termination. The symptoms which indicate a favourable result in this disease are the urine assuming a high and coffee colour, is secreted in much larger quantities than stated before, and at last is copious, thick, and mixed with mucus. Our treatment must be so applied as to reduce inflammation, and giving medicine which will allay renal irritation; which is best effected by applying alternately hot fomentations to the loins, by means of hot flannels, thickly doubled, and kept continually moist with hot water, and by the application of ice to the same part. This end is best attained by forming a kind of cup, made with the assistance of a flour-sack, in which the ice over the lumbar region can be placed; warm water clysters will evacuate the rectum and will also tend to lessen the intensity of the local inflammation. Bad food, such as musty hay, and the administration of diuretics, such as turpentine and nitre, often, doubtless, bring on renal complications. Give linseed tea in large quantities, and administer in a pint of it twice daily—

Barbadoes aloes, in powder,	2 drachms,
Tincture of opium,	half an ounce.

This medicine, if the symptoms subside, can be followed by the administration of half a pint of linseed oil. Warm bran mashes and food easy of digestion must alone be given.

Diuretics and all stimulating medicines must be strictly prohibited.

SPLENIC APOPLEXY.

Splenic apoplexy consists in an enlargement and consequent rupture of the spleen, the result of plethora, produced by over-feeding, and the same remarks concerning the cause of black-quarter are equally applicable to this malady; therefore the repetition of matters relative to the cause and prevention of splenic apoplexy would only needlessly occupy our space.

Dr. Crisp, in the *Bath and West of England Agricultural Journal*, has given a very important and instructive paper on the causes of (so-called) splenic apoplexy, from which it appears that previous to 1859 this important subject had escaped the notice of veterinarians; and, moreover, that the ideas entertained about the weight of the spleen and its functions had been erroneous, especially the assertion of Cuvier—viz., that "the spleen diminishes in size as we descend in the scale, and that in several fishes and reptiles it is proportionally larger than in many mammals, and that valves, said by all writers to be absent in the splenic vein, are present in many quadrupeds—a fact that has an important bearing upon the disease in question." Although this malady was not recognized until late years as a specific affection of the spleen, yet veterinarians and others have had their attention, during the course of their practice, directed to maladies of this type; for instance, M. Fochentin, of Baden, writes—"The sheep are said to die in a few hours, and sometimes suddenly; the liver to be partially decomposed, and the spleen enlarged and filled with tubercles and ulcers."

Again, under the head Inflammatory Fever, "The spleen is large and disorganized, the liver gorged, and the viscera congested. Overdriving and luxuriant pasturage are supposed to have been the causes."

In the "Transactions of the Veterinary Association, 1843," Mr. Meggins, Sussex, brought before the Veterinary Society several cases of death in oxen and colts, evidently from this disease. "The spleens were all enlarged, and their cells filled with blood." And from other reports it is evident that some years previous to 1859, splenic apoplexy, although not recognized under this term, existed in many parts of Europe, and at the present time it is not unfrequent among cattle; and in this country consists, according to Dr. Crisp, of two kinds—viz., of a mild and malignant form—the first being sometimes amenable to treatment, and the latter generally causing death in a few hours. "In the malignant form, the animal is dull, off its feed, the head is down, the back more or less arched, the gait unsteady, the pulse quick and feeble, and towards the termination of the attack the breathing becomes difficult, and convulsive twitchings affect the muscles; the urine and excrements are sometimes bloody, and occasionally bloody froth appears about the mouth and nostrils; the animal frequently falls dead when standing, in from four to eight hours from the commencement of the attack." In the mild form, the disease manifests less dangerous systems, although sometimes the subject of it, especially sheep, die previous to the malady being detected; that is, before symptoms of the disease have shown themselves. The morbid appearances seem to arise from a disintegrated state of the blood, so that without any rupture of a vessel the blood exudes through the attenuated coats of them, causing the exudation, &c., above mentioned. "In most instances," writes the doctor, "in oxen, sheep, horses, deer, and antelopes, I have found the spleen large, soft, pulpy, with extravasation of disintegrated blood from its proper vessels. Sometimes the blood is extravasated under the capsule of the spleen as well as to the interior, and the skin and cellular and muscular tissues frequently present a livid or violet-coloured appearance, from extravasation of blood, which is generally fluid and of a violet colour."

Such being the symptoms and post mortem appearances, the question naturally arises, What cause or causes can be brought into operation so as to produce this disastrous disease? Mr. Thomas Crisp informs his brother that a Mr. A. lost, from disease of the spleen during 1850, an ox which had been fed on marshy ground. This spleen was two feet long and one in width, was much ulcerated, bloody, and pulpy, and readily fell to pieces; and indirectly accuses the marshy soil as the cause of the malady.

Again, splenic disease occurred last April in a very healthy district. The animals affected were all stall-fed upon oil cake, chaff, and beetroot. Eight heifers and four bulls died, and only one (a bull) recovered; and the man who fed this fortunate animal said he had only eaten two bushels of cut beetroot for his breakfast, instead of two bushels and a half, his usual allowance. The root had been taken from land that had been manured with ooze from the Saer Water river, together with five hundredweight of salt to the acre; and as all the animals fed upon the root taken from this soil manifested the disease, it was considered that this food had caused splenic apoplexy. Dr. Crisp examined the beets carefully, and was not able to discover any fungi or confervæ upon them. It is a fact worthy of record, that in the outbreak which took place in Northumberland during 1859, most of the animals that died had fed upon swedes grown on a particular field.

Let us further consider the effects produced upon living creatures by eating, or on man by handling, the diseased parts taken from an animal the subject of splenic apoplexy. The spleen, when removed from the body of Mr. A.'s ox, was handled by the butcher, whose arm soon afterwards became affected to such an extent as to prevent him using it for some time. Cats died after eating it, and a sow that eat the paunch and part of the spleen also died. In another instance, a man cut his finger whilst taking a diseased spleen, weighing eighteen or twenty pounds, from the body of an ox, in which case the wound did not heal for several weeks. In addition to these, other similar cases could be cited; but we trust sufficient has been said to prove how important it is

for all persons to be careful in removing diseased flesh from animals; and, moreover, demands that all such refuse should be burnt or otherwise destroyed, as matter utterly unfit for the hog-tub, or for food of carnivorous animals. In considering the causes of splenic apoplexy, Dr. Crisp asks the following questions:—

1. Does it depend upon the nature or quantity of the food? 2. Is it of malarious origin? 3. Has the water anything to do with its production? 4. Do overstocked and ill-ventilated and ill-drained yards and sheds favour its increase? 5. Is it contagious? 6. Are fungoid and confervoid growths taken with the food, so as to occasion a kind of fermentous poisoning of the blood."

Previous to answering these questions, Dr. Crisp asserts, in all animals in which he has noticed this malady, that he has discovered "valves in the splenic and stomach veins," which are there placed in order to prevent the return of blood to the spleen when on its passage to the liver. "It therefore can be readily understood," writes the doctor, "that if from an excessive repletion of these veins from overfeeding, improper food, or from malarious influence, when the blood is driven towards the spleen, these valves, from long-continued distension of the veins, may act inadequately, or become ruptured, and the extravasation of blood into the spleen be thus produced; and this blood, unpurified by the liver, may contaminate the whole mass."

In direct answer to question 1, the opinion of several eminent veterinarians are given, all considering that splenic apoplexy is the result of plethora, brought about by overfeeding, whether it be in the stalls or from too luxuriant pastures. 2. It has been observed in malarious districts, but then only among plethoric cattle, whereas lean ones have escaped. 3. Cattle fed in stalls upon succulent food when they require little water, are subject to it; and, moreover, it is well known that cattle do drink impure water from choice and with impunity. 4. "Ill-drained yards and badly ventilated stalls may favour its increase when the exciting cause is present;" but, according to the doctor, not otherwise. 5. No satisfactory evidence has been advanced to prove spleen apoplexy to be of a contagious nature. 6. Fungoid and confervoid growths, taken with food, doubtless do produce disease, but it has not been proved that they directly bring on splenic apoplexy. As to treatment, Dr. Crisp advises the abstraction and transfusion of blood from healthy animals, under the superintendence of a veterinarian, and in doing so, refutes the idea that blood-letting takes away vital force. He states, he has often noticed that it gives vigour, "by unloading the oppressed heart, the congested lung, or the overcharged brain." This, together with a judicious administration of stimulants, he considers good treatment. In cases of the disease occurring to plethoric animals, the supply of food to the healthy should be diminished, after which small doses of sulphur and turpentine, or of quinine, may act as prophylactics or preventives.

In conclusion, Dr. Crisp considers that a series of "well-conducted microscopical and chemical analyses of the blood and urine of animals affected, are necessary before accurate deductions can be arrived at."

FOG SICKNESS; HOVE, OR BLOWN.

This disease, more properly known by the name of Tympanitis, usually proceeds from a voracious and greedy disposition incident to neat cattle, when permitted to satiate their appetites with food of which they are most fond, such as red clover, vetches, rich fog, or different kind of grasses; likewise turnips, potatoes, corn, and sometimes chaff. The latter are more likely to choke the beasts, and the former to blow them. In fact, any food which remains in the rumen or first stomach for any great length of time, without undergoing the process of rumination, is liable to decompose, and in so doing to ferment, when gaseous eliminations occur, which distend the stomach in question, and produce tympanitis, associated with symptoms of suffocation; or pieces of food may be retarded in their passage down the gullet (œsophagus), and may when there choke the animal, in which cases the rumen becomes distended, and the disease "hove," is established.

Treatment.—When there is little food in the stomach the introduction of the probang will remove the gas, and with it also any impediment in the gullet can be readily removed. If the above fail to remove the distension, but it rather increases, and the animal's life is in danger, the canula and trochar must be introduced into the paunch on the left side, mid-way between the prominence of the haunch and the last rib, and about eight inches below the transverse processes of the lumbar vertebræ; the trochar, having here been plunged into the stomach, must immediately be withdrawn, but the canula, or tube, must be retained within the wound made until the gas has escaped and the swelling subsided. In these cases, always send for a qualified veterinarian, who can alone successfully perform the above operations. On the first appearance of tympanitis, administer

Carbonate of ammonia, ...	3 drachms.
Epsom salts, ...	half a pound.

and use warm clysters. If the unfavourable symptoms do not yield to the above, the after treatment should consist of two drachm doses of carbonate of ammonia in a pint of water, followed by giving a brisk purgative.

STAGGERS, VERTIGO, FARDEL BOUND.

"Clater" evidently considered that this complaint arose from "a large quantity of phlegmatic humours pressing upon the brain and optic nerves, which caused the animal to have a wavering and staggering motion of body." To those unacquainted with pathology this may seem to be the case; but in truth, the implication of the brain is the effect, the stomach being the cause. The symptoms are attended with heaviness and dulness, a constant disposition to sleep, which is manifested by the beast attempting to rest its head upon any place

convenient for that purpose; as the disease progresses the patient becomes wild, trembles, foams at the mouth, and runs at imaginary objects; persistent constipation is also a prominent symptom.

The above signs of the affection under notice may be produced by overfeeding upon too luxuriant herbage, from which the animals eat voraciously, or from partaking of indigestible or innutritious food; it is therefore more frequent in summer and autumn, when there is abundance of rough grass and when the leaves begin to fall. Rye-grass in seed, and ripe vetches, and insufficiency of water in a dry season—in fact, any food calculated to produce impaction of the stomachs, particularly the third—may be accounted sources of fardel bound; poisons also, and particularly lead, have been known to produce constipation and vertigo. Attention has been drawn to the evils which were likely to accrue by dressing land with the manure taken from large towns, where pieces of lead, floor cloth, and broken paint-pots, found their way to the pastures in the form of dressings. On such pastures animals are allowed to graze, and in so doing to often lick the sweet carbonate of lead from the above-mentioned substances, besmeared or impregnated with it. The symptoms produced by lead-poisoning are very similar to the above, only, perhaps, the suffering animal exhibits greater signs of delirium. In this malady we nearly always find the third stomach, or "omasum," impacted with indigestible food. Our readers will remember that the two first stomachs, viz., the rumen and reticulum, are principally engaged in the function of rumination; and that the food, after having undergone this process, is sent into the third stomach, there to be triturated, in order that no nutritive matter may be lost. If indigestible food or poison finds its way amongst the folds of the omasum, then through the medium of the nerves the system soon becomes deranged, the omasum refuses to send on deleterious compounds to the fourth or digestive stomach, the third is, as it were, locked up, constipation or a very scanty discharge of liquid dung supervenes, and, as a result, the brain becomes affected, vertigo is set up, and often the subject of it dies in a state of delirium.

The treatment consists in removing the constipation with purgatives; these must be very powerful, as in this disease no time can be lost, and experience proves that repeated small doses are of little service. Administer, therefore, a mechanical mixture which has proved very successful—

Epsom salts,	1 pound,
Croton bruns, smashed,	20 in number,
Linseed oil,	half a pint;

and afterwards use warm-water clysters, and give three times daily two-drachm doses of carbonate of ammonia; this will assist the action of the purge; allow large quantities of water to drink, and prohibit food until the symptoms abate.

In cases of lead-poisoning, in addition to the above treatment, antidotes must be sought. Sulphuric acid may be given often in water or linseed tea, and two to four ounces of the sulphate of soda exhibited; every two or three days use clysters. "Opium is recommended to allay pain, if the latter be intense; sulphuretted hydrogen is a chemical antidote, forming with the lead an insoluble black sulphuret;" alum, also, has proved useful. "M. Melsens has found the iodide of potassium the most effective antidote to poisoning by lead compounds, the soluble iodide being formed, and eliminated from the system by the kidneys.—"Veterinarians' Vade Mecum," page 172.

COLIC, OR GRIPES.

Oxen and cows of every age are liable to this disease; it seems to arise from a spasmodic contraction of some part of the intestines. Almost all pains of the belly go under the denomination of colic, or gripes. It therefore will be necessary to consider them under different heads. Flatulent colic is, for the most part, occasioned by an animal's eating hard and indigestible food; also, from drinking too large a quantity of cold water when in a state of perspiration, or from stoppage caused by impaction of ingesta or calculi of various kinds in some part of the intestines, when, unless speedy relief be afforded, flatulence results, and the disease (windy colic) is set up. Colic is not so frequent nor so fatal among cattle as with horses. The symptoms evinced in cases of this kind are:—The animals frequently lie down to rise up suddenly, and sometimes strike their horns and hind feet against their belly. The pulse is not usually much affected at first; but if the disease continue for any length of time it becomes much quicker and harder than usual; this generally indicates the commencement of inflammation, and is accompanied with considerable abdominal tension. Spasmodic colic, for the most part, proceeds from the former, which, if continuing for any length of time, must terminate in inflammation of some part of the intestines. Colic, as the foregoing remarks indicate, is always attended with persistent constipation, and may be, by the unscientific, mistaken for "fardel bound." In fardel bound persistent constipation is not always present, as frequently a very scanty discharge of very liquid dung is a symptom of it. Considerable danger attends cattle in this situation, as these deceitful appearances are often mistaken for purging. When these symptoms of costiveness occur, no time should be lost in administering a purgative; that dung is passed in a liquid state in some cases of fardel bound is well known to veterinarians, but generally obstinate constipation prevails as in cases of colic. In fardel bound an animal may live for ten days or a fortnight, whereas, in colic, unless decided relief be given within forty-eight hours, the patient usually dies. The treatment of colic consists in the frequent use of clysters, and in administering—

Epsom salts,	1 pound,
Linseed oil,	1 pint,

to be followed by giving twice daily two-drachm doses of the carbonate of ammonia in a pint of water.

PUERPERAL OR MILK FEVER.

This is a disease peculiar to cows in high condition at the time of calving; both young and old are liable to be attacked by it. This malady is better known now by the name of "parturient apoplexy," and, among dairymen, as "dropping after calving." It causes great loss to owners, owing to its carrying off the flower of the herd, and especially the best milkers. It generally occurs two or three days after parturition. When the object of it ceases to ruminate constipation sets in, the lacteal secretion is suspended, congestion of the brain and spinal marrow occurs, the serum of the blood is thrown out, which causes nervous and cerebral pressure, the breathing becomes laborious, stupor supervenes, and death closes the scene. This affection is the result of overfeeding before the period of parturition, which, in many instances, is considered necessary in order to insure a large supply of milk afterwards. So it may; but it must be remembered that during the months of utero-gestation the blood is determined in large quantities to the fœtus, which, after birth, is rethrown, if we may so say, upon the system; but as yet is not directed towards its new channels for the production of milk. This I believe to be the most usual and potent cause of dropping after calving. Other causes consist in the absorption of pus from the uterus, and milk into the blood. Mr. Finlay Dunn writes:—"One kind common to most animals consists in inflammation of the membranes of the womb and intestines, and is produced by exposure to cold, by overdriving, or injury inflicted during parturition;" but all operate detrimentally in a similar manner by devitalizing the system, paralyzing the action of the nervous centres, and, in so acting, by arresting the due performance of the bodily functions.

Treatment.—Administer a purgative drink in a pint of warm ale, viz., Epsom salts, one pound; carbonate of ammonia, two drachms; assafœtida, one drachm; nitre, half an ounce. A similar amount of carbonate of ammonia should be given in a pint of warm ale, thrice daily. Use clysters, and apply ice persistently to the spine. As a preventive of this affliction, some ten days or a fortnight before calving, give aperient medicine, under the advice of a qualified veterinarian, and in some instances blood-letting can be advantageously resorted to.

ABORTION, OR SLINKING.

Abortion, or cows slipping their calves in the early period of utero-gestation, is a great misfortune to the owner; it appears that cows in the best condition are most liable to it. It sometimes happens as the result of injury by cattle haunching each other; at another it assumes an epizootic type, several having slipped their calves in the course of a few days: in these cases it results from debility or relaxation of the generative organs. This malady may occur any time between conception and parturition, but usually takes place about the fourth or fifth month of pregnancy. Cows are most liable to slink their calves towards the latter end of the year, whilst feeding on fog or autumnal grasses, or on low, marshy, fenny grounds; at other times it has proceeded from the smell of putrid flesh, which may have been exposed on the pasture, or too slightly covered with earth. The sense of smell with cattle is remarkably acute; "Clater" has noticed them on a warm day, when in an open pasture, collect in great numbers to a particular spot, where dead carcasses had been buried for years, and with their horns and feet tear up the ground in a surprising manner, at the same time making a most horrid noise. Other authors also have considered the smell of carrion to be productive of abortion; but doubtless the chief cause exists in the food or water, in which some deleterious agent exists, which injuriously affects the uterus. In proof of this, and as most authors have drawn attention to the fact that the disease under notice usually occurs during the late summer or autumnal months, the space cannot be better employed than by reproducing a portion of an article from the pen of Professor Tanner, which appeared in the *Edinburgh Veterinary Review*.

"I shall not go into any notice of the general subject of abortion, but rather restrict my remarks to the cause which is much overlooked, and yet probably is more influential than all other causes combined. I refer to the growth of ergotised seeds in our pastures. The action of the ergot of rye (*Secale cornutum*) upon the womb is well known as an excitant to powerful action, which usually terminates in expulsion of the fœtus. We have a similar disease appearing on the seeds of our grasses, but especially on the rye-grass, and thus we have an ergot of the seed of rye-grass produced, possessing similar exciting powers upon the womb to those produced by this ergot of rye. Two conditions are necessary for the production of this ergot upon the seed of rye-grass. The first, the grass must be allowed to run to seed; and the second is, that the climate must be favourable for encouraging the development of the ergot. In practice we find that on land which has been fed on during the summer, unless it has been grazed upon with unusual care, much of the grass throws up seed stalks and produces seed. In districts where the climate is humid and rain abundant, as well as in very wet seasons, these seeds become liable to the growth of this ergot. Cattle appear to eat it with a relish, and the result is, that abortion spreads rapidly through the herd. Heifers and cows which, up to the appearance of the ergot, have held in calf, are excited by consuming it in their food to cast their calves. The abortion having once commenced, we know that the peculiarly sensitive condition of the breeding animal will cause its extension, even while the original cause may not be in operation; but their combined action renders the loss far more serious. If we add to this the tendency which the animal receives from her first abortion to repeat it when next in calf, we see how seriously the mischief becomes multiplied."

The cause of abortion having been discovered, as indicated

by Professor Tanner, the remedy is readily seen: it consists in removing cows and heifers in calf to pastures devoid of these seeds. These seeds are seldom met with until after the end of July, or early in August: consequently, lands may be deemed free from the ergot up to this time; the mowing of grass, also about the end of June, or early in July, is a guarantee against the formation of the seed, and consequently the development of the ergot; if, however, mowing be commenced early, and a rapid growth of grass afterwards occurs, the seeds may grow, and upon them the ergot may appear, when cattle in calf feeding from such pastures are liable to abort.

Treatment.—Remove cattle from the cause, such as bad smells, &c., and if one cow abort take her from the herd, having previously buried the calf in some place at a distance from all pregnant stock. If an animal manifest symptoms of premature labour and is in high condition, she should be immediately placed in a loose box, and two quarts of blood may be taken from her with advantage. Purgatives and any irritating medicine should be avoided. Administer in a pint of water, twice in the day, tincture of opium one ounce. Chloroform also may be given under medical advice, but is dangerous in the hands of any save persons possessing extensive chemical knowledge. Feed also upon food easy of digestion, and under all circumstances keep the remainder of the herd from all exciting causes.

HOW TO EXTRACT A CALF WHEN IT PRESENTS ITSELF IN A WRONG POSITION.

Persons who keep cattle ought to be well acquainted with the manner in which a calf should present itself when in a natural or proper position. All those positions are called unnatural in which the calf presents itself otherwise than *with its head and fore-feet first, and its back towards the cow's back.* It is well known to all those who have the management of cows, or those who practise in medicine among them, that calves are very commonly presented in a variety of different postures, for which no just reason can be assigned; and whenever they lie in a wrong position, both cow and calf are in danger, and the more or less so according to the ability of the person employed to afford the necessary assistance. In the first place, then, after the waters are evacuated, and the head and only one foot present themselves, you must hold the calf's head and await an interval, during which the throes are off; then gently push it back, and bring forward the other foot. By this means a natural presentation is obtained, and the calf may now be extracted without danger. Secondly, if the head only presents itself, and both feet are drawn back, the head must be pushed back with a gentle hand, the utmost care at the same time being exercised, in order to avoid wounding or tearing the uterus. The head having been returned within the uterus, the feet, one by one, must be drawn forward, and be thus placed as in a natural presentation. Thirdly, if all four feet be turned where the back ought to be—towards the top of the uterus—in this situation it will be impossible to extract the fœtus until it be put in a proper position. In operations of this kind much depends upon the management and activity of the person employed in placing the beast in a favourable position. The fore parts of the cow should be slightly raised with straw, or otherwise filled with that or anything else that is soft and easy to lie upon, and properly placed under her. It is seldom, however, in this case that manipulation, without the assistance of instruments, succeeds in extracting the fœtus. Therefore, if repeated manual efforts fail to remove the calf, it will be necessary to secure the head with a rope, by passing it underneath the lower jaw, and afterwards by fastening a rope around both fore-legs, and by bringing both the ropes that secure the legs out on one side of the calf's neck. This done, the hand of the operator must be introduced, and be pressed firmly against the calf's withers, which he must endeavour to turn upwards towards the cow's back, and at the same time an assistant, with the ropes in hand, must be directed when, how, and in what direction to draw them. If little or no impediment exists, the fœtus will gradually turn on itself, and a natural presentation will thus be obtained; when the calf can be steadily removed. Fourthly, it sometimes happens that the hind legs make their appearance. In this case it will be found better to extract in that position than attempt to turn them. Fifthly, frequent instances have occurred where the shoulder has presented itself at the mouth of the uterus, and requires the hand to be introduced in search of the fore legs; or, if thought more proper, the hind legs may be brought forward. This must be left to the judgment of the person employed. Sixthly, instances occur of calves being dropsical in the head. This may be discovered by its size, in which case the other parts are generally small and wasted. Under these circumstances, if the calf cannot be extracted in the common way, nor with instruments, the head must be reduced, or it must be cut away; and this can only be effected with instruments proper for that purpose, and used by a qualified and practical veterinarian. A description of the operation would not be understood by the public generally; therefore it will not be advisable to detail the processes adopted in extracting a calf suffering under the above complications. Seventhly, it sometimes happens, in cases where a calf is dead, that instruments of necessity must be used. In a few cases the dead fœtus, if properly presented, can be removed by inserting the hooked extremity of a long iron rod—an instrument made for this purpose—into some part of the calf's head, as the orbits, sockets of the eyes, mouth, or any other part that may appear at the time most convenient to the operator. Sometimes, however, the fœtus is so enlarged, and the womb so contracted, as not to admit of extraction by this means. It will then be necessary to take it away by pieces—*i.e.*, limb by limb—and in so doing the abdomen of the calf is often obliged to be evacuated in order to lessen its bulk, and thus facilitate its exit.

Several cases of difficult labour, in addition to the above-

mentioned, occur; but they are cases requiring great surgical skill and proper appliances, which are seldom met with excepting in the veterinarian's surgery; and, moreover, although these cases of unnatural parturition bear well-known names, indicative of their nature, they often assume varied forms of complication, which cannot be controlled without anatomical knowledge and great practical skill. Therefore, to write a description of the above would little serve the stockowner, for the interest of whom this essay is intended; and to the scientific veterinarian it would be repeating second-hand stories.

RETENTION OF THE PLACENTA, OR AFTER-BIRTH.

Some authors have stated that the placenta should be removed immediately after the act of parturition is accomplished. To do so, however, shows great want of knowledge, and in nine cases out of ten would injure the animal operated upon. If, however, the animal does not cleanse at the proper time, it is good treatment to administer thrice daily—

Carbonate of potash, ...	half an ounce,
Infusion of savin, ...	1 pound—*Hering*;

and if the above does not assist nature—which sometimes happens, owing to debility of the animal's system, or its not possessing sufficient vital force to contract the uterus, and thus to throw off the after-birth, or persistent contraction of the os uteri may prevent its escape; in either of the above cases, and particularly if decomposition of the placenta has occurred, it will be necessary for the veterinarian to introduce his hand and dilate the os uteri, and extract the placenta carefully, separating it from the cotyledons, one after the other. Afterwards, if the fœtor be great, the uterus may be well syringed out with a weak solution of Burnett's disinfecting fluid. The following may be afterwards given in a pint of warm ale—

Epsom salts, ...	half a pound.
Powdered ginger, ...	1 ounce,
Carbonate of ammonia, ...	1 drachm.

Ergot of rye sometimes acts beneficially in assisting nature to remove the placenta; but it should be given always under professional advice.

PROLAPSUS UTERI,

or, more properly termed, inversion of the uterus, is a very frequent complaint among cows, particularly old ones, after calving, and often proceeds from violent motions that attend the extraction of the calf, and likewise from relaxation of the uterine ligaments. Some cows are more subject to this complaint than others, which in great measure is due to the shape and make of the generative organs. Clater thinks cows most liable to this complaint are those that rise considerably on the small of the back in the form of a curve, and begin to lower towards the tail; the hips, rump, and sirloin being for the most part straight.

J. R. Dobson, in his book on "The Ox: his diseases and their treatment," writes—"A proximate cause of inversion of the uterus is debility in the animal, proceeding from badly got and innutritious provender. As a proof of this in the spring of 1861, following the wet hay harvest of 1860, inversion of the uterus was exceedingly common." Cows that have been previously known to have been subjects of this affection should be kept in a cow-house a short time before the period of calving, the floor or pavement of which must be level; and better still, an advantage will be gained by compelling the cow to stand on an inclined plane, extending from the hind extremities to the fore. By this means the hind quarters will be raised higher than the fore, and when down, the animal will be able to rise with more ease and with less danger of straining herself. If inversion be suspected, the cow ought to be carefully watched at the time of calving, and immediately after it has taken place, Gowing's patent truss should be applied; which consists of a collar which surrounds the animal's neck, and from which two straps proceed on either side of the neck, to be buckled to a pad on the top of a belly-band. To this pad a saddle or backband is attached, ending in a crupper which surrounds the root of the tail; from each side of the commencement of the crupper two pieces of leather form as it were a second or outside crupper, from which point a thick pad to press upon the vagina is obtained, and is secured firmly to this part through the medium of two straps which are passed up on the inside of each hind leg, and on each side of the udder, to be fastened to buckles on the backband, about a foot behind the pad or saddle above mentioned. This apparatus is very useful in cases of inversion of the uterus, and ought to be in the possession of all large dairy keepers. If, however, as is sometimes the case, the inversion foils our endeavours, a clean sheet should be placed under the uterus, which must be carefully cleansed with water at a blood heat temperature from all particles of dirt or dung. The operator now, with the aid of two assistants holding the uterus upon the sheet, should use gentle pressure on the neck of the uterus, and pass in as much as possible; and afterwards the lower and remaining part can with increased force be returned to its natural position. Many ways of operating in this injury have been recommended, but it is always wise to leave it entirely in the hands of those skilled in such matters. In severe cases, when all attempts to return the uterus prove unavailing, very likely mortification of it will set in, when it will be found necessary to remove it; a ligature should be first tied around the neck of the uterus, when the uterus below the ligature can be detached with a sharp knife. The only medicine calculated to be of any use in this affection, is to give, twice daily in thin gruel, half an ounce of tincture of opium.

INFLAMMATION OF THE UDDER,

or mammitis, known to stock-owners by the name of garget, long slough, &c., consists in an inflammatory state of the

udder. Young cows in high condition are its frequent subjects, and especially just after the time of calving. The more aged ones are most liable to it during hot and sultry weather, particularly those which are fattening for the shambles; when this is the case the loss is considerable, as a summer's keep is generally thrown away, to the loss and disappointment of the owner. Cows of gross habit, when overheated or when they have taken cold, or received any injury by blows, &c., or when allowed to remain unmilked for twenty-four or more hours in order, as it is termed, "to stock the bag" for purposes of sale, when it is to the interest of the would-be seller to prove that his cow has a very abundant secretion of milk, are causes most fruitful in the production of mammitis. In this last-named case the udder appears distended, the teats jut out, and from them large drops of milk may be seen dripping on the ground, and sometimes quite a small pool of milk is there collected. It can be readily understood that immediately after parturition, and especially with such animals as are of plethoric habit, that redundancy of blood is sent to the udder, and that milk also in large quantities is determined to that organ for the support of the calf; at first the calf is not able to take milk largely, and consequently the udder becomes overstocked, inflammation sets in; in other words, mammitis occurs. The symptoms indicative of the disease are increased heat of udder, attended with swelling, hardness, and with evidence of much pain on the application of pressure, and sometimes lameness of one hind leg, will be premonitory symptoms of it. The above signs are always associated with much constitutional disturbance—viz., shivering fits, dulness, quickened pulse, laborious breathing, and in severe cases suspension of the function of rumination, and refusal to eat. If the teats be drawn (a process which is always advisable to attempt), a serous fluid will make its escape; and if any milk, it will come away in a curdy form; and if the disease has continued for a length of time, thick matter mingled with blood may make its escape. At a late stage of the disease the udder becomes nodulated, manifesting the formation of matter, and sometimes a large tumour filled with pus will form; but more commonly mortification sets in, in which case death usually terminates the scene.

Treatment.—During the early stage it is good practice to administer

Epsom salts,	1 pound,
Nitre,	1 ounce,

and to strip the teats as clean as possible. Some practitioners advise the abstraction of blood from the abdominal or milk vein, hot and frequent fomentations to the udder; and if the udder be very large, it must be supported by means of a towel fastened by cords over the loins, when a linseed meal poultice, mixed with bran and about two drachms of belladonna in it, will in many cases greatly relieve the sufferings of the patient. Should the above fail, and induration of the udder supervene, or an abscess form, active means must be resorted to. In the first case, stimulating embrocations must be applied daily to the part, viz.,

Linimentum saponis,	½ pint,
Tincture of iodine,	2 ounces.

In the second, if the abscess points it must be carefully opened, and afterwards be well fomented with hot water; gentle pressure, in so doing, must be used in order to evacuate the pus.

If mortification occurs, powerful stimulants must be administered twice daily—

Carbonate of ammonia,	2 drachms,
Assafœtida,	1 drachm,
in a pint of warm ale.	

The last phase this malady assumes is induration of the udder, generally on one side; the only treatment for which is to cause the diseased part to be repeatedly hand-rubbed, and also to apply an ointment consisting of

Biniodide of mercury,	1 drachm,
Lard,	1 ounce,

or the udder may be rubbed daily with linimentum saponis. The administration of drachm doses daily of the iodide of potassium in a pint of ale is recommended by some practitioners. Feed sparingly at first, and upon easily digestible provender; when abscess or mortification occurs, the patient must be well supported with food.

RHEUMATISM, OR JOINT FELLON.

The word felon is of frequent occurrence in the country, and is chiefly applied to diseases proceeding from cold, and is variously called as follows:—Cold fellon, joint fellon, and chine fellon. This complaint chiefly affects milk cows and young cattle at the spring of the year. It may proceed from animals being kept in a state of poverty during the winter, and being suddenly exposed in the early spring to the inclemency of the north or north-easterly winds, in low situations: sudden atmospheric change is also a fruitful source of it.

Symptoms.—The animals for the first two or three days appear stiff in their joints; afterwards they tumify or swell, the inflammation being confined to the ligaments, tendons, and synovial membranes of the joints. Rumination is suspended, pulse accelerated, breathing disturbed, and suspension of the lacteal secretion and constipation mark the extent at which the disease has arrived. The sudden shifting of the pain from one joint to other, and its concentration in the white fibrous tissues, are very distinctive symptoms of rheumatism. Sometimes the inflammation runs so high that disorganization of a joint may occur, when bony depositions will grow on it to so great an an extent as to impede permanently its action.

Treatment.—As soon as the disease makes its appearance, the patient must be placed in a warm cow-house or stable in which ventilation and drainage is properly secured; and the joints or parts affected should be placed in flannel bandages

and rugs must surround the body, which can be previously well rubbed with a liniment consisting of turpentine and olive oil, of each equal parts, and administer in a pint of warm ale, twice daily.

Carbonate of ammonia,	2 drachms,
Aloes,	1 drachm,
Camphor,	1 drachm.

Feed on barley flour and roots, and good hay.

SORE TEATS.

Injuries and obstructions in the teats are of frequent occurrence, and particularly during very cold weather, among cows that have recently calved. Sometimes they are only inflamed, owing to not being dried after milking, and exposed immediately afterwards to the inclemency of the weather; this inflammation often is associated with the existence of cracks, which are very painful, and cause the animal to be very fidgety during milking time. Small tumours and lacteal calculi (stones), and strictures, occur in the teat and often stop the fall of the milk, and impede its passage through the duct. Warts are often a cause of great discomfort to the cow; but they are generally of such a shape as to enable us to remove them by placing a ligature around the base of each wart, and keeping it there until it sloughs off. If the base be very wide, excision with the knife must be resorted to.

Treatment.—Administer in a pint of warm gruel—

Epsom salts,	half a pound,
Nitre,	half an ounce.

Well foment the udder and teats with warm water; afterwards well dry them, and if cracked, apply glycerine: if inflamed only, apply a lotion, after every milking, consisting of—

Tincture of arnica,	1 ounce,
Water,	1 pint.

In cases of lacteal obstructions their removal must be attempted with a probe, when they must be extracted either bodily or in pieces. Strictures must be dispersed by passing up the duct a probe at first of small size, and gradually increasing the size of them until a probe sufficiently large in diameter has removed the constriction.

TO DRY A COW OF HER MILK.

Old authors placed much reliance upon certain useless medicines which they prescribed "to dry cows of their milk." Every stock-owner of experience knows well that if a cow is "to be let off her milk," she requires that it be done gradually, by half milking at first, missing one milking, two, and so on. A dose of Epsom salts and nitre may tend also to drain the system; and if the feeding of milch cows be attended to at this time—namely, if only small quantities of food be administered—the milk will cease to be secreted, without any fear of mammitis occurring. It has been proved that the administration of iron compounds tends powerfully to arrest the secretion of milk, and on one or two occasions I have given daily drachm doses of the iodide of iron to cows, for this purpose, and have succeeded in producing the required result within a week.

THE COW-POX.

This disease was never noticed by any author before Jenner attempted to convince the world of its utility in protecting the human race from that baneful disease—small-pox. Vaccination, since this time, has been introduced throughout Europe, the East and West Indies, besides many other parts of the civilized world. Some persons conjecture, (and Jenner was of their opinion) that grease in the heels of horses is of the same nature as cow-pox; but this is evidently a mistake, as facts contrary to this belief have proved. Variola of the cow consists in an inflammatory condition of the udder and skin, and more particularly such parts of it as are denuded of hair, associated with slight constitutional disturbance. The disease, which is highly contagious, commences with slight inflammation of the skin, indicated by the appearance of small red patches on the udder or hairless parts about the dock. Upon these papillæ arise in four or five days; small bladders or vesicles appear containing a transparent fluid, the true vaccine lymph: at the expiration of three days more the vesicles secrete a thick yellow matter, and are then called pustules. In the course of a few days a scab forms upon them, which, if not rubbed away, peels off, leaving the skin underneath sound; should the scab be removed in the act of milking, ulcers will supervene. A very mild solution of alum water, however, will often put matters right. In this affection the most simple treatment is demanded, chiefly consisting of warmth and good nursing: all lotions and medicinal applications for the skin should be avoided, as the disease will run its course. A mild aperient may be administered at the onset; afterwards good soft food, such as bran, boiled carrots, oatmeal made into a mash, can be given.

ANGLE-BERRIES

are cutaneous warty excrescences growing out above the surface of the skin, and are of different sizes, and constitute great eye-sores. Young cattle are most subject to them, and sometimes when animals are well fed, and as age advances, they fall off without any interference. Warts make their appearance on different parts of the body, and on the udder they are not only disagreeable to see, but cause the cow to be very troublesome during milking time. These excrescences, if narrow at the neck, are called angle-berries, and may be removed by tying tightly round the neck a piece of tar string, when in a few days they will drop off, as the result of strangulation. A wart with a wide base can be extirpated with the knife, and the bleeding surface afterwards touched with a heated firing iron; or warts, if dressed with the following ointment, thrice weekly, in two or three weeks slough off: by this means hundreds may be removed:—

Arsenious acid,	1 part,
Lard,	4 parts;

or they may be dressed with a paste made up with sulphur and sulphuric acid; this must be most cautiously used, and should not be applied excepting by a professional man.

WARBLES

consist of small tumours existing in different parts of the skin, and owe their presence to the existence within them of small grubs or larvæ. The eggs producing the larvæ are deposited there about the latter end of the summer by a fly—the *Œstrus bovis*, ox-fly—where they remain until the spring, when the larvæ having been matured, make their escape, and are converted by metamorphosis into the gadfly. Warbles are removed by pressing them between the finger and thumb, or by puncturing with a red-hot needle. They seldom affect the health of animals infested with them.

THE MANGE.

This affection is well known to most graziers; it is seated in the skin, and poverty of condition seems to favour its extension. Symptoms:—The skin all over the body appears thrifty, and every time the beast rubs himself, which he is constantly doing, a thick, white scurf, of a scabby nature, is to be seen on the spot where he has rubbed himself. *Scabies bovis* is occasioned by the existence in the skin of an insect—the *Acarus bovis*—which burrows beneath it, and in so doing raises up raw-looking pimples. The mode of cure is to destroy the parasites, which is easily effected by dressing the skin all over, twice weekly, with a lotion—

Carbolic acid,	1 ounce,
Water,	1 pint;

or an ointment may be rubbed into the affected part, consisting of—

Iodide of sulphur,	1 drachm,
Lard,	1 ounce.

Remove affected cattle from their companions, as this disease spreads rapidly by contagion.

LICE IN CATTLE

require no description, as this filth is always visible to the eye. The irritation caused by these creatures is so excessive as to prevent animals infested by them putting on flesh. Wash the affected parts with—

Carbolic acid,	1 ounce,
Water,	1 pint,

and feed well, as low condition, like mange, seems to favour the increase of these parasites. The author has known lice leave the skins of animals, without any medicinal application, in a few weeks after having been well fed, and after they had improved in condition.

BULL-BURNT.

Gonorrhœa is not common to the horse and dog, but ferquently occurs amongst cattle; it is a local disease affecting the mucous membranes of the urino-genital organs of the bull and cow. It is supposed to follow the act of copulation in an animal of plethoric habit, and especially in hot weather. The animal, the subject of it, evinces slight febrile symptoms, associated with uneasiness, and the urine is emitted very scantily, with evident pain.

The mucous membranes of the part expel a muco-purulent discharge from small pustules, which ultimately develope into ulcers and fungoid growths. Treatment:—Administer, thrice weekly, half doses of Epsom salts, and, with a cow, well cleanse the parts with warm water, and afterwards bathe the parts with a lotion—

Acetate of lead,	1 drachm,
Water,	1 quart.

On this disease happening to a bull, unless the case be very simple, it will be necessary to cast him, in order to examine the sheath and penis, and to apply the requisite remedies, which consist of mild astringent lotions, such as—

Sulphate of zinc,	½ ounce,
Water,	1 pint,

which must be injected up the urethra and over the parts affected. If the disease extend to the development of warts, or extensive ulcers, then such must be dressed twice weekly with a rod nitrate of silver; and in long-standing cases fungoid growths must be excised with the knife. In all cases great cleanliness must be observed, which is an all-important adjuvant in producing cures.

WOUNDS,

although not so common to cattle as horses, yet do sometimes occur from injuries sustained in consequence of their breaking through fences, or from blows inflicted with their horns whilst fighting. Wounds, for the sake of description, may be divided into four kinds, viz., contused, incised, lacerated, and punctured. A contusion is simply a bruise; but, at the same time, it may be of so extensive and complicated a nature as to involve in injury adjacent parts, especially when occurring near the region of the lungs, liver, &c.; and sometimes such wound causes internal hæmorrhage, which is always accompanied with a greater or less amount of danger. In treating bruises warm fomentation should be resorted to, and the following lotion, by means of a bandage kept continually moist with it, must be applied:—

Tincture of arnica,	1 ounce,
Nitre,	1 ounce.

An incised wound consists of a clean cut, more or less deep, inflicted with a sharp instrument, through the skin and muscles. In cases of this kind it is always advisable to

send at once for a skilled veterinary practitioner, whose attention will be immediately directed to the copious bleeding which usually attends such accidents. This hæmorrhage it will be his duty to arrest, which, if only small vessels are cut, may be stopped by sluicing the part with cold water: if, however, large vessels, or an important artery be divided, then the bleeding end, or ends, must be secured with a ligature. Having arrested the hæmorrhage, the only step remaining is to draw the edges of the wound together, which is effected by bringing the lips of the wound in close contact, and securing them in this position by means of sutures. This is accomplished with a curved needle, made for this purpose, and threaded with strong silk cord, or wire, silver being the best; each suture must be separate from the other, and, of course, must necessarily be tied, or in the case of wire, be twisted, the one independently of the other. Cold water applications, by means of a wet bandage, will also afford the best dressing for the injured surface; sometimes, however, to arrest the formation of pus, syringe the wound carefully with a weak solution of nitre and water. Lacerated wounds are the most severe the veterinarian has to deal with, as they are usually inflicted with a blunt instrument, and are sometimes associated with fractured bones; and if not, they usually consist of large rents of the skin and muscles, and sometimes with loss of substance (as a piece of skin and muscle is not uncommonly removed), or is so much injured as to necessitate extirpation. The edges of these wounds having been well examined and bathed with warm water, must be brought in apposition with sutures, and sometimes one or more quill sutures must be provided, which consist of the quill end of turkey or flexible feathers, which are secured to the lips of the wound with looped sutures. Should mortification ensue, a lotion consisting of—

Carbolic acid,	1 ounce,
Water,	2 pints,

can be syringed into the wound daily, and stimulants consisting of two-drachm doses of ammonia in warm ale can be given twice daily. Punctured wounds occur very often among cattle, as such injuries are inflicted with the horns. Sometimes the accident in these cases appears trifling; but experience proves that sometimes they are attended with disastrous, if not fatal consequences. A punctured wound should always, even if the aperture is very small, be probed in order to ascertain its depth, which must be kept open for some time in order to prevent the occurrence of deep-seated abscess, which, if allowed to form, will involve a simple wound in other complications, such as fistula, &c. In this case it is good practice to open with a knife the external wound, and syringe into the more deep-seated disease a solution of nitric acid and water; half an ounce of the former to a quart of the latter will cause a slough, which will destroy the pus-generating membrane, and leave behind a healthy granulating surface. When the bones are broken the detached pieces should be removed; but if not easily operated upon, they must be left to exfoliate of themselves. During this process the animal is to be fed well, and in some cases supported with strong ale and tonics, such as—

Disulphate of quinine,	1 drachm,
Warm ale,	1 pint.

It is advisable in all cases of the above to allow a skilful veterinarian to attend, who will be able to diagnose coming mischief, which those unacquainted with physiological research would fail to recognize, and will therefore often preserve life, which otherwise would be sacrificed for lack of skill.

WOUNDS OF THE JOINTS

are constantly associated with fractures, which are described as simple, comminuted, and compound: simple, when a bone is broken into two pieces; comminuted, when broken into several pieces, or is crushed; and compound, when any portion or portions of the broken ends protrude through the muscles and skin. In cattle, simple fractures alone are capable of being set, and this may be effected by placing the patient in slings, and placing the injured parts in splints and starched bandages. In cases of injury to the joints, where the synovial membranes are opened, it is good practice to well wash the wound, and afterwards sprinkle over it a powder, consisting of—

Powdered myrrh,	of each equal parts,
" sulphate of iron,	
" alum,	

and place over the wood a pledget of wool, and confine the joint, and the whole of the leg below it, in a linen bandage: a pressure only sufficient to keep the bandage in its place, and not so great as to impede circulation, must be insured. Feed upon a nutritious diet, and allow plenty of it.

Strains of the joints, where evident pain and swelling occurs, are best treated by the application of light linen bandages, kept constantly saturated with one of the following lotions:—

(1.)	Tincture of arnica,	1 ounce.
	Water,	1 pint.
(2.)	Gowland's extract,	1 ounce.
	Water,	1 pint.
(3.)	Tincture of opium,	½ ounce.
	Tincture of arnica,	½ ounce.
	Nitre,	1 ounce.

No. 3 should be applied when great pain is evidenced. A mild dose of physic, also, can be given, viz.:—Epsom salts, half a pound in a quart of water.

LOCKED JAW.

Tetanus, commonly called locked jaw, is an affection of the nervous system, which causes contraction and spasm of the muscles of voluntary motion, attended with tenderness and rigidity of the parts affected. Tetanus arising from injury—such as wounds—is called traumatic; and when from a variety of causes, is denominated idiopathic. This malady has received various names, indicative of the parts affected:—

1. Trismus, when the rigidity is confined to the flexor muscles of the lower jaw or throat.

2. Eprosthotonos, when the flexor muscles are affected and the spine is arched, presenting a concave line to the ground.

3. Opisthotonos, when the extensors are involved and the spine is curved downwards, presenting a convex line to the ground.

4. Pleurosthotonos, when the body is drawn to one side.

Each of these states is very difficult of cure, and if arising from injury (traumatic tetanus) rarely yields to treatment. Locked jaw is most commonly noticed in veterinary practice, and is readily recognized, by the subject of it stretching out its neck and nose. On placing the fingers in the mouth, it will be immediately ascertained that the jaws are fixed almost to immobility. Great nervous excitement prevails; the bowels are constipated, and the excretions are constantly locked up. The treatment for tetanus consists in first opening the bowels with purgatives, which, in the case of trismus, will be administered with difficulty; and placing the patient in a loose box, removed from all noise, and from the ingress and egress of strangers: half-grain doses of strychnine given daily have in some instances acted beneficially. I have seen good results follow the inhalation of chloroform; but the influence of this anæsthetic must be repeated. Perfect rest and quietude is the great essential in the treatment of all kinds of tetanus. Oils to rub into affected parts, and medicines, have been prescribed. The Pharmacopœia itself has been ransacked, but to no purpose; no specific for this malady has yet been discovered. I once heard Professor Spooner tell his pupils, that the best treatment for tetanus was the "stable-key." "Secure your patient in a loose box; keep the key in your pocket; insist upon perfect quietude." This advice was sound, and without comment is repeated to my readers.

THE FOUL IN THE FOOT

proceeds from full habit of body, or from any external cause, by foreign agents insinuating themselves between the digits. These should be at once extracted; when the removal of the cause usually cures the effect. Sometimes, however, it makes its appearance in the form of a deep crack, either between or around the claws, which is attended with considerable inflammation, and in a short time will discharge an offensive matter, similar to that noticed in horses the subjects of grease.

Many have been the theories about "foul in the foot." Youatt, in his book on "Cattle and their Diseases," clearly sums up all evidence in the matter—"It is generally believed that there is a constitutional tendency to diseases of the feet in cattle, resembling the rot in sheep, but this has never been satisfactorily proved; and the simplest explanation of the matter is, that inflammation was produced by some external cause; that it ran its usual course; that suppuration followed, and matter was formed; that it burrowed in various parts of the foot, and broke out on the coronet; that sinuses remained, and that the ulcer took on an unhealthy character; fungus shooted up—in short, there was a quittor similar as in the horse, but on a smaller scale, and more manageable."

This malady is most prevalent in low marshy grounds, when the hoof, from the continual presence of moisture, becomes softened, and by this means is rendered more susceptible to disease, and less able to resist injury. When an animal is noticed to be lame, it should be immediately placed in a loose box or cow-shed, and the foot should be carefully examined. Sometimes to effect this object it is necessary to secure the animal with hobbles, when the horn should be cut down at the seat of injury; and if a stub or grit be present, it must be removed, and afterwards a linseed-meal poultice applied. If the operator fail to discover the seat of mischief, then a poultice, as directed, can be applied for two or three days, and sometimes a projecting red spot will arise, which he must open; and if any sinuses occur, they should be well syringed out daily with a solution of hydrochloric acid and water—a wine glassful of the former to a pint of the latter. If fungoid growths occur, remove them with a knife, and afterwards reduce them still further with a rod of nitrate of silver; and also use caustic to any ulcer or proud flesh which may appear, which is often the case in this disease. Dress feet, from which a fœtid discharge flows, with Burnett's disinfecting fluid. If the diseased parts above alluded to assume a healthy appearance, they may be dressed daily with tincture of myrrh, and an aperient given, viz.:—

Barbadoes aloes, in powder, ...	4 drachms,
Linseed oil, ...	½ pint.

ON THE DISEASES INCIDENTAL TO YOUNG CALVES.

THE METHOD OF TREATING THE NAVEL-STRING AFTER EXTRACTION.

As soon as the calf has been properly cleaned by the mother licking it, the navel-string should be examined, and if it bleeds, a ligature can be passed round it, about two or three inches from the belly. Secure it fast, and then clip it off with a pair of scissors a little below the tied part. Sometimes, four or five days after birth, swelling, attended with inflammation of the navel, takes place; when hot fomentations must be frequently applied, and if the tumour points, it may be opened with a lancet; and an ounce of castor oil in a wine-glassful of port wine will assist treatment. Sometimes bleeding occurs from the navel itself, caused by the removal of the entire length of the cord, by the cow biting it off, or as the result of accident. In this case the lips of the wound can be brought together with a large pin; or sometimes a pledget of wool inserted in wounds and confined there by means of a bandage, will arrest the hæmorrhage. Hæmorrhages of this kind often cause great prostration, and the subject of them will derive benefit from the daily administration of the following:—

Disulphate of quinine, ...	5 grains,
Port wine, ...	a wine-glassful.

HOOSE IN CALVES.

This disease most commonly attacks calves during the first year, and generally seizes them while at grass in the summer. In some dry summers it has carried off large numbers. The symptoms are a dry, distressing cough, caused by the presence in the trachea (wind-pipe) of numerous small worms (the *Filaria bronchialis*), sometimes collected together in a bunch, surrounded with mucus, or dispersed in the smaller branches of the bronchial tubes. This malady causes the subject of it to breathe laboriously and rapidly waste in condition, and if prompt remedies be not applied, death supervenes in a few days.

Treatment.—Administer an ounce thrice daily of the following:—

Linseed oil,	6 ounces,
Turpentine,	4 ounces.

I have found marked benefit derived from inhalation of chlorine gas; it must be administered cautiously. All animals affected should be placed in a loose box, in which all windows and apertures must be closed; and in such building several plates, each containing chloride of lime, should be distributed. The lime must be well saturated with water, when a small quantity of sulphuric acid can be poured over it, and the chlorine gas will be eliminated, when the patients will breathe this atmosphere impregnated with the gas, which, in passing to the lungs, will come in contact with the parasites, and cause their death and ultimate expulsion. Repeat the inhalations every other day. Should the above treatment succeed, and the animals be left emaciated, of course nutritious food will do much in obtaining good condition; but it can be judiciously supplemented by administering daily ten grain doses of the disulphate of quinine in half a pint of warm ale. Clater writes—"In many instances where this complaint has baffled the power of other medicines, the disease has instantly given way on their taking one tablespoonful of spirits of turpentine, without mixing it with anything. It may be repeated every third day for three times."

DIARRHŒA, OR DYSENTERY.

This is a disease to which young calves are very subject, at the age of from two to six weeks, and is chiefly brought on by change of diet, or by scarcely allowing these young creatures that subsistence which nature requires at so early an age, and for want of which great numbers die. The milk of the mother may not agree with the calf; it may be too poor, when acidity in it is likely to occur, and to irritate the mucous membranes, particularly of the fourth stomach; or it may be too rich, and act in too stimulating a manner, and thus derange the digestive functions. The time of changing the diet demands much caution; and if the calf is to be fed by hand for the first fortnight, it should be fed on the milk direct from the cow, and afterwards it may be mixed with older milk; but in no case must it be in the least degree acid, and a little porridge may be introduced. The symptoms are great weakness, loathing of food, a continual purging; everything it takes seems to turn acid, and coagulates on the stomach. Towards the last stage of the disease the stools become bloody and fœtid, and large portions of the defensive mucus of the intestines is mixed with them; after which mortification sets in, which terminates in death.

Treatment.—Administer with a wine-glassful of port wine—

Castor oil,	1 ounce,
Tincture of opium,	half a drachm.

In cases of long standing there is always a continual motion to dung, called tenesmus. The pain in this case appears to be limited to the rectum, and may be removed by the administration of warm water clysters. Administer also daily a teaspoonful of tincture of opium and half a drachm of carbonate of soda in the same quantity of port wine as above directed. The calf also should be drenched with starch and thick gruel.

COSTIVENESS IN CALVES.

The costive habit of some calves may take place at the age of three or four days, and this occurs generally from the mother's first milk, commonly called "beestings," having been denied the calf by previous milking. The prompt administration of the following usually relaxes the bowels—

Castor oil,	2 ounces,
Ginger, in powder,	1 scruple,
in half a pint of thin gruel, milk-warm.	

Sometimes this disease occurs from over-feeding; the calf having been allowed to lie by the side of its mother in a stall and take milk at its pleasure. This practice is good if the calf be allowed to follow its mother about the pasture, for then exercise is necessitated, which assists digestion; and in this case the young can be allowed with impunity to take milk when it pleases, as it is only obeying a natural law. But in the former instance no exercise can be taken; the calf sucks, gets too full, and lies down. This is repeated time after time, until the digestive powers are overtaxed, and the fourth stomach becomes filled with hardened curd, and a stoppage to the passage of the ingesta is present. At other times, again, change of milk, especially that of a foster-mother, will derange the secretions, and then similar constipation supervenes.

Treatment.—Administer daily—

Epsom salts,	2 ounces,
Liquor ammoniæ,	4 drops,
in a pint of warm water.	

Calves are subject to this malady when first introduced to dry feeding—viz., upon hay, &c., say, at about eight or ten weeks old. This food becomes impacted, not in the fourth, as above noticed, but in the third stomach, before this organ has derived sufficient power to grind down the hard and fibrous portions of food. This disease is indicated by cessation

of rumination, enlargement of the abdomen, and persistent constipation.

Treatment.—Administer daily—

Barbadoes aloes,	2 drachms,
Castor oil,	1 ounce,

in a pint of warm ale.

After recovery, feed upon oatmeal and bran mashes, and allow plenty of good water.

POISONS.

Poisons may be considered under two heads—external and internal. A poison is defined to be "any substance which, when applied externally or internally to the animal system, is capable of destroying life." Poisons have differents effects upon the system, according to the parts they are brought in contact with. For instance, if injected into the veins, they rapidly destroy life; and if absorbed into the stomach or intestines, or exhibited to the serous and mucous membranes in a fluid or gaseous form, they are sure to produce death. Their action, however, is not so rapid when applied to the skin, as the power of cutaneous absorption is not so great as that of the mucous membranes. There are also poisons, as that of the viper, which, if applied to a wounded surface, prove fatal, but are quite innocuous when taken into the mouth, the stomach, or intestines.

"The action of poisons may be considered as local and remote. The local effects are of three kinds, viz., corrosion, or chemical decomposition, as is seen in the effects of strong mineral acids and alkalies; irritation, or inflammation, varying from simple redness in its mildest to ulceration and gangrene in its most severe degree; and a sympathetic effect produced on the sentient extremities of the nerves, as is felt on the local application of prussic acid, &c.

"The remote effects are those affecting an organ remote from the part to which the poison has been applied. Various narcotic poisons produce but little local change, though their remote effects are very remarkable. Many substances have both a local and remote action, as is well seen in the influence of cantharides upon the part to which they are applied, and their remote effect upon the urinary organs.

"Medium by which the remote effects are conveyed:—This is by one of two modes, or, as some contend, by both; by absorption, *i.e.*, by the passage of poisonous particles into the blood, or by sympathy, *i.e.*, by an impression transmitted through the nerves."—"Memoranda on Poisons." T. H. Tanner, M.D.

Much evidence could be adduced proving absorption to be the most potent agent in transmitting poison through the system, *i.e.*, in conveying its influence to remote parts; for instance, prussic acid has been discovered in the blood of an animal which died in thirty-five seconds after administration, and prussiate of potash was evacuated in the urine within one minute of its being swallowed on an empty stomach. As absorption, therefore, is so rapid, it is somewhat difficult to explain how poisons do act by sympathy; the only argument in its favour that has ever been adduced being the rapidity with which death ensues after the administration of some poisons. It has been shown above how rapidly absorption takes place, so rapid, indeed, as to render it almost impossible to determine whether an animal has been destroyed by the action of poison, through the medium of absorption or sympathy; ferrocyanide of potassium was injected into the jugular vein of a horse, and was discovered in the vein on the other side of the neck in nineteen seconds. And other experiments showing the rapidity with which poisons are absorbed could be cited, showing how quickly poisonous agents destroy life.

Poisons which injuriously affect the well-being of animal life may be divided into two classes, viz., vegetable and mineral. The former more commonly find their way into the stomachs of the ox tribe; the latter also, as in the case of lead-poisoning, mentioned under "Colic," and when exhibited for malicious purposes, produce death among cattle. In all cases of poisoning it is good practice to effect the discharge of the offending agent from the system, which is obtained by the stomach pump or purgatives, or both, and by emetics. The last-named agents will not answer our purpose in cattle practice, although useful in the treatment of carnivorous animals. In a case of suspected poisoning, antidotes, if the nature of the poison be somewhat accurately ascertained, can be administered in order to counteract the action of the supposed poison. In cases of corrosive and irritant poisoning, linseed meal, mingled with wheat-flour, as a thin gruel, can be given to sheath the mucous membranes of the alimentary canal, and immediately afterwards administer the following dose:—

Linseed oil,	1 pint,
Nitre,	1 ounce,
Carbonate of ammonia,	2 drachms,

in a pint of strong ale.

To describe the action of various poisons, and the antidotes capable of counteracting their effects, would fill a volume, and would, when detailed, be little understood by "every" stock-owner. In cases of poisoning it is always wise to send for a scientific veterinarian, who can detect symptoms, and with the aid of a toxicologist, *i.e.*, if not one himself, can suggest remedies, or prescribe antidotes.

The Bite of Venomous Reptiles.—In this country we have but few poisonous reptiles compared with those found in warmer climates, where they often prove fatal to man and beast.

The viper and adder are most common in this country, and the bite of these reptiles is often attended with dangerous consequences. Neat cattle are more liable to be stung by these reptiles than any other of the domestic animals. Some instances have been known where the tongue of the beast has been stung while grazing. Adders seldom attack cattle, except the latter disturb them when grazing; this is the chief reason why so many of them are bitten about the head, and

sometimes about the feet. The stings of the hornet, wasp, or bee, are attended also with considerable pain and inflammation, and require similar treatment to the former. The following liniment Clater, informs us, he has found to be a powerful remedy in checking the progress of the poison, and in expelling it from the part effected, viz.:—Take olive oil, half a pint; strong spirits of hartshorn, four ounces; opodeldoc, six ounces; spirits of turpentine and tincture of opium, of each four ounces. Put them altogether in a bottle, and shake them well every time they are used.

The above prescription is given *in extenso*, as it contains medicinal compounds (viz., opium and olive oil) which we have applied since we were children to "stings," but more especially because Clater prescribes spirits of hartshorn, or liquor ammoniæ, which is said lately to have counteracted the effects of snake-poison. An Australian physician informs us that, on two or three occasions, he has injected into the wound caused by a snake-bite three or four drops of liquor ammoniæ, and that it has acted as an antidote to the poison; others also bear testimony to the truth of this assertion. If future applications prove its efficacy, of course a very valuable antidote to the poisonous effects of venomous bites inflicted by reptiles has been discovered. Hot and frequent fomentations to the affected part will also assist the above treatment.

THE CATTLE PLAGUE,

or Rinderpest, is a malady that has defied almost every treatment, and during its visit to our shores in 1865-66, the pole-axe alone prevented its ravages. The rinderpest is seldom absent from the steppes of Russia, and is said to spontaneously originate there—a statement which demands more investigation, until this assertion can be received as a fact. When once this disease makes its appearance in a district, experience has proved that few cattle escape its infection, or are able to resist its fatal termination; consequently, this malady acts heavily as a pecuniary subtracting influence to the wealth of stock-owners. The opinions of many eminent physicians and veterinarians will be detailed in the following article, particularly because, during the outbreak in this country in 1865-66, it became law, that when the disease appeared, immediate slaughter was to take place.

The materies morbi, like other allied maladies, lies dormant in the system for several days—about nine; and during this period the animal does not manifest symptoms of ill-health. The disease is first recognized by a slight cold, ushered in with shivering fits and with spasmodic twitchings of the muscles, especially of the shoulders; the coat stares, the back is arched, the appetite fails, and the patient ceases to ruminate; as the disease progresses the extremities grow cold, and pulse rises to ninety. The above symptoms, by themselves, would not give sufficient evidence of rinderpest were they not followed with others, viz., a discharge from both nostrils, consisting of mucus mixed with flocculi of lymph, soreness of throat associated with a distressing and husky cough; the countenance also gives evidence of pain; the vessels of the eye-balls become red and swollen, and discharge, mixed with blood and pus (matter), escapes from their inner angles; the bowels are at first constipated, but afterwards violent diarrhœa sets in; the stools at the same time being very offensive are mixed with a jelly-looking substance, composed of mucus, flocculi of lymph, and blood, and, in some instances, of small detached pieces of the inner lining of the intestines; the animal's strength now rapidly fails, the twitchings of the muscles subside, and within the areolar tissue of the same, emphysema occurs, caused by the gas eliminated from the decomposing blood, and death terminates all suffering.

It will, perhaps, be remembered that in December, 1865, Dr. Murchison wrote a letter to the *Lancet*, in which he asserted that the cattle plague and small-pox were similar diseases; to this statement many subscribed. Soon after Dr. Murchison's letter came to my notice experiments were immediately instituted, in 1866. Dr. Murchison argued, if small-pox and cattle plague are identical diseases, then the vaccination of healthy stock will prevent in them the occurrence of rinderpest. Dr. Murchison, in his examination of cattle the subjects of cattle plague, discovered in some instances "circumscribed circular flattened vesicles, some as large as a threepenny piece, on the udders of cows that had died of the plague, resembling in every respect the vesicles of cow-pox." This state of the malady was, of course, sometimes presented, but was in my experience a very unusual pathological state; that is to say, during the examination of some two thousand subjects of rinderpest, I only found three cases with vesicles on any part of their bodies; but as Dr. Murchison's is one of the valuable contributions to medical literature, it is reproduced *in extenso*.

"*On the points of resemblance between Cattle Plague and Small-pox, by C. Murchison, M.D., F.R.C.P.*

"The main anatomical characters of the disease are catarrhal or croupal inflammation of the lining membranes of the digestive canal and of the respiratory passages, and, in fact, of all the mucous membranes; an unusually dark colour of the blood; ecchymoses or hæmorrhages in various parts—such as beneath the skin and into its substance, beneath the mucous and serous membranes of the third and fourth stomachs and bowels, and beneath the endocardium; an aphthous condition of the mouth, nostrils, and vulva; the exhalation of a peculiar offensive odour from the whole body, but especially from the abdomen; and an unusual proneness to decomposition.

"In my former communication, it was shown that the dogmatic assertion that rinderpest was the precise pathological equivalent of human typhoid or enteric fever, was devoid of foundation. So far as I know, this opinion has been confirmed by every subsequent observer who has dissected the diseased cattle for himself, and published the results of his investigations. All agree in stating that the essential lesions of human typhoid fever are absent. A grave pathological error has thus been corrected.

"Typhoid fever, however, is not the only human malady to which cattle plague has been thought to be intimately related.

By different writers rinderpest has been compared to contagious typhus, scarlet fever, erysipelas, influenza, and dysentery. A careful study of the subject has satisfied me, that all these affections are entirely distinct. It is not my present object to enter in detail into the points of distinction between rinderpest and the several diseases now mentioned. This I have done in a report which I have been requested to prepare for the royal commission 'On the Relation of the Cattle Plague to Human Diseases.' In the meantime, I desire to impress more particularly on the profession, that there is one human disease which, as regards its relations to rinderpest, cannot be dismissed so lightly. If this disease be proved to be the same as rinderpest, not only will the benefits to pathological science be enormous, but a certain means of preventing the cattle plague will be placed within our power. The disease I allude to is small-pox.

"The resemblance of rinderpest to small-pox is no new discovery, although latterly it has been lost sight of. Upwards of 150 years ago, Ramazzini, in his admirable account of the cattle plague which pervaded Italy in 1711, enumerated among the symptoms 'pustulæ quinta vel sexta die per totum corpus erumpentes, ac tubercula variolarum speciem referentia.'* Lancisi likewise, in his description of the same outbreak, observed, 'Semper autem phlogoses, pustulæ, et ulcera linguam et fauces summo cum ardore obsidebant.'†

"The physicians who described the outbreak of cattle plague in Britain in the middle of last century, constantly refer to the pustular eruption. Dr. Mortimer describes "scabby eruptions in the groins and axillæ which itch much; for a cow will stand still, hold out her leg, and show signs of great pleasure when a man scratches these pustules or scabs for her."‡ Dr. Brocklesby remarks: "Frequently we may observe pustules break out on the fifth or sixth day, all over the neck and fore parts.§ And lastly, in 1758, Dr. Layard writes thus: "Whoever will compare the appearances, progress, and fatality of the small-pox with what is remarked by authors of authority, as Ramazzini, Lancisi, and other observers, relative to the contagious distemper among horned cattle, will not be at a loss one moment to determine whether this disease be an eruptive fever like unto the small-pox, or not."‖ The outbreak of cattle plague here referred to commenced in England in 1745, and is generally said to have died out at the end of twelve years, or about 1757, and not to have reappeared until the summer of 1865. But in 1769 the disease was again so prevalent and fatal that it was referred to by his Majesty George III., in his speech at the opening of Parliament in January, 1770, as a great national calamity. It is a most remarkable fact, that this last outbreak has been alluded to by most subsequent writers as an undoubted epizootic of variola, and that Layard, who described both this outbreak and the preceding one in the Philosophical Transactions, regarded them as identical, recommended and practised inoculation in both, and in support of his opinion quoted the following passage from a letter addessed to him by Vicq d'Azyr, a great French authority on Epizootics: 'Il me parait comme à vous que c'est toujours la même maladie qui a regné depuis 1711; et qu'elle a des grands rapports avec l'eruption varioleuse.'* It is generally believed that it was the remains of this violent epizootic that Dr. Jenner found in Gloucestershire, which, being communicated to the milkers, rendered them insusceptible of small-pox. With these and many like observations on record, it is surprising that the cutaneous eruption should have been so long overlooked in the present epizootic.

"Early in the month of September I was struck with the occasional presence of circumscribed circular flattened vesicles, some of them as large as a threepenny piece, on the udders of cows that had died of the plague, resembling in every respect the vesicles of cow-pox. In one specimen which Professor Gamgee had the kindness to show me, this resemblance was most striking. Further observation has satisfied me that these large well-developed vesicles are only present in a few cases, but that in almost every case, and probably in all where death has not occurred within the first three days of the disease, there is a papular or pustular eruption on the skin, closely resembling the eruption of small-pox. This eruption is not confined to any particular part of the integuments, but is most abundant on the back of the neck and shoulders, in the neighbourhood of the mouth, on the udder and scrotum, and on the skin surrounding the anus and the entrance to the vagina. A minute description of this eruption is contained in my official report. At present it will suffice to state that it appears to consist, in the first instance, of minute pimples or elevations, which become softened at their summits into pustules. These speedily dry up, and form a scab, on detaching which the subjacent cutis appears raw or superficially ulcerated. Petechiæ are not unfrequently interspersed through the eruption. This eruption accounts for the spots and stains observed in the tanned hides of cattle that have died of the plague.

"But the cutaneous eruption is not the only character in which rinderpest resembles small-pox. Its close resemblance, if not still more intimate relation to human variola, is borne out by the following considerations:—

"1. Small-pox is the only acute contagious exanthem in man that assumes a pustular form. The eruption in rinderpest is also pustular. Any difference between the two eruptions may readily be accounted for by differences in the skin of men and cattle. In both cases, the eruption extends from the skin to the interior of the mouth and nostrils; and in both the pustules are often interspersed with petechiæ. Moreover, in certain cases of rinderpest, the eruption on the udder assumes the form of large flattened vesicles, indistinguishable from those of ordinary cow-pox.

"2. The other prominent symptoms of rinderpest are also those of small-pox—viz., pyrexia, lumbar pain, running from

* Opera Omnia, Genevæ, 1716, p. 787.
† De Bovilla Peste, Romæ, 1715, p. 155.
‡ Philosophical Transactions, 1745, vol. xliii. p. 554.
§ Essay on the Mortality among the Horned Cattle, London, 1746, p. 33.
‖ Philosophical Transactions, 1758, vol. l. p. 531.
* Philosophical Transactions, 1780, vol. lxx., p. 513.

the nostrils, alvine flux, albuminuria and hæmaturia, and the 'typhoid state.'

"3. The anatomical lesions of the two diseases are identical—viz., inflammation of the mucous membranes of the air-passages and digestive canal, dark-coloured blood, ecchymoses, and a pustular eruption with petechiæ on the skin. This will be apparent on comparing the post-mortem appearances of human variola as detailed by Dr. Copland,* with those of rinderpest described by me in *The Lancet* of August 26.

"4. In both diseases a peculiar offensive odour is exhaled from the body, both before and after death.

"5. In both the duration of the pyrexial stage is about seven or eight days.

"6. The two diseases resemble one another in their extreme contagiousness, and in the facility with which the poison is transmitted by fomites.

"7. Both diseases can be propagated by inoculation. This can be said with certainty of no other human malady than small-pox.

"8. In both diseases there is a period of incubation, which is shorter when the poison has been introduced by inoculation, than when it has been received by infection.

"9. Vaccinated persons are constantly exposed to small-pox poison with impunity; and with regard to rinderpest, there are numerous instances in which individual cattle, or entire herds, appear to have led charmed lives in the midst of surrounding pestilence. This last fact has never been explained; but the immunity of the cattle in question would be readily accounted for on the supposition that they had previously suffered from ordinary cow-pox.

"10. It is a mistake to imagine that variolæ vaccinæ is of necessity a mild disease. Under ordinary circumstances it undoubtedly is so. But there are many epizootics of cow-pox on record† where the disease was of a malignant character, and destroyed the cattle almost as extensively as small-pox did the human race.

"11. It has been repeatedly stated of late years that ordinary cow-pox had become so rare, that it was difficult to obtain lymph direct from the cow for the purpose of human vaccination. As a natural consequence, the majority of the cattle in these kingdoms are unprotected from the invasion of the disease in a more severe form.

"12. Although it may be objected to the view that rinderpest is simply small-pox in the ox, that there is no proof that the diseased animals have communicated small-pox to the human subject, and that in fact human small-pox is far less prevalent in Britain than it was a few years ago when there was no rinderpest, yet it is well known that there is often a difficulty in transmitting small-pox from one species of animal to another, and that when transmitted the disease is modified, although essentially the same. The rinderpest itself, notwithstanding the assertions to the contrary made when it first appeared among us, is transmissible to sheep, goats, and deer; yet there is more difficulty in communicating it to these animals than from cow to cow. The difficulty ought to be still greater in communicating it to the human species, than to animals so closely allied to cattle as sheep, &c. Evidence, however, of the transmission of rinderpest to the human subject is not altogether wanting. Through the kindness of Dr. Quain, I had recently an opportunity of seeing a man who had accidentally inoculated the back of his hand about ten days before, with matter from the hide of a cow which had died of rinderpest. The result was a large vesicle surrounded by a red areola, indistinguishable from a vaccine pock on the ninth day. A surgeon in the country, who had seen the man and sent him up to town, had no hesitation in pronouncing the disease to be cow-pox; and I understand that this opinion has since been confirmed by no less an authority than Mr. Ceely of Aylesbury. Moreover, the general, as well as the local symptoms in this man, were those of cow-pox. For a few days he suffered from a considerable fever, headache, and pain in the back. He had previously been vaccinated, but the protective power of the former vaccination had probably become exhausted. Although this is the only instance of the sort that has fallen under my notice, I have reason to believe that it is not a solitary one. It is to be borne in mind, however, that most of the inhabitants of this country are protected from small-pox by vaccination during infancy, and thus possibly may also be protected from rinderpest.

"These considerations may not be sufficient to establish absolutely the pathological identity of rinderpest and variola, but they unquestionably point to a very close analogy between them. The object of this communication, however, is not to insist that the two diseases are pathological equivalents, but to enlist the assistance of the medical profession in clearing up the matter. The mode of procedure is obvious and sufficiently simple. It is to produce cow-pox in cattle by inoculating them, on the one hand, with vaccine lymph, and on the other with the matter of human variola; and afterwards to ascertain if they be proof against the prevalent plague, or if the course of the rinderpest be thereby modified. If the results of these experiments turn out as I think there is reason to anticipate, the vexed question of the pathological nature of rinderpest will be finally settled, and mankind will be furnished with a certain remedy for arresting its ravages."

The Post Mortem Appearances.—The mucous membranes from the mouth to the anus, of which sometimes prolapsus exists, exhibit signs of intense inflammation, as also do the respiratory passages. Ecchymoses and hæmorrhages also occur beneath the serous and mucous membranes of the third and fourth stomachs, and ulceration of the fourth stomach and intestines is usually a post mortem manifestation. In the third stomach also the food is dry and hard; and the folds of this stomach soon after death can be rubbed into powder between the finger and thumb.

* Copland's Dictionary of Practical Medicine, vol. iii. p. 821.

† See, for examples, "Report of the Section of the Provincial Medical and Surgical Association appointed to inquire into the present state of Vaccination," read at Liverpool, July 25, 1839

It is difficult to prescribe treatment. The pharmacopœia has been ransacked for drugs, and almost every treatment has been adopted, both the depletive, with the lancet, and purgative; and the opposite, with its stimulant, its tonic, and gruel. One system, viz., that of giving small doses of sulphuric acid and water, seems to have answered better than any other; and reports from continental authorities, especially the Dutch, state they have always placed the greatest reliance on mineral tonics, and have found them more beneficial than anything, cases being cured at the rate of 45 per cent. To my knowledge, certain cases that were treated with mineral acids recovered; but whether the recovery resulted from the use of the above medicine, or from the "vis medicatrix naturæ," I shall not venture to affirm; but the author of the "Principles of Organic Life," with whom I have often talked the matter over, is very sanguine that the system advocated by him, in his article on the remedies used for rinderpest, would cure, not 45, but 90 per cent.; and for this reason his article is here transcribed:—

"I will now speak of inflammation, in which I include all cases of inflammatory actions, whatever character they may assume, but which produce in the system more or less a febrile tendency; also, all cases where sudden damages are to be repaired, or reconstruction carried on.

"Inflammatory actions never exist without destroying the balance of the inorganic and organic fluid elements in the system. In fact, as heat and thirst prevail there must evidently be a drought; this drought therefore shows that the natural inorganic fluids of the body are below par. The organic elements may remain in the same proportion, but the inorganic are considerably lessened. The very first natural acts shown in these states are conservative, in order to get these elements again. Thus, perspiration ceases, urinary secretions are lessened, and constipation of the colon ensues. No amount of foreign fluid taken into the system can possibly supply what it now requires. Therefore, the conclusion must necessarily arise that nature herself is unable to make up the quantity for the due lubrication of her machinery, or to support the chemico-vital principles of life. It is evident that the three great conservative actions mentioned above are known to all medical authorities, including also the veterinary. Because, directly they occur, they all exclaim, 'Get a secretion on the skin! Get the kidneys and bowels to act!' The more these unnatural acts are pursued by equally unnatural means, the farther off is the wished-for result. To say that these make matters worse, is the mildest expression that can be used. From the disappointment often experienced in trying to effect these objects, the great wonder has appeared to me that the physiology of nature has not been more deeply studied.

"There have existed in every generation of men practising medicine keen observers, who have said, 'Do not give aperients in fevers;' yet they will give medicines which, in ordinary circumstances, when inflammation does not exist, will produce renal actions and perspirations, but fail to do so when inflammation is present. In our own day, men who have got some credit for their works on fever have said, 'We seldom see any benefit arising from cathartics in fever; nay, we have often seen great evils arise; better then leave a little constipation to *some natural law*—it seldom does an injury to the system.' Again, 'Pneumonia is none the worse for having allowed some conservancy of the bowels.' But inasmuch as these are only opinions, backed up and supported by no law; other writers, equally esteemed, advocate aperients, and will show cause for doing so by a number of cases where absolute benefit is proved to have resulted by the proceeding, while in a few they are candid enough to admit the reverse.

"This touches on my last section; for it may so happen that the fevers thus treated have been congestive, and could stand this treatment to a certain extent; while, on the other hand, the authors who decry aperients may have had more purely inflammatory ones. But inasmuch as neither party knew the difference between the two, the dogmas of both sects are seen to be only their opinions, totally unconnected with any physiological law whatever. If, as physiologists have said, the body depended upon the blood for all its moisture, why does it not supply this now, in its utmost need, when its organic elements remain the same, and even totally unimpaired? Simply because the inorganic fluids are made from totally different sources. Nature not being able to supply fluid diluents to the organic reconstructing elements, she retains in the system all those which she wants for these purposes, but which the faculty try all they can to carry away. This, forsooth, is called physiology, and the scientific practice of medicine, when it is neither the one nor the other.

"Nothing shows the truth of these remarks more than the dreadful pestilence called the rinderpest, which has lately, with its 'scientific stamping out,' carried off millions of cattle, and caused millions of money to be lost. I am in possession of the Government report on this disease; and a wonderful production it is. It is a great lock, with the key lost, and nobody seems able to pick it. Therefore, the rinderpest must remain a mystery, and the Blue Book which records it simply an oracle, which will answer no question or give any sign. Now, I believe that the rinderpest is as capable of being cured as the measles, if the oracle is only questioned in the true spirit of physiology. We have all we want to enable us to solve what is now a mystery; but it must be done by the greatest sacrifice, and that is nothing more nor less than to throw overboard all our prejudices, all our dogmas, all our false physiological theories. Can this be done? We have the disease now amongst our herds, and foreign herds breed it still. Is it to remain in England as its habitat? Is the pole-axe still to be the only safe *modus medendi?* Are we still to lose our cattle and their money value; and is every householder to be mulct in twopence a pound for all his meat, because science is so helpless in this second half of the nineteenth century? These are serious questions for the community to have put to them; and more serious, as well as disgraceful to science, to be told it is powerless. All the

beautifully coloured pathological drawings of the Parliamentary Report leave nothing to be desired. The description of the disease is perfect. What does it lack, then? Only two things—its true physiology and treatment. At present there is nothing but what is either false in the one, or most pernicious in the other; yet they are capable of being resolved into the most marvellous simplicity.

"The physiology fully demonstrates the want of the inorganic elements in the system; and the treatment, the best means of supplying these, and to assist nature to do so as well.

"The letter concluding this work ended with the year 1865. In February, 1866, I received a letter from a surgeon in Shropshire to the following effect:—

"*February 25th*, 1866.

"'Dear Sir,—I much regret that you have discontinued your most interesting and most valuable letters on physiology. From the views which you have maintained on certain points, it struck me, as soon as I saw the great outbreak of the cattle plague, that you might break through the mystery which surrounds it.

"'All have tried their skill without any good results. Acting upon your general physiology, designed only for human ailments, I assisted a neighbour of mine six weeks ago in the treatment of his cattle, which consisted in giving the sulphates. The result has been most successful. My mode was to give dilute sulphuric acid, two ounces; sulphate of iron, three quarters of an ounce; sulphate of zinc, half a drachm.' (He does not mention in what proportion of water, or how often the dose was given.) 'Then excessive purging came on, sulphate of copper twelve grains, in a quart of water twice a day. Barley, linseed, oatmeal, or rice gruel, to be the chief article of diet. I have saved one in five; whereas others' treatment here has scarcely exceeded one in ten, or even more. I wish to ask you whether you can suggest any better treatment, that, according to your views, would be more beneficial, as I have the disease a few yards from my house, and have also two cows of my own at present free from the disease. I may here remark, that from six post-mortems I have seen, the contents of the first and third stomachs (rumen and omasum) were as dry as dust. I may add, that brandy, whisky, laudanum, chalk, &c., in any quantities, in my experience are injurious, and that simply cold water is best.'"

"At the beginning of August, 1867, a friend of mine who has often derived personal benefit from my principles in the practice of medicine, as well as his horses and stock, was in Bedfordshire. While there, he accidentally fell in with a dairy farmer near Hutton. Speaking to him of his large stock and the rinderpest, the farmer said he had no fear of the cattle plague, for when it was most severe he bought cows at his own price, and everybody thought he would be ruined; but he had heard of a good thing for them, and he never allowed them anything but acidulated drinks At first they did not seem to like them, but afterwards preferred them; and the quantity of sulphuric acid he used was enormous; for it was cheap enough. Directly he saw them lop their ears and their gums were red, and they refused their food, he gave them drenches of it; also opium and chlorodyne, and so stopped all scouring and purging immediately; and in a few days they were all right, and he never lost an animal. My friend asked him how he found out all this? 'Oh!' he said, 'he heard it from somebody, and wondered why others did not do the same.' Here, then, is a proof of the singular benefit of the physiological treatment I have laid down; but whether this farmer got his knowledge directly or indirectly from my betters on physiology, or from other sources, I cannot say: I hope the latter, because others may be engaged on these principles of treatment as well as myself.

"I may here add that I wrote a very long letter to my Shropshire correspondent and several letters afterwards; but I never again heard from him, and can therefore give no further account of his proceedings. To return to his post-mortem cases. There is no way of accounting for the contents of the first and third stomachs becoming as dry as dust, except from the absence of naturally formed moisture; and I must here say, that no amount of extraneous fluid would or could have moistened them, for any time sufficient for natural uses. The absence of power in the animals themselves to make their own inorganic fluid elements, by the natural generation of hydrogen from their own secretions and fæces, in order to combine with the oxygen of the air taken in such large quantities with their food and drink, was one most exciting cause of this dry state of their aliment after certain processes of digestion. The second, that no gases can exhale without the presence of moisture; and as the natural resisting gases could not be formed in their bodies, the oxygen, as a sequitur, finding no elements of combination, dried up the contents of their stomachs. Attrition and friction, producing their due amount of inflammatory actions, was the consequence We have only to see this fully and graphically described in the Government report. What, then, does this bugbear the rinderpest amount to? Simply this, that the self-supporting action of the system is out of gear; that the natural resistance of the oxygen is taken away, or rather hydrogen in sufficient quantities is not generated; therefore the animal, being unable to make the proper amount of inorganic fluids necessary to life, a general and universal destruction of all tissues and parts ensues. If an adult human being makes these inorganic lubricating fluids to the extent of thirty pints in every twenty-four hours, entirely independent of the blood and any fluid he may drink, and uses them—how much more must animals make? Perhaps little short of one hundred! I refer to the fat obtained entirely in this way by inspissation of these fluids; which, when deposited in its proper places, becomes not only the natural oil can of their bodies, but the storehouse of aqueous matter to be used—not by combustion, as our present physiology teaches us, but simply by dissolution and absorption. In the face of all the symptoms in this disease so characteristic of rapid destruction, owing almost entirely to the loss of inorganic elements, I shall quote from the Government third report, which I shall now merely refer to, what

were the principal remedies administered for the disease:—Vaccination; inoculation from the humours of the diseased animals; bleeding; injection of antiseptics into the veins; injection by rectum of carbolic and cresylic acids; sulphate and bisulphate of soda; inhaling the vapour of warm water and vinegar The animals had given them, by the mouth, brandy and opium in full doses; strong ale; hyposulphate, sulphate, and disulphate of soda; common salt; water impregnated with iron; Worms' mixture of onions, garlic, ginger powder, and assafœtida, to which cayenne pepper was often added; oil of turpentine; carbonate of ammonia; solution of acetate of ammonia and chloric ether; half-pound doses of charcoal; bichloride and chlorate of potash; bark, tinctures, and all kinds of diaphoretics; linseed oil, in constipation; sulphate of magnesia, sulphur, and all their aperients, such as saline laxatives, with diffusible stimulants. Certain hygienic means and diet followed all these different treatments. Only now and then do I find by the merest accident, and that evidently for the sake of experiment, that the mineral acids were given. Again, although it was constantly observed that diarrhœa, evidently from mucomenbranous inflammation and irritation, always lowered the animals, yet laxatives and aperients were nevertheless given. I need scarcely add, what the Report is fully justified in saying, that not only no good arose from any form of allopathic treatment; that little benefit was derived from the use of drugs, but rather the greatest evil from them, every symptom being aggravated; and it could not well be otherwise.

"To show that all treatment was founded only on supposition and conjecture, a trial was set on foot between the three great sects: the allopaths, the homœopaths, and nature. One hundred beasts were allotted to each. As a matter of course, the natural sequence ensued between the two first, as to what was, or what was not rinderpest. The animal quarrelled over was then set aside for nature to determine; and so something was done to put an end to 'such unseemly disputes.' The homœopaths' treatment consisted of aconite; ammonium causticum and arsenicum; belladona and phosphorus; nux-vomica; phosphorus and sulphur; arsenicum and rhus; pulsatilla; arsenite of iron; mercurius corrosivus. These medicines were sometimes given separately, and sometimes combined one with the other, according to the fancy of the giver. Porter entered into all their dietary. The treatment by this sect was not more satisfactory than the other. Now for the Dutch system of treatment. They have always placed the greatest reliance on the mineral tonics, and 'have found them more beneficial than anything.' Muriatic acid in linseed tea; sulphuric acid, with quinine, gentian, ginger, ginger and tormentilla, and other astringents and tonics, as natural remedies; washing the eyes, mouth, nostrils, vagina, rectum, &c., with solution of carbolic (phenic) acid, as well as giving it internally as a prophylactic remedy. Preparations of chlorine, for fumigating purposes, were found injurious, and often affecting the lungs. Distillers' wash and stimulants were found unsuccessful, and often hurtful. By this Dutch method, we are informed, success at the rate of 45 per cent. ensued. But nothing more than empiricism was manifested in this treatment. They found it the 'most beneficial,' and that is all they have to say on the subject. Neither philosophy nor physiology of the disease, nor cause nor effect, ever transpire. No reasons are given beyond the old, old ones, of being found beneficial. I will now state what is done in eastern Europe:—

"*Odessa.*—Vapour baths, nitre, linseed gruel, and gentian; injections of tobacco water; bleeding; warm milk mixed with garlic as drenches, which always failed, while repeated doses of vinegar and cold water were of great service, when every other remedy had failed. 'Hashha' (or poppy-heads) and 'huibia' (or chicory) stopped flux and allayed pain In other cases, setons and mustard plasters are applied to the chest; the seton steeped every day in fresh turpentine. 'Burn all swellings with red-hot iron immediately they appear.' Four or five pounds of blood to be taken from sanguine animals. A pint of infusion of linseed and olive oil, as a drench, three times a day. When the disease augments, add enough sulphuric acid to extract of nux vomica to the drinking water, to give a bitter taste. Half a drachm of spirits of ammonia in half a pint of water, three times a day as a drench. Three ounces of glue dissolved in a pint of tepid water will stop diarrhœa. This latter treatment in Southern Russia and Bessarabia has been found perfectly efficacious, and caused the disease to disappear. At Jassy they depend on acetate of ammonia, alternately with gentian, quinine, and peppermint, every two hours during the day. Black hellebore steeped in wine is given to the animal, which is made to take active exercise immediately afterwards, in order to cause sweating.

"*At Ragusa.*—Sulphur, mercury, and antimony are given, and hypophosphate of soda. In all this treatment nothing but usage appears to guide the administration of medicine, like every other medical treatment, human or animal, throughout the world; supposition and conjecture on the best authorities, founded on hope, but neither physiology nor philosophy entering into the question. Now, without these the hope expressed in the report has small chance of fulfilment, 'that the labours and views of so many minds brought to bear upon the subject will go far beyond the cattle plague itself, and point to the benefit of the human race for the prevention of and cure of zymotic diseases.'

"This is just the point where fresh thought ought to come in; but it never will, while speculation is the sole act even of the greatest experience. Disease, as a simple effect, is a myth; and instead of being treated specifically, as it has been, on what is called the best authority—which is nothing more than the opinion of certain men who in every age lead the whole community—the causes which produce it must be better understood. So, when once philosophy and physiology go hand in hand, those unseemly disputes so constant among ourselves, as well as our theories and medical speculations on all

medical subjects, will disappear, or will be resolved into the one question of the best way of carrying out sound principles.

"Let us find a germ in the rinderpest, which is only an aggravated form of the rapid and sudden loss of inorganic elements, leaving the organic as they were, and as they exist when the inorganic are in their full integrity. Any impartial reader will see if he has followed me from the commencement, that the corrections by all the alkaline remedies are the best when the inorganic elements are in excess, and the body in a superfluous, or over-exuberant, or acid state; that when given they cause the highest state of combustion, and either lessen or destroy them; that caloric is produced, and rapid conversion of the products formed from such treatment are again acted upon by other elements; and these again on freshly developed secretions, until the whole system is relieved—relieved because the organic elements are not interfered with or lessened, but are ready in the body to come to the rescue, and keep up the strength of all its general structures. It will be found true that we can be almost heroic in our remedial and prophylactic treatment of the inorganic elements, which constitute 95 per cent. of the whole mass; but that we must be cautious in what way we attack organic elements. We must not tamper with these; for they are only 5 per cent., and we cannot replace them as we can their opposites. The lamp of life may be represented by the oil and the wick, the former by the inorganic, the latter by the organic elements; so that there may be plenty of oil and no wick, or plenty of wick but no oil—in either case the lamp goes out. Now the rinderpest, and all inflammatory fevers, choleras, and most of the zymotic diseases, represent the lamp with plenty of wick, but no oil. What will every one find, when the alkalies are given in any form in all these inflammatory diseases? That things are made worse: for the few remaining inorganic elements, which are the acid ones, are removed by them. What when purgatives and cathartics are given? That the hydrogens, the great resisters of the oxygen of the atmosphere, are carried away, leaving this latter gas to work destruction, because it has no opposing element, and the system is unable to form its own lubricating fluid. What when bleeding is resorted to? That organic elements are being robbed from the system; so that if a beneficial change actually took place, naturally or artificially, the bases of reconstruction are cut away. What when counter-irritants are applied? Only putting animal life to greater misery; because eruptions are nature's legitimate counter-irritants in supervital states and seldom or never come, certainly never in any form to diminish natural powers, in inflammatory actions; therefore, as nature does not point to their use, they should not be applied artificially. What when the mercurials are used? Why, nothing but a transfer of some inflammation from one part to another, causing only a temporary relief of the one for which it has been given. What when alcoholic stimulants, such as brandy, tinctures, and turpentine, are given? That they increase irritation on all present inflammatory surfaces, and excite other parts which may yet be free from them to take on these states. What when spices, peppers, and all similar heating condiments, are administered? That they cause greater irritations, and aggravate all the symptoms. What when onions, garlic, and all these analogous bulbs, are used? That they relax the mucous surfaces, and often promote diarrhœa, as well as cause thirst and absorb inorganic fluids. What when diaphoretics and diuretics are given? That they carry away the watery elements of the fat stores, wherever these are deposited, when the object should be to retain them. What when vaccination is performed? That doing this, on the supposition that something exists which does not; that the disease is from some specific blood poison, when it is not, and cannot be. What when inoculation is performed? That the diseased elements, both inorganic and organic, will produce in the bodies of sound animals a similar inflammatory state, which is most culpable; because, if any animal so having the disease induced cannot be cured with any certainty—as has been proved by the treatment of those who had it naturally—it is only placing that animal in danger of its life, without the slightest benefit likely to accrue. The administration of charcoal cannot be of any service, because the animals are already robbed of all elements which poison the system, which are the inorganic in excess; and therefore there is nothing to be counteracted by this remedy. So much for the allopathic remedies of the faculty and veterinary fraternity in rinderpest.

"The homœopathic remedies are more or less visionary in their actions, and if administered homœopathically could not possibly do either good or harm; yet if given dishonestly by them, that is, in similar doses which the allopaths would use, some of them would be most injurious; while those that were beneficial carried no logical deductions with their administration. It would be certain that ammonium causticum, and arsenicum and mercurius corrosivus, would go more quickly to destroy life by aggravating the disease, and so to save the use of the pole-axe, the knife, or the bullet. Taking all these things into consideration, it will be clearly seen that all the foregoing remedies and measures went far to aggravate the disease. On the other hand, what is actually wanted is nothing more nor less than the restoration of a balance of power of the inorganic elements; and this object is only to be attained by the opiates in their crude or aqueous, not in their alcoholic form, to arrest all secretions, and the administration of the acids, which, in their conversion into gaseous elements, help to make such resisting ones, which the system always requires to oppose the action of the oxygen. The Dutch and some others, as I have shown, have fully established the empiricism of this treatment; but science requires more than this: it wants to know upon what principles it does good, both physiologically and philosophically.

"I have proved for years, that in all fevers and inflammatory conditions of the mucous and serous membranes, opiates are given for the express purpose of locking up the bowels, which

is done by detaining the natural secretions; and that the acids generate such gases as mix with and oppose the oxygen, and furnish most rapidly the self-generated fluids, whose duties are to assist the organic elements to repair and reconstruct destroyed tissues. Having watched this in the human family for many years, I cannot deny myself the pleasure I felt in reading the following in 'The Report of the Rinderpest,' p. 93, and which I can fully verify:—

"'*Rapidity of Repair in Diseased Tissues.*—It is very curious, considering the tendency there is to the formation of sloughs, how rapidly parts heal, even during the progress of the disease towards a fatal issue. In the abomasum, shallow depressions have been seen in the mucous membrane, which are manifestly the cicatrized or cicatrizing excavations whence sloughs have recently separated. Again, we find the edges of perforations of the folds of the omasum cicatrized or healed, whilst sloughing is still in progress in other parts of the folds. It is remarkable, too, how rapidly, on the supervention of convalescence, the mouth and other organs regain their original healthy condition.'

"All this is perfectly correct, as I can verify in thousands of instances, and is constantly occurring in the colon of the human being; but this organ has been completely ignored by the profession, except to purge it constantly of its natural manure, or only to examine the fæces coming from it; and men think by doing so more assiduously than others, that they ought to know its physiology, while, nevertheless, all its true and noble duties are yet to be discovered. The liver and many other organic centres have had too much notice and importance, while the colon and its uses, have been entirely overlooked. I therefore conclude this section on the rinderpest, which has only been incidental to greater conclusions, but is analogous to many affections to which the human frame is subject, and which have been treated in precisely the same way, and will be to the end of time, unless a physiology that will serve us steps in to supersede one that does not. The conclusion, then, is obvious, that opiates, and mineral acids, and tonics in such doses—mild at first when the disease first shows itself, and bold when it advances—in either man or animals, are the only true prophylactic remedies, as they restore the balance of power and the principles of life. And I here repeat, that as there are very many diseases, such as fevers, &c., showing similar symptoms, it will not do to treat them all in the same way, simply because their causes may be distinctively different: one set, where the inorganic elements are in excess, requiring the alkalies; and another, where they are deficient, requiring the acids and opiates. They are easily distinguished, and when once known their treatment becomes exceedingly simple, as well as efficacious and scientific.—"Principles of Organic Life." R. Hardwicke, 192 Piccadilly.

DISEASES INCIDENT TO SHEEP.

THE LAMBING SEASON.

One hundred and fifty-two days after intercourse with the ram the ewes commence lambing, which generally is so arranged that they shall bring forth their young towards the latter end of February or beginning of March. About a month or six weeks previously to this period such ewes as are in bad condition should be supplied with plenty of food, in order that nature may provide for her offspring at the appointed time; but it is always better to feed ewes during their pregnancy on moderately good pastures. Ewes, if half starved at the time of parturition, are often sick, but many, on the other hand, die of inflammation, as the result of being overfed with too stimulating food; and often lambs have been destroyed from sucking overrich milk. A medium course, therefore, should be adopted, in feeding moderately during the period of pregnancy. Previously to the lambing season a fold-yard suitable for the purpose should be provided, arranged in such a manner as to afford protection from the north-easterly wind, with a suitable shed, close by a shepherd's house, in which all the necessary conveniences for assisting the parturient ewes should exist. Thus the shepherd will be better able to attend them during the night, to give assistance if required, and to take proper care of them. By the adoption of these simple precautions many lives, both among the ewes and lambs, will be saved. After the birth of the first lamb the attention of the shepherd must be directed to the remainder of the flock; each ewe should be carefully observed. Interference with those in labour is fraught with evil, unless the ewe has remained in such a state for twenty or more hours, and her strength is beginning to fail; then the necessity of immediate aid is indicated. This last case usually is brought about by a false presentation, of what kind must be left for the attendant to discover, who must use the same means as directed for cows at page 17; but of course, ewes are timid and much smaller animals, consequently require very tender usage, and will not bear the introduction of

instruments similarly as the cow. In cases of dead lambs the fœtus must be extracted with the hand, if possible—if not, with an instrument made for this purpose. Medicine is little required for ewes after lambing, although the placenta (cleansing) may not become detached for a day or two; sometimes, however, to check febrile symptoms, the following may be administered in their gruel:—

Epsom salts,	2 ounces,
Ginger in powder,	1 drachm.

ON THE DISEASES OF YOUNG LAMBS.

Young lambs are liable to a variety of different diseases, either from insufficient support, or from a redundancy of milk on the part of the ewe. If they proceed from the former support must be given them, either by allowing them to suck other ewes, or by giving them cow's milk: when the ewe has too much milk it is apt to coagulate in the stomach of the lambs, and causes constipation, by which the best of them are frequently carried off.* At other times the acid produced from the coagulated milk in the stomach brings on diarrhœa, which, if not put a stop to in a short time, will cause the death of many lambs.

Treatment.—Administer in a pint of warm gruel—

Castor oil,	1 table-spoonful,
Ginger in powder,	1 drachm,
Coarse sugar,	1 table-spoonful.

This drink may be repeated once a day for two or three times, until a proper passage is obtained. The quantity of castor oil may be increased or diminished, according to the size and strength of the lamb. A strong lamb, six weeks or two months old, will require one table-spoonful and a half; but if only two or three days old, half a table-spoonful will suffice. If the disease be permitted to continue for some time, and no means to give relief be attempted, the diarrhœa increases, and the stools are attended with a copious dejection of mucus from the intestines, and the young animal pines away. After the bowels have been properly evacuated with the above purgative drink, if the diarrhœa still continues, twenty drops daily of tincture of opium in starch and oatmeal can be given, which often succeeds in effecting a cure.

RED WATER.

This disease is of an inflammatory nature, and prevails chiefly at the end of the year or during the winter, among sheep feeding upon turnips or succulent grasses. Clater writes:—"In the neighbourhood of Retford, 1812, this disease has been common for several years past; it seldom misses a season; it makes its appearance amongst some of the numerous flocks that feed on vegetables of those kinds, and for the most part attacks those sheep which are in best condition; and if no relief can be obtained they generally die in the space of twenty-four hours, or less." Sometimes a change of pasture, from a dry to a moist and cold one, will produce this malady, and prove as injurious as an immediate change of food. This disease manifests itself sometimes without giving any premonitory symptoms of its coming: for instance, at night the flock may appear in good health; on the following morning several dead bodies may be discovered lying in a natural position, with the exception of protrusion of the head. At other times premonitory symptoms occur; the diseased sheep separate from the flock, stand with protruded head, breathe with difficulty, and evidence considerable dropsical enlargement of the abdomen, with frequent watery stools, mixed with blood and mucus, giving evidence of the true nature of the disease, "red water;" more often, however, constipation is present. On opening such sheep the disorder on examination has been found to proceed from inflammation, either of the stomach, the intestines, kidneys, or neck of the bladder, associated with dropsy of the abdomen; and Clater says the intestines sometimes become loaded with sand or gravel while feeding on turnips, by which the inflammation is considerably increased. The last post-mortem appearance I have never observed, and think Clater must have mistaken this state for some systemic disorganization. This malady is usually, in its last stages, associated with peritoneal and hepatic inflammation, and indicates a general break up of the organism.

Treatment consists in the removal of the flock to a dry and warm ground, where turnips and succulent food must be denied, and in its place oats and hay should be given. The following medicine Clater has had an opportunity of trying on a large scale, sometimes on five or six hundred sheep, belonging to one man, in the course of the day:—

Epsom salts,	6 ounces,
Nitre,	4 ounces,
Boiling water,	3 pints.

Pour the water hot upon the salts, and when milk-warm add—

Spirits of turpentine,	4 ounces,
Bole-armeric in powder,	½ ounce.

Mix and shake them well together. The dose is from three to four table-spoonfuls.

When this medicine is intended to be given to a number of sheep, they must be taken from the turnips, or whatever they are feeding on, and put into a pen or fold-yard for two hours before it is given; then a small horn should be provided that will just hold the proper quantity for each sheep. This method of giving drinks to sheep will be found very advantageous when many require it at one time. They must be kept from food two hours after the medicine is given, either in a fold-yard, or pen. The medicine should be repeated every other day. The treatment the writer has prescribed on several occasions, consists in the daily administration of—

Epsom salts,	½ ounce,
Disulphate of quinine,	3 grains,
Ginger in powder,	½ drachm,

in thin gruel, with a little starch added.

* Administer every six hours, until relief be afforded, half ounce doses of Epsom salts, and afterwards turn the ewes and lambs into a succulent pasture.

Sometimes the dropsy must be evacuated through the medium of the trochar, which operation can only safely be entrusted to a veterinarian. Usually recurrent dropsy intervenes, and consequently tapping fails in its purpose. The system, however, if it has gained sufficient vital force, may cause the absorption of the effused fluid, and thus effect a permanent cure. A very valuable medicine during this stage consists in the daily administration of a table-spoonful of the syrup of the iodide of iron, which acts as a tonic and absorbent, consequently is a medicine indicated in this affection.

THE ROT.

This disorder has been more fatal to sheep than any other; and having at different times carried off great numbers, it has occupied the attention of the learned, who have favoured the public with a variety of opinions. Dr. Harrison was the first person to scientifically investigate this malady, and to draw attention to the true cause of its existence, and as his views upon the subject are very carefully detailed, and the post mortem appearances correctly described, his paper on rot is here given:—

"When in warm, sultry, and rainy weather, sheep that are grazing on low moist lands feed rapidly and some of them die suddenly, there is reason to fear they have contracted the Rot. This suspicion will be further increased if, a few weeks afterwards, the sheep begin to shrink and become flaccid in their loins. By pressure about the hips at this time a crackling is perceptible. Now, or soon afterwards, the countenance looks pale; upon parting the fleece the skin is found to have exchanged its vermilion tint for a pale red, and the wool is easily separated from the pelt. As the disorder advances, the skin becomes dappled with yellow and black spots. About this time the eyes lose their lustre, and become whitey and pearly, for the red vessels of the tunica adnata, conjunctiva, and eyelids become contracted, or entirely obliterated. To this succeeds debility and emaciation, which increase continually until the sheep die, or else ascites, and perhaps general dropsy supervenes, before the fatal termination. These symptoms are rendered more severe by an obstinate purging, which comes on at an uncertain period of the disorder. In the progress of the complaint, sheep become what graziers call chockered, *i.e.*, affected with a swelling under the chin, which proceeds from a fluid contained in the cellular membrane under the throat. In five or six days after contracting the rot, the thin edge of the small lobe of the liver becomes of a transparent, white, or bluish colour, and this spreads upon the lower and upper sides according to the severity of the complaint. Sometimes it does not extend more than an inch from the margin. In severe cases, the whole of the peritoneum investing the liver, is diseased, and then it commonly assumes an opaque colour, interspersed with dark lines or patches. The upper part of the liver is sometimes speckled like the body of a toad, to which it is said to bear a striking resemblance. Round the ductus communis choledochus and hepatic vessels jelly-like matter is deposited, which varies according to the severity of the attack, from a table-spoonful or less, to five or six times that quantity upon boiling. The liver looses its firmness and separates into small pieces in the water, or remains soft and flaccid. Some graziers and butchers with whom I have conversed at different times, having observed that sheep are much disposed to feed during the first three or four weeks after being tainted, omit no opportunity of producing it to increase their profits. When this stage is over, flukes begin to appear in the pori biliarii, ductus communis choledochus, and the gall bladder. At first the quantity of these creatures is small, but, as the disease advances, they increase, and before death are often very numerous. In the first part of the complaint, they are sometimes found in the stomach, as well as in the intestines and liver. This, like the visceral disorders of the human body, may terminate in resolution, effusion, suppuration, or scirrhus. First, the complaint is said to terminate in resolution, when inflammatory action goes off, without destroying the state and texture of the parts. However, I am strongly inclined to believe, that every considerable inflammation in the human body and in other animals, although it ends in resolution, leaves behind it some remains which may be discovered by an experienced anatomist. When the vessels are thrown into inflammatory action for a few days only, effusion commonly takes place, the coats become thicker, and assume a buffy colour. These changes in the sanguinary system often continue through life, and lay the foundation of many chronic and incurable diseases. Sheep that recover from the rot, exhibit very different appearances after death, according to the severity of the attack; but the taint is seldom or never entirely removed. I was desired within these few days to look at the liver of an old ewe that died fat, and contained fourteen pounds of suet in her body. The back part of the small lobe was dappled with whitish spots, the coats of the ductus communis choledochus and pori biliarii were considerably thickened and more solid than usual. In colour they resembled the human aorta of old people, and were full of flukes; in other respects the liver appeared to be sound and natural. The butcher asserted that this was occasioned by a slight taint of long standing, which had not been considerable enough to disorder the economy, or impair the health of the animal sufficiently to prevent its feeding. Secondly, when sheep die suddenly in the first stage of the disorder, an effusion of serum, or of wheyish-coloured fluid, may commonly be discovered in the cavity of the abdomen, and then the peritoneum surrounding the liver is generally covered with a membrane or coat of coagulable lymph. This form of the rot has been frequently confounded with the resp, or red water, though it differs from the latter disorder in the colour of the effused liquid, in being much less disposed to putrefaction, and in several other particulars. Thirdly, abscesses in the liver exhibit another termination of the malady. They are seldom considerable enough to kill immediately, but in consequence of the absorption of purulent matter from them, the sheep frequently waste away, and die hectical or dropsical. When the collections are

small, sheep will recover sufficiently to bear lambs for three or four seasons, and afterwards become tolerable mutton. Fourthly, the most common termination is in scirrhi, or what shepherds call knots of the liver. I have seen the whole substance of this important viscus so full of small roundish lumps or scirrhous bodies, that it would be difficult to find any sound part in it. The first attack is unfortunately so very insidious, that the disorder is scarcely observable before the animal begins to waste and lose flesh. In this advanced state it is said to labour under rot, or *pourriture*, from overlooking the commencement of the disorder." The fluke—the Fasciola of Linnæus, the Distomum hepaticum of Rodolphi, the Planaria of Gosse—is met with in livers of many animals; but the exact method by which it finds its way there, demands further discovery to elucidate the fact. Küchenmeister thinks that in all probability man and animals infect themselves with free encysted young Distomata, either by devouring snails which adhere to the grass on pastures, especially in moist ones, or by drinking from impure stagnant pools, marsh or pond water. Exactly the same thing would take place in man by means of snails adhering to salad, fruit, or such other edible. Nay, such small snails might be introduced with dry fodder into the stomachs of our domestic animals during the winter, by their eating the small species passing their winter sleep in closed sacks, in their closed shells, or the shell-less slugs adhering to roots, protected from the frost in warm cavities or cellars.

"Youatt considers the fluke is not often the cause of rot, but that the tissues having become weakened by previous derangement, the liver then is reduced to such a condition as to favour the propagation of flukes; or, in other words, if a sheep in robust health becomes infected with the Distomata, the chances are they would not find comfortable quarters in such a body, and would die or leave it, owing to its being no habitat for them. It is also well known that in wet seasons this malady is very prevalent, whereas in dry ones it is not; this fact all veterinary writers and men of experience acknowledge; and Küchenmeister accounts for it very clearly; as slug life is favoured by a continuance of wet weather. Of course, grass supersaturated with moisture is not the best food for sheep; but such keep may tend first to devitalize the ovine system, and weaken those tissues into which the fluke, as above indicated, finds its way. But whether the Distomum hepaticum be the cause or effect of rot, when once it is established in a flock the grazier well knows that some loss is inevitable, and his first thought is how to prevent its occurrence in the remainder of his flock. If wet ground favours the development of the rot, the removal of the flock to high and dry lands appears to be indicated, and is generally advised; or they may be brought near home, and placed in a straw yard, and be fed on dry food, such as oats and hay, and the following drink in a pint of warm gruel, can be given to each patient:—

Barbadoes Aloes,	2 drachms,
Ginger,	1 drachm,
Chloride of lime,	½ drachm.

Clater recommends the following, and states that he has effected numerous cures with it, and several farmers at this day extol it as a valuable medicine in Sheep Rot:—

Nitre in powder,	6 ounces,
Ginger fresh powdered,	4 ounces,
Sulphate of iron,	2 ounces,
Common salt,	3½ pounds,
Boiling water,	3 gallons.

Pour the water hot upon the ingredients. Stir them, and when new-milk warm, add to every quart of the mixture three ounces of spirits of turpentine, and bottle it for use.

Directions for Use:—Keep the infected sheep from food all night, and on the following morning give each sheep two ounces or four table-spoonfuls of the above mixture. To those which are weak or reduced by the disease, one-half, or three parts out of four, may be sufficient for a dose. Keep them from food three hours after giving the medicine, and turn out into a dry pasture. It will be necessary to repeat the medicine every fourth day for three times, observing the above rules. But where only half the quantity has been administered, it will be proper to repeat it every second or third day for six times. Every shepherd should be provided with a small horn, containing just the proper quantity; this will save considerable time and trouble, when it is necessary to give the above drink to a number at the same time.

THE SCAB

is a cutaneous affection very common to sheep, and is of a very contagious nature, as one infected sheep will communicate the disorder to a whole flock in which it is placed; much caution, therefore, is needed by the grazier in introducing sheep purchased from other districts among his own flocks, lest any of them should be infected with the disease. It is first discovered by the animals rubbing themselves against every post, gate, bank, or any other convenient place suitable for this purpose, and they are frequently seen to pull off the wool with their mouths. Clater writes:—"This disease appears to be of a cutaneous nature, and only affects the skin with a scabby eruption; but if permitted to remain without attempting to cure, it will enter the system, and unless great care be taken, the sheep will sink under its pressure." The scabby eruption noticed by Clater has since been clearly traced to the existence of a parasite (*Acarus ovis*) which infects and burrows under the skin, where it sets up great irritation and inflammation. If an acarus be placed on the wool of a sheep, it will soon bury itself in the skin, scarcely leaving a trace of its entrance; in three or four days a red spot appears; in five or six days more a little swelling occurs, which soon developes into a pustule which breaks, from which the parent acarus escapes with a young brood attached to her feet; the little ones immediately enter the skin of the sheep, grow and propagate, and thus the disease is kept up; *i.e.*, if the acari be not at once destroyed, the sheep will speedily die. The following sheep-dipping mixtures will be found very useful in treating scab, as they seldom fail in effecting cures:—

(1) Arsenious acid, ... 2 pounds,
Carbonate of potash, ... 2 pounds,
Boiling water, ... 60 gallons.

Boil for half an hour:—

(2) Powdered Arsenious acid, ... 2 pounds,
Sulphate of iron, ... 200 pounds.
Water, ... 60 gallons.

Boil until the fluid is reduced to a third, and then add as much water as has been lost by evaporation.

(3) Carbolic acid, ... 1 part to 20 parts of water.

In using dips 1 and 2, or any dipping mixtures containing poison, it is always necessary, in fact it is imperative, that sheep on being removed from the dipping tub be placed in some inclosed spot or yard, in which no food of any kind can be obtained; for this reason, that if sheep are allowed to go from the dipping trough to the pasture, the drops of the solution fall on the ground, and thus saturate the grass with poison, which if taken with the grass into the stomach is sure to cause death. The idea that sheep dips containing arsenious acid can be absorbed by the skin, is erroneous, as the experiments instituted by Dr. Stevenson Macadam, Professor Gamgee, and Mr. Finlay Dun, clearly prove, and the author had the good luck to see carried out. These experiments were instituted previously to the trial, *Black* versus *Elliot;* in which Mr. Black, a farmer, sued Mr. Elliot, a chemist and druggist, for loss sustained by him of 850 sheep, out of a flock of 869, after dipping the said animals in a dipping mixture composed of—

Arsenious acid, ... 20 ounces,
Soda ash, ... 20 ounces,
Sulphur, ... 2 ounces.

Directions:—"Pour upon each packet three or four gallons of boiling water, and stir well together for ten minutes; add about forty-five gallons of cold water, and dissolve in the mixture four pounds of soft soap. The preparation will then be completed, and the quantity sufficient to dip fifty hogs." Mr. Black, after dipping his flock, allowed them to pass from the trough to the pastures, and the consequence was that the above mixture dropped from the wool on to the pastures, and thus saturated the grass, upon which the sheep fed, with poison. Packages sent by Mr. Black, containing the above ingredients, were chemically examined, and arsenious acid was detected; and in the stomachs of several sheep that had died distinct traces of arsenious acid were discovered. Mr. Elliot also sent sods taken from the pasture above alluded to, to Edinburgh, to be chemically analysed, and they also were found to be impregnated with this poison. The question, therefore, arose by what means the poison had entered the system of the sheep; it was contended on one side, Mr. Black's, that it got there through the medium of absorption, and, on the other, that the close-biting sheep had obtained it from the pasture, and that proper care had not been used by the plaintiff in sufficiently wringing the wool out, or in preventing the sheep in a dripping state, after having been dipped, to roam over the pasture. The truth was these sheep partook of the grass impregnated with the poison; it found its way into their stomachs, and death, as a consequence, resulted. The absorption theory cannot be entertained for a moment; if it had taken place the poison would have been discovered in the blood, and not in the stomachs; and, again, why had this dip, which had been previously so extensively used, not caused death before? Simply because due precaution had been taken, as above indicated. The following evidence given at the trial (1860), detailing the experiments instituted, is reproduced on account of its importance:—

"Finlay Dunn.—I am not connected with practical chemistry at present, but was so up to 1856. I am the author of a work entitled, 'Veterinary Medicines,' &c. I have made, for the purpose of this inquiry, certain experiments on sheep with various sheep-dipping solutions. I wrote down the results. On Saturday, 19th February, I made a mixture exactly like Mr. Elliot's. I had twenty-three sheep brought up, and the whole I dipped in this solution. The sheep were turned into a yard, into which hay, loose straw, &c., had been removed. No mischief arose to the animals. Besides that I made another experiment, taking the same proportions of soda ash and sulphur, but half the quantity of water. I immersed four sheep in this solution, and again without injury. I made a third experiment, taking 10 ozs. of arsenic, 10 ozs. of soda ash, 1 oz. of sulphur, and 2 lbs. of soft soap. I dissolved that in six gallons of water. In that I dipped four sheep. I also got one of the sheep that had been previously dipped, and kept it in sixty-five seconds. I consider Mr. Elliot's powder perfectly safe."

"John Gamgee, Member of the Royal College of Veterinary Surgeons, London, and Lecturer on Veterinary Medicine, deposed: I have made some experiments on sheep. On the 10th of January, this year, I made experiment No. 1. I used 1¼ lbs. arsenic, 1¼ lbs. soda, and 2 ozs. sulphur. In this solution I immersed two sheep. They were in no way injured by that experiment. They are well now. I watched them up to last Wednesday. Experiment No. 2 was made on the 15th. I used one of the packets that I received from Mr. Elliot's shopman. I used from thirty-seven to thirty-eight gallons of water. I dipped in that solution four sheep. I used three healthy sheep. The fourth was badly affected with scab. The three sound sheep were immersed five minutes each. The other was in half an hour. No harm came to those sheep; on the contrary the unsound one was cured. On the 25th of January I made a third experiment, using 3 lbs. of arsenic, 3 lbs. of soda ash, 4 ozs. of sulphur, and 4 lbs. of soft soap. About thirty-seven or thirty-eight gallons were used in this solution. I put into the solution six black-faced sheep. They were not altogether sound. One was affected with scab, and another with foot rot, in which the vascular tissue is exposed. The healthy ones remained in five minutes each, and the other two half an

hour. No injurious results followed; on the contrary, the scabby one was cured, the other one considerably improved. In experiment No. 2 I used ½ lb. of arsenic, ½ lb. soda ash, without sulphur or soap. Four sheep were immersed in this —two for five minutes, and two for half an hour each. The result in this case was also uninjurious. Experiment No. 5 I made with Dr. Macadam on the 21st of February, using 1½ lbs. of arsenic, 8 ozs. of soda ash, 2 ozs. of sulphur, and 4 lbs. of soft soap. I am the author of the 'Veterinarian's Vade Mecum,' published in 1858. I have recommended baths for sheep as strong as Mr. Elliot's, as safe and proper baths. I made an experiment to ascertain whether sheep would eat matter saturated in arsenic. A dipping mixture was prepared according to Mr. Elliot's prescription, in which I aided in dipping two sheep—the head shepherd holding the head, and I pressing the liquid out of the wool. The two sheep were placed in covered shed, separated from other two that had not been dipped. One oat sheaf and four quarts of oats were saturated in that solution. The oat sheaf was placed in a tent containing the two dipped sheep. The sheep were left there all night. I have seen these sheep this morning, and they present symptoms of the introduction of arsenic into the system."

"Henry Wilkinson, veterinary surgeon in Newcastle, deposed—On the 27th instant I made some experiments for the purpose of ascertaining whether sheep would eat food impregnated with Mr. Elliot's powder. I spread the solution over part of a field. I chose a piece of ground 24 yards by 23 yards, nearly square, and a piece of ground 23 yards by 3 yards. Over these I carefully sprinkled one quart of the solution. There were four sheep left. They had their option of other pasture, and they ate indiscriminately of either. Of the four sheep, two had been dipped, and two had not. I consider that they are suffering from the effects of having taken arsenic, and one of them is very likely to die."

The evidence given for the plaintiff was not backed up with experiment; it was asserted, that if the mixture was not horned down the sheeps' throats, it must have found its way to the stomachs and livers by absorption, and moreover that they would not eat grass "seasoned with poison;" they were delicate animals both in taste and smell. This statement was proved not to be correct, as the sheep experimented upon ate grass, &c., "seasoned with poison," and a similar composition to that complained of, and for the supplying of which the action was brought.

Every sheepowner using poisonous mixtures should be careful, after dipping, to see the wool be well wrung out, and the sheep confined to a circumscribed area for six or seven hours, and in no case to allow the drippings to fall on the pasture or feeding ground. The dip prescribed, the author has been in the habit of recommending as a very useful one, and if the above precautions are strictly attended to, there is not the slightest fear of fatality occurring.

SHEEP LICE AND TICKS.

Sheep of every description are liable to this kind of filth, but especially such as are not in a thriving state. The sheep louse (*Hippobosca ovina*), is small, active, and of brownish colour, and often swarms in thousands on young sheep. The tick (*Acarus reduvius*) is nearly of the same colour as the louse, but is much larger; they are furnished with a proboscis and suckers, which dig into the skin of the sheep. They are of great detriment to sheep, prevent them from thriving, and cause them to scratch and tear off their wool by rubbing themselves against fences, and sometimes they will tear it off with their mouths, to the great injury of the pelt and fleece. In order to destroy these noxious vermin, a number of different applications have been employed; but the author has found none so effectual as—

Commercial carbolic acid, ...	1 pint,
Water, ...	1 gallon.

Apply as a dip; use it once weekly, for three consecutive weeks. In the application of all dipping mixtures care should be taken, that the animals' heads be kept sufficiently above the water after dipping; the sheep must then be placed in a second tub, and the liquor pressed from the wool with the hands; this done, the pressed out liquid must be returned to the former trough. By this method a considerable number can be dipped in a short time. Many veterinary authors recommend the application of mercurial ointment, common turpentine, and linseed oil, as agents calculated to destroy ticks and lice. "Ointment," writes Clater, "possesses a great superiority over all washes; the former promotes the health of the animal, as well as the growth of the wool, while the latter produces the contrary effect." This statement is contrary to my experience; and I think sheep farmers will agree with me, that washes are to be preferred to ointments for woolly sheep infested with ticks or lice.

TO PREVENT THE FLY, SORE HEAD, AND MAGGOTS.

Sheep during the summer, and especially about the month of May, are constantly teased with flies, particularly those kept in lanes or in woody districts. They give the animal so much trouble at times, as to cause them to run into hedges and the bottoms of ditches or dikes, to the detriment of their fleeces and pelt, and otherwise by preventing them from feeding at a time they ought to make the greatest progress. Certain flies during the spring, being in quest of a convenient situation to deposit their eggs, select various parts of the sheep and wool for this purpose; sometimes they choose a sore place or the parts around the tail, especially if the dung collected there be putrefied. The eggs having been here deposited, soon hatch, and are called maggots, and immediately begin to burrow in the skin, when they cause by the severity of their bites continual annoyance to the sheep. If the head be the part selected, the sheep, in order to ward off their attacks, is constantly seen striking its head with its hind legs until a sore is created, which spreads as the result of continual injury. The removal of the cause will usually cure the effect; to accomplish which, clip the wool off the diseased

part, and apply an ointment, once weekly for two or three consecutive weeks, consisting of —

Iodide of sulphur,	1 ounce.
Commercial carbolic acid,	2 ounces.
Lard,	1 pound.

Hogg asserts that the strongest kind of fish oil always prevents the attack of the fly; doubtless it will, and so will any ointment containing strong smelling medicinal ingredients, such as carbolic acid, &c. Youatt recommends for sore head a compound which, in its action, is similar to carbolic acid, and consists of the following plaster: —

Pitch,	1 pound.
Bees' wax,	2 drachms.

Melt together, and spread, whilst warm, on soft leather or linen, and apply to the head.

INFLAMMATION IN THE UDDER OF EWES.

This is a common complaint among ewes at the time of yeaning or lambing. Those which have been well kept for some time before they bring forth are most liable to this disorder, as it is apt to cause a flush of milk at that time; and from the glutinous state of the first milk, and also from being long retained in the udder, it blocks up the passages, and soon brings on inflammation of that part. If ewes are noticed to refuse their lambs to suck, they should be immediately examined, and often it is then discovered that the udder is tender and inflamed, and that milk will not flow from one or both teats. In this case it is necessary at once to apply to it repeated hot fomentations, and to administer two ounces of epsom salts, and the ewe and lamb should be confined in a pen by themselves, in order to see that the lamb does suck its mother; if, after two or three days, the young is not permitted to suck, it is better to remove it to some ewe, if possible, that has just lost her lamb. Fomentations must be still applied to the udder, and the following ointments can be rubbed in twice daily —

Camphor,	1 drachm.
Spirits of wine,	1 tea-spoonful.
Goose grease,	1 ounce.

Should the udder continue to enlarge, and kernels make their appearance of greater or less size, and should they afterward soften and contain pus, the matter must be evacuated by plunging a sharp knife into the swellings at that point, and by squeezing them well out, and reapplying hot fomentations. If an ulcer occur at the point of operation, syringe it with a weak solution of Burnett's disinfecting fluid. Resolutions occur similar to those mentioned under Mammitis in the cow, and as those demand like treatment, the details need not be repeated in this chapter.

THE FOOT HALT OR FOOT ROT.

These diseases in the feet of sheep appear to proceed from one and the same cause; yet if any person wishes to make a distinction, it may easily be done by considering the first stage of the disease as the foot halt, and the last as the foot rot. For rot is first observed by the subject of it being lame; if caught, and the foot be examined, it will be found to be hot and tender, the horn softer than usual, and at the part between hair and hoof enlargements associated with slight separation of hoof coronal bands from the horn will be discovered; sometimes, also, ulcers occur and excrete a thin fetid discharge, and if allowed to increase often develop into fungous granulations, which grow to such an extent as to cause the entire separation of the hoof horn from the subjacent tissues. In accounting for the occurrence of this affection, it will be necessary to consider, first, the situations which sheep in a natural state select to live upon; and secondly, to detail the reasons why the artificial life in this particular respect, and in the production of foot rot, interferes with the health and well-being of flocks. In a state of nature, the sheep, like the goat, was evidently intended for mountainous and rocky districts, and was supplied with a foot structure thoroughly adapted to travel over hard roads and rocky precipices, and consequently such being the case, it will be easily seen that in such an animal the hoof horn growth would be rapid, in order to withstand its continual exposure to the friction such localities would necessitate. The next question which arises is, Do our flocks, as a rule, inhabit localities similar to the above? Certainly not; they live for the most part upon soft pastures, and seldom, if ever, travel over a hard road. In such positions their feet being denied necessary friction grow to an inordinate length; they become sodden with the wet ground; the tissues of the foot grow weaker and weaker, until the connection of the tissue is so far interfered with as to render it incapable of withstanding external injury; for the different parts of the hoof being deprived of their wear, grow out of all proportion, and thus throw the foot out of its natural bearing, when pieces of hoof break off or are irregularly torn away; or by "overshooting the sole," cannot prevent the introduction to the hoof of sand and grit, and these, reaching the sensitive parts, set up inflammation and its results, which, if not cured, ultimately cause sloughing of the hoof horn. To bear out the truth of the statement of a soft pasture being the chief cause of foot rot, we have the fact, that sheep brought from the uplands to marshy districts frequently contract this malady; and this is easily accounted for. On uplands, the growth of grass is commonly not very luxuriant, and consequently the animals are subjected to greater exercise in gathering their food than they would be on lower grounds, where the herbage is generally more plentiful. The hardness of the ground, again, would cause the hoof horn to wear away as quickly as it grew, and by this means any inordinate growth of the foot would be prevented. It is well known to flockmasters that sheep, like goats, will select the highest grounds in a field to lie upon, and in mountainous countries always prefer the hills to the valley; in such countries the scarcity of food on the hill tops, the hardness of the soil, and the exercise necessarily imposed upon the animal in gathering sufficient food to keep it in good case, act

markedly in preventing the occurrence of foot rot. The feet of flocks feeding on low marshy lands should be examined from time to time, and if any superabundance of horn exists, it must be immediately pared down with a sharp knife, as this simple precaution proves the truth of the saying, "Prevention is better than cure."

Treatment.—Let sheep infected with disease be fetched from their pasture, and put in a dry fold yard; and let the foot of each animal be carefully examined, when those feet which are diseased can be well washed clean with a water brush, every particle of grit and sand being at the same time removed. Should an inordinate growth of hoof horn, large excrescences, or proud flesh be present, cut them down with a sharp knife, and afterwards use the following lotion, which in some cases must be applied with a pledget of tow, and confined in its situation with a piece of tape.

Hydrochloric acid,	1 ounce.
Water,	½ pint.

If the growth of proud flesh recurs, touch the part as often as required with a rod of nitrate of silver. The ulcers on the sensitive structure of the feet usually dry up after two or three dressings with common commercial carbolic acid. The secret in treating this malady is never to allow the hoof horn to grow too long, for such growth takes away the natural bearing of the foot, and moreover devitalizes the tissues of the foot, and causes the irregular tearing away of the hoof horn, and injury to the subjacent structure, which terminates in foot rot.

THE SCOUR, OR DIARRHŒA.

This disease occasionally attacks full-grown sheep, but is not so prevalent among them as with lambs; it generally proceeds from bad and scanty keep during the winter season, and makes its appearance in the spring, as soon as the young grasses begin to put forth their succulent qualities. The sheep are not able to stand against so luxurious a change; the fresh grass acts as a too stimulating food, and diarrhœa sets in. This discharge must not be checked too suddenly, for in five cases out of six, in the course of twenty-four hours, without any treatment on man's part, the dung regains its normal consistency; but should the diarrhœa continue for a longer period than the above, then it will be necessary to move the affected flock to dryer pasture, and one on which the herbage is scanty, and also allow a little hay once a day, for a short time. This treatment is usually sufficient to check the scour in sheep. Generally this disease lasts only a few days; but if the symptoms should continue to increase, the following powders must be given twice daily to each sheep:—

Disulphate of quinine,	10 grains.
Powdered ginger,	1 drachm.
Prepared chalk,	1 drachm.
Brandy,	1 table-spoonful.

In some cases where the disease assumes a very severe type, half a tablespoonful of tincture of opium can be added to the above dose.

STURDY IN SHEEP

This disease luxuriates in many names, in turnsick, giddy, goggles, &c.; its existence is due to the presence on the brain of a bladder worm hydatid, the cœnurus cerebralis, which varies in size from a hazel nut to a pigeon's egg, and in this situation interferes most injuriously with the cerebral functions. The subject of sturdy turns round, cannot walk straight, and partial, and often total, blindness ensues; the bones of the skull grow soft, and become pierced by absorption; and if the parasite be not removed the animal so affected dies in convulsions. Sturdy was long ago thought to be a nervous affection produced by the worry and fear inflicted on sheep by the continual presence of the sheep dog when acting as guardian over them; but it has since been discovered by Von Siebold, the German helminthologist, that the disease existed owing to the presence on the brain of the hydatid above named; and further that the dog was to a certain extent answerable for the damage. Von Siebold instituted several experiments, and the results led him to the conclusion that the cœnurus cerebralis was not a complete individual, or, in other words, that this hydatid would not develop into a complete being until it had passed into the intestines or elsewhere of some other animal, and experiments proved the truth of the suspicion. Von Siebold gave the brain containing the cœnurus cerebralis to a dog, and some time afterwards destroyed the animal, and found he was infested with numerous tapeworms —the tænia serrata. A few rings of this tapeworm were given in milk to lambs, and within six weeks they exhibited symptoms of giddiness, and on opening the crania hydatids were discovered on their brains. This experiment was repeated, and has been again and again carried out by helminthologists, and has led to the establishment of the fact, that the cœnurus cerebralis on the brain of the sheep if given to the dog or man will produce in either of them tapeworm; and again, if the tapeworm be given to the sheep, it will breed in them the cœnurus cerebralis. It has therefore been most satisfactorily proved, that the cœnurus cerebralis which infested the brain of the sheep lived in another form in the intestines of the dog. In the latter habitat thousands of germs are developed, which, strewn on the pastures and pools, are taken into the stomachs of sheep, and from the stomach find their way through the medium of the bloodvessels to the brain.

The tapeworm common to man is called the tænia solium, and that met with in the dog the tænia serrata; but although different names are given to them they are, according to Von Siebold, identical worms, and have corresponding hydatids existing in animals of another species. Every bladder worm, therefore, on passing from the body of one animal enters that of another to become a complete individual or tapeworm, when it is supplied with organs of propagation for the multiplication of its kind. Thus the hydatid on passing from the brain of the sheep would die unless a proper habitat were found for it, in which, by metamorphosis, it could develop into a tænia.

Kückenmeister writes:—"Were I to bring forward all

the various causes to which the origin of the cœnurus has been referred, I should far exceed the limits of these pages. That the doctrine of equivocal generation played a conspicuous part therein will surprise no one, since there yet exist veterinarians who adhere to that doctrine on all points." The only mode of insuring the destruction and removal of the worm, and hence the only effectual cure for the disease of sturdy, is trepanning. The operation is, of course, only admissible when the cœnurus cerebralis is imbedded in the anterior and upper portion of the ruminant's brain, whilst if, on the other hand, it be deeply seated in the base of the brain, or in the spinal marrow, it cannot be reached by trepanning. For this reason, therefore, we find cases reported in which the hydatid has been successfully removed; but these must have been those in which the cœnurus was superficially situated; whereas, on the other hand, veterinarians have lost credit for not having extracted from the brain the hydatid when deeply seated, *i.e.*, when so much imbedded in the brain structure as to prevent even the possibility of a successful operation. Many persons reading the above may think that flocks can be preserved from the attacks of tapeworm by not allowing the sheep dog to accompany them. Perhaps fewer dogs might be kept; but then even stray dogs might also be the cause of mischief. The excrements of man and carnivora should not be thrown on fields where sheep are fed, because the tænia solium of man, similarly as the tænia serrata of the dog, produce the sheep hydatid; the flesh of animals known to be affected with parasites should not be eaten; and lastly, meat containing worms must not be given to dogs raw; if well cooked, however, the germs of such creatures are destroyed, and consequently food so treated can be given to carnivorous animals with impunity. In trepanning great care must be used in finding, first, the spot, which often is soft, where the hydatid lies; and secondly, in removing the bone above it; and thirdly, in extracting the cyst bodily in which the worm lives. This operation, as before indicated, is rarely successful, and sturdy consequently is a very fatal malady. The preventive measures, however, suggested will, if thoroughly carried out, gradually reduce the number of sturdy cases; and it is trusted that, in a few years, it will be struck out of the list of diseases to which sheep are liable.

THE DISEASES OF THE EYE, COMMONLY CALLED BLINDNESS.

Ophthalmia attacks sheep as an epizootic at certain seasons. In 1850 it was prevalent among cattle and sheep. Cattle about a year old suffer most; and during 1868 many cattle in Richmond Park were subjected to the author's treatment. In sheep the symptoms are closed eyelids, congested eyeballs and conjunctival membranes, opacity of the cornea, and great defluxion of tears, and sight almost lost, and sometimes the formation of pus in the eyeball itself. The treatment for sheep consists in placing them in a dark place, and bathing the eyes with the following lotion:—

Tincture of opium,	1 ounce.
Water,	1 pint.

and giving in gruel—

Nitre,	½ ounce.
Epsom salts,	3 ounces.

If the disease increase in intensity use an eye lotion—

Goulard's extract,	1 ounce.
Distilled water,	1 pint.

and apply it twice daily; sometimes a solution of caustic can be employed; it must be painted on the eye with a camel's-hair brush—

Nitrate of silver,	6 grains.
Distilled water,	1 ounce.

and much benefit is derived by daubing the orbits with a plaster of the extract of belladonna. In some cases, also, the eyeball has to be punctured in order to evacuate the pus therein formed. The above treatment was prescribed and adopted by me in treating cattle in Richmond Park; and even including three animals the eyeballs of which were punctured, did not fail in a single case to effect a cure. The exclusion of light, by placing a linen bandage over the eyes, kept continually wet, and the exhibition of mild and laxative food, will act as very important adjuvants in restoring the eyes to health.

OVINA VARIOLA, SMALL-POX AMONG SHEEP,

may be defined to be an eruptive fever, in which there are several stages through which it passes before the disease can be fully developed. First, the stage of incubation; that is, a period during which the seeds of the malady are latent in the animal system, when the subject so infected gives little or no evidence of suffering, and consequently is placed beyond the limit of our observation. The incubative stage rarely extends over more than fourteen days, and in some cases only ten. The stage of incubation being passed, it will be noticed that a general failure of health manifests itself, by the subjects of the malady separating from the flock, by hurried breathing, and by a feverish state of the whole system. On catching, and closely inspecting these animals, on their bodies will be observed several red spots, more particularly developed on the parts devoid of wool, such as the inside of the thighs, arms, face, and lips.

In the second or papular stage of this malady small tumours arise on the red spots above mentioned, which sometimes are distinct one from the other; at other times they are thickly clustered together, this latter pathological state being recognized as confluent small-pox. It is during the papular stage that the greatest amount of mortality occurs, and particularly so when it attacks the face, and assumes the confluent form. After three or four days, or at most six, the papular stage passes off, which is indicated by the papulæ parting with their previous redness, and becoming white, and by the appearance of the vesicles or blisters on the papulæ; and for this reason the last-mentioned period has been designated the vesicular stage. These vesicles contain lymph, and from them veterinarians have been recommended to take material (lymph) for

purposes of inoculation, or, in plain words, to obtain lymph by which they may be enabled to communicate small-pox from one animal to another; this stage lasts about three days, during which few animals die.

The vesicular is sometimes, although not always, succeeded by the pustular stage, by the matter within the vesicles degenerating into pus, at which period the face usually swells to such an extent as to close the eyelids; and this pathological state terminates similarly to the vesicular, in the formation of scabs. In the progress of maturation the contents of the vesicles undergo similar changes to those that are produced by ordinary causes; at first they are distended with a clear fluid, which becomes milky in colour, then turbid and straw-coloured, and ultimately by drying hardens into a crust, which is cast off with the epidermis or scarf-skin. As before said, the vesicles sometimes degenerate into pustules; but this is by no means a common phase of the disorder, and both Professor Simonds and Mr. Ceely, who carefully watched the progress of sheep-pox in 1848, have satisfied themselves "that it was not essentially a pustular, but a vesicular disease." In 1862, during the outbreak of ovina variola in Wiltshire and Berkshire, the author examined several hundred sheep, the subjects of this complaint, and noticed that many affected sheep passed through an attack of small-pox without the development of the vesicle into the pustule; but doubtless the formation of pustules indicates a more complicated form of disease, as this stage often leads to the ulcerative, which extends more or less into the skin proper, or dermis, and not unfrequently the subjacent tissues. This state of course prolongs the existence of disease, and as it often terminates fatally, is the most dangerous form of the affection we have to contend with.

In a case of sheep-pox which has reached the vesicular stage, our desire should be for the vesicle to dry up and form a scab, which in six cases out of eight takes place. But as before mentioned, sometimes the lymph within the vesicle degenerates into pus, but if, even with formation of pus, our case progresses favourably, both these pathological states terminate in the formation of scabs; the pustules remain as such for about three days, and then terminate in the formation of scabs; these changes being known as the processes of desiccation and desquamation, which are always protracted when suppuration takes place. The crusts forming the scabs are of a brownish-black colour, and are thicker when cast from a pustule than from a vesicle. The crustaceous stage is, if matters progress favourably, accompanied by a subsidence of the eruptive and feverish symptoms, and soon after the skin regains its natural appearance. The above description details the favourable termination of ovina variola; but unfortunately the vesicular and pustular stages do not always run on to the crustaceous state, as both the vesicles and pustules sometimes degenerate into ulcers (the ulcerative stage), which usually attack the head, when we have a very dangerous form of the malady to contend with, and especially so if the disease has assumed the confluent type. Professor Simonds gives the following summary of the gradations through which small-pox in sheep passes:—The first 10 or 11 days are those of incubation; 12, 13, of invasion; 14–16, of papulation; 17–19, of vesication; 20–22, of desiccation and separation of the crusts.

An attempt has been made above to describe the local manifestations of ovina variola, which of course are under the control, as it were, of the constitution, and I will now detail its symptoms. While, as before suggested, the disease is incubating in the system, the patient gives not the least evidence of of ill health, no indication of failing appetite, hurried breathing, or any febrile state of the system—nothing, in fact, to lead one to suppose that it was not in perfect health; but it must be remembered if a man were exposed to the infection of the *variola hominis*, which is in many particulars closely allied to that of sheep, he might, during the period the disease was lying dormant in his system, complain of being a little out of sorts; he might have pain in the head, his appetite might not be good as usual: but such slight symptoms as these are not readily recognized in sheep, although no doubt they have existed.

The incubative having passed, we notice that the infected sheep separate from the remainder of the herd, and lie down in remote corners and secluded spots of the feeding ground. They exhibit the following symptoms—dejected head with pendulous ears, laboured breathing, swollen eyelids, associated with a copious defluxion of tears; the conjunctiva assumes a deep-red colour, and a discharge of mucus, sometimes associated with blood, flows from the nostrils; the pulse beats ninety in the minute, and as the disease progresses, becomes weak and tremulous; the patient refuses to feed, and the function of rumination is suspended. The fæces are little changed at first, but occasionally constipation sets in, to be quickly followed by diarrhœa, which usually effects a fatal termination; the temperature of the body varies, the extremities being generally cold, but elsewhere the skin is hot. These symptoms continue unabated until the papular stage is succeeded by the vesicular, when the patient manifests by its manner that relief has been obtained. Of course, when the disease assumes the confluent type, our prognosis is rendered unfavourable, as this phase is always associated with greater systemic disturbance, which retards to a considerable extent the wished for termination of the disease. The same remarks also can be made when the fever continues high, for then the patient's sufferings are immensely increased; the breathing now grows more laboured, the animal continually groans, frothy saliva is now discharged from the mouth, the wool separates from the skin, ulcers form on the conjunctiva, and sometimes the eyeball itself becomes involved in disorganization, and the pulse grows weaker and weaker, until it ceases to beat, and death terminates all suffering.

Captain J. Carr thus describes the symptoms, when ovina variola takes on a malignant type:—"The pulse becomes increasingly rapid, the mouth dry and hot, the breath fœtid, and the eyelids, and even the head, so much swollen, that the creature can scarcely be recognized. The pustules being very

numerous become confluent, and form a mass of matter which, especially in warm weather, is apt to assume a putrid character, degenerating into malignant ulcers, by which the poor animal is rendered blind, lame, or loses part of the lips, and is at last carried off by violent diarrhœa."

Professor Simonds asserts that in the majority of fatal cases of sheep-pox, "death occurs during the first week of the eruption," but under ordinary circumstances the chief danger has passed; *i.e.*, when the fever has not run very high, and when the vessels of the skin have expelled the variolous poison from the system; but both Professor Simonds and the continental authorities speak unfavourably of a recurrence of fever during the period of suppuration.

Sacco states, that "this period is the most dangerous, and that during it the patients abstain altogether from food, and utter tones expressive of great pain; they heave quickly at the flanks, the eyelids and lips are tumefied, a viscid and fœtid mucus flows from the nostrils, and an augmented quantity of saliva from the mouth; they never move from the fold; the prostration of strength is great, and they lie principally on their sides. The tenderness of the body is so extreme, that a simple touch will produce convulsions; the alvine evacuations are copious and offensive, and the deranged condition of the alimentary canal speedily carries them off."

Regarding the post mortem appearances of small-pox, no person has investigated the matter more fully than Professor Simonds, consequently his report will be transcribed as follows:—"In most instances the mucous membranes, especially of the respiratory system, are the principal parts affected, the serous membranes, however, do not escape; but for the sake of perspicuity we describe *seriatim* the lesions of the different organs:—

"The condition of the common integument (skin) will depend altogether on the time that the animal survives. If death takes place in the early stages, papular elevations, a few of them covered with vesicles, are abundantly spread over the surface of the body; in the latter stages ulcers of various size and depth are met with. The skin also varies in colour, being in some parts of a red, in others of a blueish-black hue, and everywhere the slightest force will separate the wool from its follicles. The subcutaneous areolar tissue is more or less engorged with blood, and purulent formations often exist beneath the confluent papulæ. Infiltration of albuminous serum into the cellular tissue of the face and extremities is occasionally present. The conjunctiva and transparent corneæ in many instances are free from disease, but now and then give signs of approaching ulceration. The pituitary membrane (Schneiderian, the membrane which lines the cavities of the nose), always exhibits an abnormal condition, but in various animals presents various degrees of sanguineous congestion, and is frequently so much inflamed that disorganization ensues. In many cases it is studded here and there with mucous vari of a light copper colour; these vari are doubtless internal papulæ modified by the structure on which they are developed; these lesions are not simply confined to the nasal portions of the respiratory system, but extend into the larynx, trachea, and bronchi. Occasionally small ulcers are situated on the epiglottis and other parts of the larynx, and along the course of the mucous membrane; rarely, however, do they extend as far as the bronchi. The smaller bronchial tubes and air-cells of the lungs are mostly filled with dark-coloured mucus, and are in general less engorged with blood than other portions of the air-passages. The serous membranes of the thorax (chest) are comparatively free from disease. We have seen them, however, very much inflamed, and in one instance the greater part of the surface of both lungs was adherent to both sides of the chest by a thick layer of colourless fibrin. The lobes of these organs were, in like manner, glued together; the outer portion of the pericardium was coated with lymph, the heart was inflamed, and partially united to its sac by bands of fibrin; an effusion of serous fluid also existed in the pericardial and thoracic cavities. Such appearances are unfrequent, and in general the lungs are congested, and liver-coloured spots, irregular both in size and form, are seen immediately below the pleural covering. The digestive system shows fewer traces of morbid action; the buccal membrane and velum palati are sometimes inflamed; but we have not observed any lesions on the lining membrane of the œsophagus (gullet), rumen, reticulum, or omasum (*i.e.*, the first, second, or third stomachs); the villous coat of the abomasum (fourth stomach) is in some cases infiltrated with blood, and ecchymosed. The cavity of the abdomen occasionally contains an effusion of serum. The peritoneal tunic is even more rarely inflamed than the other serous membranes, and the intestines are free from disease, except when the patient sinks from diarrhœa, in which case they participate in the general morbid changes, and contain fluid and fœtid ingesta. The kidneys are sometimes softened, and now and then similar spots to those seen on the lungs exist beneath their capsules; for the most marked case of which we are indebted to Mr. Ceely, who kindly forwarded the morbid parts for the inspection of Mr. Marson and ourselves. The bladder, and other urinary organs, are unaffected. The generative system does not participate in the disease, and, according to the French authorities, when an impregnated ewe is carried off by the malady the fœtus gives no indication of it.

The spleen is often enlarged, and the liver soft in structure, sometimes pale, but more frequently of a dark colour. The condition, however, of this organ in sheep cannot be said to afford correct evidence of the existence of small-pox in sheep, for it undergoes a variety of structural changes from a multiplicity of causes, some of which are the very reverse of each other. The brain and spinal marrow are affected in some animals, and free from disease in others. Simple congestion, either of the "meningis or substance of the encephalon, is the morbid product usually observed."

ORIGIN OF OVINA VARIOLA.

As before stated, ovina variola is in many points similar to

small-pox of man, although it does not produce the same local effects in the former as it does in the latter. This, however, is more due to the special arrangement and structure of the skin, than to any actual difference in the nature of the affection, since both are governed by the same laws, *i.e.*, both spread through the medium of contagion and infection. Moreover, the adoption of the same preventive measures equally protects man and the sheep from the extensive ravages of small-pox.

Small-pox is considered by some medical investigators to be of spontaneous origin. Of course, all disease must have had a beginning; but the origin of small-pox is of very remote date. Homer, Livy, Ovid, and Virgil, all have described a disease, if not identical, at any rate not very dissimilar to small-pox; all attribute its origin to a vitiated air, and Virgil also draws attention to the great extent to which the disease involved whole flocks in its ravages. He wrote, "Pecus languescit et omnis," and this proves that even in his day its contagious and infectious nature was fully recognized. Consequently, when small-pox has once made its appearance, its extension is certain, unless in a district where measures proved by experience to be preventives are resorted to. From the above, therefore, it will be observed that there is no need in the present article to argue about the for and against theories of spontaneous origin; suffice it to say, that whatever combination of causes may lead to the production of small-pox, when once it is established it immediately spreads rapidly through the medium of contagion and infection, and for all practical purposes our remarks need only be directed to its existence, without asking how that existence originated; as our arguments would begin and end in hypotheses, neither history nor experience affording an axiom in this department of medical research.

Simonds writes, "Whatever the combination of causes may be which produces these maladies, certain it is that very many of them assume an infectious nature: otherwise we cannot account for animals separated and kept apart from those which are diseased, frequently and sometimes altogether escaping, while those are sure to become early victims that are allowed to pasture and live with the affected. Moreover, we can often succeed in producing the malady by inoculating healthy cattle, thus showing how closely the spread of the disorder depends upon contagion and infection. The fact, however, of animals, when in health, if placed with affected ones, contracting a disease of the same kind as that which the latter are suffering from, is the best proof of the infectious and contagious nature of a complaint. An animal escaping an attack, when such affections are raging in the locality in which it is placed, may arise from a variety of causes, as non-susceptibility, and also a possibility of the exciting agents never having been brought within its sphere of inhalation. For although each victim to a destructive epidemic may be considered as adding new seeds or fresh energy to the malady by the exhalations arising from its body, we must not lose sight of the circumstance that very many infectious diseases assume an endemic type, whilst others, which are spread over a vast extent of country, are often observed to take a particular direction. There are, however, diseases of this kind that appear to be guided by no determined laws, breaking out again and again in the same neighbourhood. But even here we may suppose that the deleterious atmosphere floats, as it were, *in nebulis*, and is driven hither and thither by currents, sacrificing fresh subjects placed in the course of its passage."

Judging from our present experience and observation, and the history of the past, we can arrive at no other conclusion than that small-pox spreads both by contagion and infection.

The introduction of ovina variola to England has generally originated from foreign importations, although in the outbreak during 1862–63 its occurrence could not be satisfactorily accounted for. The origin of the previous attack, however, during 1847, was distinctly traced to Spanish sheep purchased at Smithfield market by Mr. Statham, of Datchett, who a few days after purchase noticed two or three of his Spanish sheep affected with a cutaneous eruption, which he considered to be the result of stings, and therefore the subjects of the disease were not removed from the remainder of the flock, and in consequence the disease was allowed to spread with fatal result.

Mr. Statham, noticing the spread and fatality of the above-mentioned skin disease, sought the advice of Professor Simonds, who on his arrival at Datchett found the affected sheep divided into three lots, which were placed in fields situated at prescribed distances from each other. The first lot comprised sheep supposed to be healthy; the second, those recovering; and the third, those recently attacked. Professor Simonds thus reports upon the cases:—"Those in the first stage of the affection were extremely low in condition; a mucous discharge from the nostrils was present, the breathing was quick and catching, the visible mucous membranes were inflamed, particularly the conjunctiva, from which tears flowed in large quantities; all food was refused, rumination had ceased, the ears were lopped, the head held low, and a disinclination was evinced by the patients to associate with one another; some standing and having a dejected appearance, and others lying down. The pulse was considerably accelerated, and scarcely perceptible at the maxillary artery, but at the heart it gave to the hand a jerking sensation; the skin was hot, red, and elevated in patches in the form of nodules or papulæ, approximated to each other. The chief seat of the eruption was on the inside of the arms and thighs, on the sides of the face, the labia of the female and the præputium of the male, parts which are either nude or covered only with hair; but on separating the wool the whole skin was seen to be similarly affected, although less intensely. In the second stage greater emaciation and debility existed; the discharge from the Schneiderian membrane was increased, viscid, and adherent to the alæ of the nostrils, impeding the respiration; the capillaries of the nostrils were in a highly congested state; the pulse was indistinct, even at the heart; the ears and feet were cold, and the wool came off easily, showing the skin underneath

it inflamed, the redness existing chiefly between the elevations, although no distinct areola was present. The summits of the nodules were blanched, arising from effusion of a very small quantity of serous fluid beneath the cuticle, which scarcely gave to it the character of a true vesicle. All the papulæ, however, had not taken on this change.

"In the third stage the vital powers were prostrate; the fever had become of a typhoid character, the discharge from the nostrils fetid, and the other general symptoms much aggravated. The cuticle covering the majority of the nodules had assumed a brown colour, and pus here and there was formed on the margins of some of them, showing the ulcerative state to have commenced; in others simple desquamation of the cuticle had begun to take place. In some extreme cases the ulceration had extended to the subcutaneous structure, and large unhealthy sores existed on the sides of the face, the inferior parts of the abdomen, the prepuce, and the inside of the thighs." On noticing these pathological states, Professor Simonds was at once struck with the identity of small-pox in man with this disease, and at once communicated with several medical friends, among whom was Erasmus Wilson, who similarly with Professor Simonds pronounced the disease to be small-pox in sheep. From 1847 to the present time much experience has been gained relative to the existence and spread of small-pox in sheep, and particularly so in the outbreak in this country during the years 1862–63. It was then stated by many farmers in Wiltshire, that as the disease broke out in Mr. Parry's flock, one bred from home stock, and where sheep were never bought in, it was impossible for small-pox to have occurred otherwise than spontaneously. It must be remembered that there is no record of small-pox in sheep in this country until after the repeal of the law prohibiting the importation of foreign animals. The first outbreak, as above mentioned, in 1847, was directly traced to the Continent. The attack in 1862 was said to be involved in mystery; certainly it never was determined that foreign sheep brought over the infection, but at the same time the port of London, previously to this outbreak, had seen imported cases of contagious disease, including even small-pox in sheep; and it was then surprising to me, that more disease among cattle, the seeds of which were imported from the Continent, did not devastate British herds. It was said, relative to Mr. Parry's flock, that having been entirely bred upon the farm, it was impossible for it to have come in contact with diseased stock, as no fresh animals, either healthy or diseased, ever entered the farm at Allington. In writing of the outbreak in 1862, I find that Professor Gamgee, in a speech delivered at Devizes, drew attention to the possibility of Mr. Parry's flock having been infected by foreign importation:—"I first noticed that the contagious diseases of this country did not receive that amount of attention from veterinary surgeons that they deserved. I have consequently devoted myself specially to inquiries as to the geographical distribution of these disorders, the sources of their origin, and their means of spread. In the course of my travels it has been my lot to investigate even the subject of small-pox in sheep, and I now propose to state briefly my opinion as to the origin of this disease in the county of Wilts, and afford you whatever information I can on the subject of its prevention. In the first place, I wish you to understand that it is impossible small-pox should have appeared amongst us spontaneously. What some people call the contagion *theory*, I call a contagion *fact*. And this disease has hitherto been at all times one of foreign importation into Great Britain and Ireland. It is one of those disorders which we have unfortunately introduced into this country since that memorable date the 9th July, 1842. Five years elapsed before we were affected by it. It remained amongst us for a short time; and here we have it bursting out among us in the most unexpected manner. Before reaching Devizes I understood that the origin of the disorder was involved in mystery. The only plausible statements afloat referred to the malady having been communicated through the canal, or from the flying of starlings from one flock to another. But such far-fetched theories are not needed. I find that on the Downs of Wiltshire there is a constant traffic in animals, healthy or diseased, driven along the Wansdyke to avoid the payment of tolls. At every step I have received confirmation of the passage of animals along these Downs, and into the very heart of Mr. Parry's farm. I do not mean to say that the undoubted existence of this traffic demonstrates that the disease was thus imported, but I wish to show that Mr. Parry's flock has not been so privileged from any communication with other animals as to drive us to imagine that the malady must have been of spontaneous origin. The great cause of the mystery attending this outbreak has been, the want of direction in accumulating all the facts necessary to come to a conclusion. I may illustrate my meaning in a very simple manner. If a thief entered this inn to-night, and stole some plate, the fact of the robbery would not be doubted, notwithstanding that the man might evade the vigilance of the police. But with regard to disease, we often find effects result where causes have operated in a most mysterious manner. That is no proof that the causes have not been in operation. When in the county Cork a few days ago, I had a good illustration of the way in which contagious diseases are communicated, notwithstanding the greatest care on the part of the farmer to avoid contamination of his flock. An extensive short-horn breeder, who avoided the public markets, and purchased with the greatest care, so as to prevent an outbreak of pleuro-pneumonia, observed one fine morning that a case had occurred among some cows that he had nursing some of his high-bred calves. He was extremely puzzled to know how the disease had entered his domain, but, determined to get at the truth, he instituted a searching inquiry; and he found that whilst he was comfortably asleep in bed a drover had taken the opportunity of turning some cattle to feed upon his land, and had removed before he (the farmer) was about in the morning. That act of trespass was the cause of a loss amounting to several hundred pounds."

SMALL-POX IN SHEEP—THE HISTORY OF ITS EXTENSION DURING 1862.

THE introduction of ovina variola to England during 1862 was never clearly traced to foreign importation, although it is not unlikely that the suspicions suggested in Professor Gamgee's speech go a long way in explaining this difficulty; but certain it is that small-pox spreads by contagion and infection, and when once established involves with fearful rapidity whole flocks in its ravages: such was the case during 1862. Mr. Parry's flock was the first to be attacked; and as this gentleman's farm was situated in the midst of an extensive sheep district, extending over at least 70,000 acres, there need be no surprise that the neighbouring flocks soon became affected with variolous disease. When small-pox appeared, Mr. Parry being then in ignorance of its nature, placed his sheep in a field adjoining certain pasture lands tenanted by Mr. Harding, of Etchilhampton, and in which this latter-named gentleman's flock was feeding. Soon after this small-pox broke out among Mr. Harding's sheep, and Professor Simond's aid was solicited.

In order to make matters clear, it will be necessary to inform my readers that, on a certain morning in the month of May, 1862, Mr. Joseph Parry, of Allington, noticed several of his sheep to be sick, upon which he sought the assistance of a local farrier, who stated that the flock generally was labouring under the baneful influence of a "chill" (a term used to designate many diseases occurring in Wiltshire), but that a draught or two would soon put them right again. The prescribed treatment was consequently adopted, and persisted in for some time, but unfortunately without benefit, for the animals continued to die daily.

At this crisis, in July, Mr. Parry became alarmed, and went to London to consult Professor Simonds as to the cause of this ovine devastation; the result of which visit was, that the professor came to Allington on the 2nd of August, pronounced the disease to be ovina variola, advised inoculation, and consequently operated upon 800 sheep (lambs and ewes). Mr. Parry's flock, prior to the date of the outbreak, consisted of 1720 sheep, out of which number 920 were attacked in a natural way, and of them fifty per cent. had died; of the 800 inoculated cases only thirty-six terminated fatally.

The question which naturally arises, and has been proposed over and over again, is—How did the disease first occur? How could it have arisen as the result of contagion, since Mr. Parry's flock were bred upon the farm, and when fresh stock had not been imported for years? Doubtless there is great difficulty in answering this question. Nobody has been able to throw any light upon the subject, and as yet all suggestions offered amount only to so many vague ideas; still it will not be unavailing to inform my readers that the "spontaneous origin" theory met with many supporters amongst flock-masters, and for this reason, that being unable to find a cause to account for this sudden outbreak, they embraced the "spontaneous origin" theory, as they had no other to choose from. Besides, they argued small-pox must have had a beginning: Abraham and Lot might have possessed animals the subjects of small-pox, and the disease with them must have been spontaneous. It is admitted that it occurs spontaneously in Africa. Why not, then, in England? Why should not a number of afflicting causes operate in such a manner upon our flocks as to produce small-pox? We know that certain devitalizing atmospheric influences produce skin diseases, and facilitate the appearance of pustular irruptions; and in the case of Mr. Parry's flock, singularly enough, such influences have had their sway: for it so happens that his sheep were washed when they were overheated, that shortly afterwards they were sheared, and on the night following they were exposed to the baneful effects of a cold wind, accompanied by a heavy fall of rain. Soon after this the "chill," as it was termed, attacked, or more properly, small-pox commenced its ravages amongst them. But, be this as it may, whether small-pox be of spontaneous origin, or whether it arises as the result of contagion or infection, it is certain that, having once established itself, it has a great tendency to spread as an epizootic, and to cause a greater amount of mortality than any form of disease affecting other sheep.

Not only did small-pox spread as an epizootic from Allington to Etchilhampton, but also to Mr. Neate's flock at Allcannings, a farm adjoining the first-named village, the disease being discovered in the following manner:—It happened that Mr. Neate, then not entertaining even an idea that his flocks were in any way diseased, sent 250 lambs to Marlborough fair, which he sold to a Mr. Lowsley, a large sheep-dealer residing at West Hayburn, Berkshire. On the Saturday after the fair his shepherd, out of the flocks that remained at home, noticed a ram to be sick. Mr. Neate, being fully conscious of the spread of small-pox, asked Mr. Parry (who necessarily had a good practical knowledge of the malady) to examine his flocks for him—in which proposal that gentleman readily acquiesced, and, after an inspection, announced that several sheep were diseased similarly to his. Upon which Mr. Neate, in a very praiseworthy spirit, started for West Hayburn in quest of the lambs he had sold to Mr. Lowsley, with the determination to repay and retake possession of them, which he succeeded in doing two days after the fair. On the Sunday following, thinking most likely that the lambs were affected with the malady, Mr. Neate sent a telegram to Professor Simonds, with intent of securing his presence and advice. The professor came to Allcannings, and an inspection demonstrated fourteen cases of small-pox. Inoculation was advised and performed during Tuesday and Wednesday on 1000 sheep, out of which number sixty-four died.

As may be naturally supposed, the farmers in and adjacent to the districts where small-pox was raging, became alarmed. In particular Mr. Hitchcock, a gentleman who had 300 sheep located in the midst of the three diseased flocks before men-

tioned, owing to this fact, and to a belief that the disease would spread to his flock as the result of contagion or infection, and knowing of no treatment but inoculation, sent for Professor Simonds, who performed it and produced by artificial means small-pox amongst the 300 previously healthy sheep, out of which number forty-six deaths occurred.

Soon after this, and during the period the disease was gaining ground, Professor Gamgee arrived in Devizes, and, in conjunction with Mr. Hussey, the local government inspector, visited several flocks, and amongst them one the property of Mr. Giddings, of Horton, a flock 400 strong, said to have been affected. These sheep were inspected one after the other, and only one was found to be diseased, which was separated. Three days later the flock was again examined; no sheep, however, presented symptoms of small-pox. Three days later four cases were discovered, and were immediately separated; one of the four unfortunately died.

The next flock that became diseased was Mr. Simpkins' of Stanton, two out of 500 being attacked, as Mr. Simpkins thought, with swollen lips; he sent for his veterinary surgeon, Mr. Coleman, who pronounced the above cases to be variolous. Mr. Simpkins, however, adhered to his own opinion, but fortunately took the precaution to destroy and bury the two sheep, the subjects of swollen lips. The following day, or soon after, Professor Simonds, in his capacity of government veterinary inspector, having been informed that small-pox had broken out at Stanton, examined Mr. Simpkins' flock (be it remembered the sheep examined by Mr. Coleman were dead and buried), and pronounced them sound, and gave him a "clean bill," bearing testimony to their healthy condition, and thus enabling him to send to and sell at market. Accordingly, on a following Thursday, part of the flock to which these two diseased sheep had belonged, and which Mr. Coleman had pronounced to be affected with small-pox, were sent to Wilton fair, there to be exposed for sale, amongst perhaps 70,000 others. In this matter, therefore, Professor Simonds' opinion was seemingly directly opposed to Mr. Coleman's, and the latter gentleman thought at that time that his professional knowledge was called in question. As might be expected, it aroused his indignation; for in a conversation with Professor Gamgee he reiterated his former opinion, and desired him to accompany him to Mr. Simpkins, in order there to inspect the above (as he stated) variolous cases, and to clear up the matter. In this Mr. Simpkins was unwilling to acquiesce. The propriety, then, of digging them up, was suggested and refused. To investigate this matter they were determined; and it happened that on the following night these two sheep were dug up without permission, and proved to be the subjects of small-pox. One head, covered with pocks, the author saw at Devizes, preserved in spirits, to satisfy those most unwilling to believe. Professor Gamgee, having satisfied himself as to the correctness of Mr. Coleman's opinion, and having learnt that a part of Mr. Simpkins' flock had left for Wilton fair, telegraphed at once to the mayor of that place and to Professor Simonds, to acquaint them with the above circumstance, "early on Friday morning," the day of the fair. "Unfortunately the message did not reach them until the evening, after the sheep were sold and driven away." They were traced, however, to Woodford, and were returned to Mr. Simpkins.

The next, although slight sufferer, was Mr. Dark, of Avebury Down. Here, again, the system of separation and destruction was resorted to, and by this means the malady was limited to only two cases.

My readers will remember that Mr. Neate's infected lambs stopped (after they were sold at Marlborough to Mr. Lowsley) at Mr. Church's farm, Aldbourne, on August 22, and doubtless during their short visit communicated the virus of small-pox to Mr. Church's previously healthy flock, as, soon after, thirty cases occurred, upon which the separation system, without destruction, had been adopted; and this early removal of the diseased subjects from the healthy stopped the progress of the malady; only seven deaths occurred amongst the thirty above alluded to, and no fresh cases in a flock of nearly 400 ewes and lambs occurred. Prior, however, to the outbreak of ovina variola at Aldbourne, Mr. Church sold 200 lambs on August 26 to Mr. Hulbert, of Langley Farm, Newbury, Berks; four days after purchase the disease manifested itself in this little flock by eighty cases immediately breaking out; the larger number in a flock of 300, with which the 200 previously mentioned had been located. The whole of this flock was inoculated by Professor Simonds. Mr. Drew, the local veterinary surgeon of Ilsley, informed me in 1862, that there had been a large percentage of death amongst the inoculated cases, and that *he* should hesitate on a future occasion to inoculate with a view to produce a benign form of small-pox.

It is not difficult to understand by what means small-pox spread to the Aldbourne flock, when we remember that Mr. Neate (then in ignorance of the fact) sent to Marlborough fair 250 lambs infected, if not affected, with the malady, and that these, after sale to Mr Lowsley, stopped for a night at Aldbourne, on their journey to West Hayburn, and thus by contact communicated small-pox to Mr. Church's flock. It is fair to state that Mr Neate, on discovering his mistake, did all that man could do to repair the mischief, by repaying Mr. Lowsley and retaking his lambs to Allcannings; but unfortunately Mr. Church, not knowing that his lambs were infected, sent 100 to Henley fair, which were sold to Mr. Hulbert, who, four days after purchase, noticed a lamb ill, after which the disease spread through his other flocks. Inoculation was practised, and great mortality occurred; but fortunately, at this period, small-pox was confined to the counties before alluded to, viz., Wiltshire and Berkshire.

Ovina variola was unknown in Great Britain until after the repeal of the law prohibiting the importation of foreign animals; and moreover, its first appearance in this country—viz., in 1847—was directly traced to a flock of variolous sheep imported from the Continent. These sheep were sold in Smithfield to several buyers, by which means small-pox

was distributed over the country, and soon manifested itself in a flock near London, in the autumn of 1847. During the three following years it spread through several counties, and thus became the source of serious loss to British flockmasters. In 1853 it again broke out in Essex, Norfolk, and Suffolk, and its origin was again traced to the Continent.

But, unfortunately, the outbreak of this malady in 1862 is somewhat involved in mystery, when we consider that Mr. Parry's flock was not increased from without: it had no fresh animals, male or female, introduced into it.

Profesor Simonds, in attempting to account for this outbreak, writes, "We have regarded small-pox as spreading by contagion; now we must ask whether it can have a spontaneous origin?"

From the above question it seems that the Professor arrived at no satisfactory explanation, asserting, as he did, that Mr. Parry's flock could not have taken the disease from animals passing along the "drifts," it being fully established that the said flock was located at least two miles from these "by-paths" at the time they were first exposed to the infection. In support of this theory all that can be advanced in its favour is, that all disease must have had a beginning; the same afflicting influences which effected the manifestation of the first variolous case, might have similarly operated in this our day to produce disease, as they perhaps did in the time of Adam. Another suggestion, which somewhat strengthens this idea, is attributable to the fact that in Mr. Harding's flock at Etchilhampton, 400 ewes evinced symptoms of infection, when being folded a mile and a half from Mr. Parry's diseased sheep. The same remark, however, would similarly apply to the Allcannings' flock; to which point, as before stated, the recent outbreaks were readily traced—ravages attributable to contagion.

Having pointed out to my readers the reasons the supporters of the spontaneous origin theory assign, it will be my endeavour also, on the other side, to state clearly the ideas advanced and the arguments opposed to it. It is distinctly stated by Professor Gamgee, and it is well known to the Wiltshire farmers, that their downs are traversed by driftways over which flocks from the Continent can travel on their journey to the different parts of the country, and it is not improbable that diseased flocks from abroad might have fed off the downs in question, and (as the result of infection) have communicated small-pox to healthy flocks.

Having previously drawn attention to facts referring to the direction in which small-pox spread amongst the flocks of Wiltshire and Berkshire, it is my intention at present to consider how and in what manner the extension of this malady was facilitated.

It will be remembered that the disease first broke out as early as June, 1862, in Mr. Parry's flock (although it was not then diagnosed by him to be small-pox); that soon afterwards about fifty per cent. of the natural cases died, and the remaining 800 were inoculated; therefore it is plain that at one and the same time an enormous amount of disease existed at Allington, in a centre from which it was likely to spread as an epizootic to the neighbouring flocks. But the question which first arises is, By what means was small-pox imported to Allington? Professors Simonds and Gamgee were both opposed to the spontaneous origin theory, both stating positively that it arose in Wiltshire as the result of actual contact. To support this statement, it is well known that there was no mention ever made in this country of the existence of small-pox until after the repeal of the law prohibiting the importation of foreign animals, and that the first outbreak in 1847 was directly traced to the Continent. The outbreak referred to was certainly involved in mystery, as Mr. Parry's sheep were all bred on his farm.

Previously to 1862 cattle often affected with disease were to my knowledge, allowed to pass from our ports into the country to be sold, and this owing to the ignorance of the inspectors, in many instances not veterinary surgeons, and therefore, in every sense of the word, incapable of recognizing, and consequently detecting, disease. But, for the sake of argument, allowing that sheep affected with small-pox did leave our ports for the country, let us consider how they could have arrived in Wiltshire and infected the flock of Mr. Parry, at Allington.

It is a system with the Wiltshire farmers to feed their flocks during the day on the downs from April to November, a shepherd being with them during that time, and at night to place them in a fold; it must also be understood that the down appertaining to each farm is not divided from the one adjoining it by a fence of any kind, but merely a landmark indicating the extent of range allowed on the one side to A, and to B on the other. "Each farm has, therefore, a certain amount of arable land in the vale, and a strip of down on the hill." Such being the situation and position of the downs in Wiltshire, and being so defenceless against inroads from without—so lax, also, was the inspection of foreign stock at our ports—it is not altogether difficult to account for the introduction of small-pox amongst the Wiltshire flocks, when we consider that this district is traversed in all directions by driftways, so that drovers can pasture their sheep on the downs for days, and go from Bristol to London without the payment of a single toll, or from Southampton to Ilsley, &c., in the same way. An extensive dealer has assured us that many a hundred sheep, driven for several days along the Wiltshire downs, cost, for travelling expenses, 4*s*. a day. No money is needed for food, shelter, or tolls.

From the above, therefore, it seems neither impossible nor improbable that diseased flocks brought from Bristol might have fed off the very downs during the night upon which Mr. Parry's flock was to browse the following morning, and by this means infection or contagion might have operated to produce small-pox amongst his flock.

This notion Mr. Parry disagreed with, because his flock, previous to their being affected, fed upon a pasture close beside the banks of a canal, and had not been on the downs; and be it observed also that this canal led to a superphosphate of lime manufactory, by the banks of which pasture the barges

containing bones and sometimes skins had to pass on their voyage to the above establishment. Is it not possible, therefore, that these bones or skins might have belonged to bodies the subjects of small-pox, and that by this means the infection passed to the Allington flock?

From the above remarks, it seems not unlikely that small-pox in sheep might have been produced by infection or contagion from either of the above-assumed causes.

But diseased animals, having passed inspection—that is, having been pronounced healthy by an examiner—are driven to and perhaps across the Wiltshire downs; during the day-time no doubt the drovers keep them moving gently along the roads, but at night they are allowed to range over the downs appertaining to the several farms; perhaps a flock affected with small-pox did range over Mr. Parry's, Mr. Neate's, and others, and by this means infected the flock. This, however, is speculative; but still such introduction might have brought, and perhaps did bring, small-pox into Wiltshire.

Secondly, as regards the bones and skins noticed on the barges whilst passing near the banks of the canal close by the spot where Mr. Parry's flock browsed: it is very difficult to trace the disease to them, and therefore I shall not attempt to say more upon it. It is merely a suggestion thrown out, which may at some future period be a means of casting some light on this mysterious subject.

HISTORY OF THE TREATMENT OF SMALL-POX IN SHEEP.

The first course to be adopted in the treatment of small-pox in sheep is that of separation; the next to be described is the indication of the different medicinal agents prescribed. In 1863 H. C. Miles, F.S.S., assistant surgeon to the Royal Artillery, in a paper on an Indian remedy for small-pox read before the Epidemiological Society of London, advised the use of the *Sarracenia purpurea*, vulgarly called Indian cup, or pitcher plant, as a medicine calculated to be of benefit in the cure of small-pox. Professor Cleveland, U.S., makes the following remarks on effects produced by it:—

"My experiments are confirmatory of the utility of the plant in cases where there is a sluggish or torpid condition of stomach, intestine, liver, kidneys, uterus, or various functional derangements, and it must be evident that this plant possesses valuable properties. It is even possible that a new salt, similar in importance to morphia and quinia, may be extracted from it, and thus a new and valuable remedy may be added to our Materia Medica."

This remedy seems first to have been discovered by the North American Indians, who, when small-pox broke out and devastated their tribes, used a decoction of the root of the *Sarracenia purpurea*, believing that it acted with prophylactic effect.

An Indian authority on this matter asserts that the root of this plant alone is beneficial in the treatment of small-pox, but that preparations made from the leaves are useless in that malady. The directions for the preparation and use of this decoction are as follows:—That the root, when fresh gathered and divested of its thin fibres, should be slowly dried; that two oz. of the dried root should be cut into pieces and placed in an earthen pot, upon which a quart of cold water should be poured, and afterwards be permitted to simmer gently over a steady fire for two or three hours, "so as to lose one-fourth of its weight."

Observations.—1. In the case of an individual suspected to be under the influence of small-pox, but with no distinct eruption upon him, a large wine-glass of the infusion of the root of the plant *Sarracenia purpurea*, or pitcher plant, is to be taken. The effect of this dose is to bring out the eruption. After a second or third dose, given at intervals of from four to six hours, the pustules subside, apparently losing their vitality. The patient feels better at the end of each dose, and in the graphic expression of the "Micmac," "knows there is a great change within him at once."

2. In a subject already covered with the eruption of small-pox in the early stage, a dose or two will dissipate the pustules and subdue the febrile symptoms. The urine, from being scanty and high-coloured, becomes pale and abundant, whilst from the first dose the feelings of the patient assures him that "the medicine is killing the disease." Under the influence of the remedy, in three or four days the prominent symptoms of the constitutional disturbance subside, although, as a precautionary measure, the sick person is kept in camp until the ninth day. No marks of the eruption (as regards pitting, &c.) have been left in cases examined, if treated by the remedy.

3. With regard to the medicine acting (as is believed by the Indians) in the way of a preventive, in those exposed to infection, it is curious to note that in the camps where the remedy has been used the people keep a weak infusion of the root prepared, and take a dose occasionally during the day, so as to "keep the antidote in the blood."

These observations by the Indian have been fully corroborated by Europeans, who have noticed that, consequent upon the administration of the root *Sarracenia purpurea* to persons covered with variolous eruptions, the following results have manifested themselves—

1. Rapid diuretic action with immediate lessening of the febrile symptoms; and, more tardily, it acts as an evacuant on the large intestines.

2. On a repetition of a dose of the decoction (which perhaps should be given after three or four hours, instead of at longer intervals), the mitigation and obvious improvement, should any symptoms of cerebral disturbance be present.

3. Its extraordinary effect (within a brief period) in altering the *character* of the cutaneous eruption. It seems to arrest the morbid process, and induce a healthy instead of a diseased action. The pustules appear simply to be deprived of their vitality; they desiccate and fall away.

4. The prevention of *pitting*, consequent, it may be supposed, on the whole nature of the pustule being changed in the manner just noted.

The dried root of the *Sarracenia purpurea* can be obtained of Messrs. Savory and Moore, London.

The fact of the prevalence of ovina variola in England during 1862–63 elicited a letter from Dr. Rennie, of the 31st Regiment serving in China. Dr. Rennie's theory is, that small-pox is generated, like typhus-fever, owing to the neglect of sanitary and hygienic measures, which neglect permits the generation and elimination of fetid compounds; and they, entering the animal economy, deleteriously affect it by contaminating the blood with this supposed malarious poison. This foreign and injurious substance, when pervading the system, devitalizes it, and consequently an effort on the part of nature is called into operation, which attempts, by throw-

ing out a pustular eruption, to eradicate the virus from the system.

The treatment prescribed in cases of cutaneous eruptions is the external application of a liniment consisting of tartar emetic and croton oil, the effect of which, the doctor states, is the production of a strong "galvanic or electric" action, which causes the eruption to assume a "healthy and mild form." The doctor considers that a further investigation of small-pox will lead us to the direct use of electricity. The report forwarded contains several cases successfully treated in the human subject by the above means.

During the outbreak of ovina variola in 1862 and 1863, it was asserted by some that the disease among sheep was not small-pox, but a severe cutaneous eruption. And what is ovina variola but a skin disease—an eruptive pustular malady, having received the name of small-pox in sheep because of its similarity, in external manifestation and in constitutional effect, to the same disease known as small-pox in man? Small-pox in sheep passes through similar stages to the disease in man—namely, the incubative, when the malady is latent in the system; secondly, the vesicular, when spots or vesicles appear; thirdly, the papulated, when the papulæ often run into one another, *i.e.*, coalesce and assume the state known as confluent small-pox. Again, the malady will run its course in sheep as in man; and any attempt to arrest its development is attended with most dangerous results. Now, in the treatment of small-pox in man, the physician has the means of cure under his control to a greater extent than the veterinarian when attending the same disease in sheep—that is, the physician can keep his patient in a bed, can have the room well aired and heated if the day or night be cold, and his patient has the sense to take medicine willingly; and therefore, by a strict observance of these means he can facilitate the development of the pocks, and avoid everything calculated to frustrate the operation of nature in producing them. For the veterinarian quite an opposite state of things exists: he often has to treat his patients when they are located in ill-drained and badly ventilated stalls, in which fetid effluvia, caused by the presence of impure gases, exert their baneful influences on the inmates; and sometimes in the open fields, when atmospheric changes, heat and cold, act injuriously upon animals labouring under disease. Perhaps no malady to which the ovine race is subject demands greater care and protection from the operation of bad weather, than small-pox. For the sake of argument let us imagine a flock to be infected with it; that is, in the state of disease which may be designated "incubative." The owner of the flock fails to observe that any animal is sick, and they are allowed to range, and are treated as formerly. Now, even during this stage, a cold, wet night would not fail to injuriously affect infected animals, by throwing (as the shepherds would say) the disease inwards, or more properly, by retarding the development of the pock, and consequently keeping the supposed virus of variola in the system for a longer period than is usually ordained by nature; by which means the system, owing to the presence of this poison, becomes devitalized, and the operation of vital powers necessary to the production of the pock is interfered with. These remarks can with equal force be applied to patients when passing through the other stages of variola; and especially so during the papulated stage, when inclement weather often causes the development of the form of small-pox known as confluent. Both Messrs. Parry and Neate informed me that their sheep, when in the latter stage of the malady, seemed sicker after wet weather and extreme heat, and died in greater numbers; whereas during dry weather and a medium temperature, they seemed less affected, and progressed more favourably. In some of the cases in which post-mortem examinations were made (the time when I carried out these examinations, being after three consecutive days' rain), I found that the lambs died as the result of congestion and hepatization of the lungs; in these instances cold had doubtless impinged upon the system, previously devitalized by disease, and by attacking the most vital organs, viz., the lungs, produced congestion of them and consequent death.

Looking at the above facts, the question suggests itself—If in treating small-pox in the human subject such care is required to insure warmth, cleanliness, &c., both during the continuance of the malady, and for some weeks afterwards, why should not the same be demanded for the variolous sheep? It is well known, however, that sheep are gregarious animals, and dislike being housed; and often, if shut up in confined places for ever so short a time, die, even though not previously diseased. But although this is the case, why could we not locate variolous sheep in places similar to those in use at lambing time, with a shed around the yard? This might be adopted with benefit, because, as before indicated, it would protect them against the injurious effects of bad weather, and the too severe heat of the sun. During the outbreak in Wiltshire little or no protection was afforded to these miserable sufferers, and, in my opinion, many died in consequence of the inclemency of the weather. Therefore if disease at some, and, I hope, far distant period, should occur, let me advise flockmasters to place their affected flocks in habitations protected from the weather, in a similar way to the folds used in lambing time.

This place or infirmary would be the spot to which the variolous sheep could be sent when separated from their healthy companions; and segregation should be resorted to on the immediate appearance of disease. In bad cases, viz., those manifesting symptoms likely to be fatal, the animals should be destroyed and burnt, and the ashes buried. Near the infirmary, and with benefit, a Turkish bath might be constructed, as an adjunct to the treatment of small-pox in sheep, but so built as also to accommodate larger animals upon the farm. Scientific men, who have borne testimony to the effects produced on the animal system by the use of the bath as a curative influence, inform us that "at a temperature over 160 degrees infection is destroyed and fever is conquered." Now if this be true, we have in the Turkish bath a very

valuable agent in stopping the progress of this disease by destroying infection, and it might be tried by my readers at any future outbreak of small-pox. It should seem that in treating skin affections the first course to be adopted should be that of shearing, in order to obtain a surface capable of being rapidly operated upon, and quickly dried afterwards; and more particularly would I recommend shearing previous to the application of hot-air baths for small-pox in sheep.

It must be remembered that sheep are very timid animals, and consequently great care must be exercised in administering medicine. A sheep, if caught and drenched three times weekly for a fortnight, will often die, either as the result of fright or of some derangement caused by the handling necessary to be called into operation during such process. It will therefore be wise, in treating small-pox medicinally, to give nitre in the water-troughs, and to feed the animals on an easily-digested and at the same time nutritious diet, such as oil-cake, carrots, &c.; and after the disease has runs its course, to administer tonics, and occasionally stimulants. This treatment during the outbreak in 1862 was attended with success.

INOCULATION OR OVINATION.

The inoculation of sheep with the view of producing a mild or "benign" form of small-pox, has for years past been practised on the Continent, and at various periods since 1847, in Great Britain. Professor Simonds, during the outbreak among sheep in 1862, operated upon several flocks with varied success, and from his book on Ovina Variola we learn that he, together with many English authorities, recommends inoculation as an artificial means, calculated to modify the type of disease, and to lessen the mortality which usually happens when-small pox occurs naturally. This being the case, I will endeavour to explain the mode of operating, and the period at which lymph should be collected from the small-pox vesicle. It is of no consequence whether the lymph be obtained from the vesicle which has occurred *de naturâ*, or has appeared as the result of inoculation; in each case it must be regulated by the duration of its incubative stage. The lymph required for the operation must be obtained from the vesicle when fully pregnant with the fluid, but on no account when the smallest amount of pus has formed, *i.e.*, when the vesicle is assuming the pustular type. Professor Simonds considers that the vesicles very seldom are sufficiently matured to yield lymph before the twelfth or thirteenth day after inoculation. Continental authorities state that lymph may be obtained from inoculated sheep on the eighth or ninth day; but this statement is contrary to the experience of British authorities, and especially of Mr. Ceely, who informs us that he has seldom been able to obtain lymph before the twelfth day. He writes as follows:—"On the fourth day succeeding the inoculation of the animal which yielded the ichor, there were febrile symptoms, and roseola and stigmata near the inoculated parts, which were hard, elevated, and of a brick-red colour. The general and local symptoms increased, and on the sixth and seventh day of inoculation, large papulæ appeared, chiefly in the vicinity of the punctures. Subsequently papulæ showed themselves near the mouth, and eventually the absorbents of the groin, near to the inoculated places, became indurated; yet it was not until the eleventh day of the eruption, and sixteenth of inoculation, that any lymph could be procured from either the eruptive or inoculated vesicles."

MODE OF OPERATING.

Having selected a sheep with the vesicles upon it, as above indicated, and procured the necessary lymph, it will be wise to confine the flock about to be inoculated, in a circumscribed area, and to catch every animal one by one, until each has been operated upon.

The places usually selected for the insertion of the ovine virus, are the inside of the ears and thighs, the under surface of the tail, or any other part devoid of wool or hair. Captain Carr gives the following instructions for the performance of inoculation:—"The places best suited are the inner side of the flap of the ear, or the under part of the tail, close to the root. The instrument employed is a kind of needle made for the purpose, with a fine and somewhat flattened point, which having been dipped in the virus is carefully inserted between the upper and second skin, carefully avoiding piercing so deeply as to draw blood, which is found to render the success of inoculation less certain. Of course, in the absence of such a needle, a lancet will answer the purpose."

The lymph may be obtained from the small-pox vesicle by plunging a needle or lancet into it, as above mentioned, and immediately inserting the charged point into the skin of the sheep on the inside of the flap of the ear, inside of the leg, or under the tail; or, in other words, those parts devoid of wool and hair. The number of punctures ought not to exceed three or four, and should be about two inches apart, so as to prevent the extension of inflammation from one to the other. Professor Simonds writes—"It is better to have one incision on either side of the abdomen, and a third on the inner part of the thigh. The greatest care is required in making the punctures, for, if deep, they are certain to be succeeded by ulceration and sloughing of the surrounding integument, often to the extent of two or three inches. They cannot be too superficial. Indeed, with primary lymph, *i.e.*, lymph procured from the vesicles of natural ovine-pox, we have found that the slightest incision, even if it did not penetrate the dermis, has been followed by an ulcer, varying in size from that of a shilling to half a crown."

The experience of Mr. Ceely agrees with that of Professor Simonds, for he writes—"I find superficial scratches better than punctures, and I place the lymph upon them by means of a portion of moist cuticle recently removed from a vesicle, and secure it with a piece of adhesive plaster: large punctures are sure to be followed by extensive or deep and dangerous sloughing." Professor Simonds, for the sake of comparison between the effects produced by scratching and by puncture, had recourse to the following experiment:—

November 29.—Three-year-old sheep, Irish breed, ovinated

by scratching the epidermis inside each thigh, and making a slight puncture on the brisket. Dry lymph used to the separate places.

November 30.—Swelling is present, associated with diffused redness of the abraded integument. No change in the incision.

December 1.—Small pustules are found on the scratches. The red colour is declining.

December 2.—The pustules have discharged their contents, the swelling has nearly subsided, and the cuticle is desquamating. The puncture is marked by a deep red dye of variolous inflammation.

December 4.—The absorbents surrounding the incision are corded. The inflamed spot is larger; but the animal's health is scarcely affected.

December 6.—A few papulæ have appeared. These subsequently passed through the regular stages, and on the 18th the patient was convalescent.

The animals selected to be operated upon with the variolous poison, should always be such as are in good health and not less than six months old, as young lambs seldom recover the effects of inoculation. We must also be guided by the weather in our determination of the period when to operate. The extremes of hot, cold, and wet weather must be avoided, but a dry and mild season can be wisely chosen; and after a flock has been inoculated it will be good practice to place it in a protected situation or shed, similar to those used during the lambing season. Some persons advise, under any circumstances, the gradual preparation of the flock selected for inoculation by dieting, so as to produce a healthy state of their systems; and in certain cases, the exhibition of medicinal agents, to be given under the advice of a qualified veterinarian.

It has been stated by Hurtrel D'Arboval, that the exudations from inoculated vesicles are not so efficacious in producing small-pox as those of the eruptive ones. In opposition to this opinion, both Professor Simonds and Mr. Ceely have succeeded in inoculating successfully with the contents of both vesicles, and consequently have not noticed the difference referred to.

The lymph used for inoculation is said by some, during its transmission from sheep to sheep, to undergo degeneration and ultimately to become effete; by others it is asserted, after several transits a lymph equally protective, but far less virulent, is obtained.

Hurtrel D'Arboval writes:—"After the same matter has passed through twelve or fifteen lots of sheep, it loses its efficacy, and requires to be renewed from sheep having the natural pock." To this opinion Mr. Ceely is opposed, and thus writes:—"If this be true when great pains are taken to repeat inoculations with lymph in a proper state, viz., clear and limpid, it is a very remarkable and highly interesting fact, and well worthy the attention of the medical and veterinary professions. We know that care and selection in the transmission of the vaccine are necessary to prevent degeneration, which has often taken place to the injury of patients and the damage of the reputation of the vaccine; but we do not see, when proper care is taken to select good lymph and fitting subjects, that such degeneration ensues, or we should be in a sad state for want of fresh supplies. I should like to be able to ascertain the truth of the statement made by French inoculators or clavelizators; and whether it be a contingent or an unavoidable degeneration."

Again, it is said that the virus is not so good from the inoculated as from the eruptive vesicle; that is a point of interest. It is very probable that the eruptive vesicles have the lymph less blended with the adventitious products of inflammation excited by the scratch or puncture of inoculation, which will often in man, after vaccination, spoil one or more vesicles. After all, I cannot but suspect that these difficulties have been overstated, and might be met with where large numbers have been clavelized. Where one or two only are inoculated, as with vaccine in man, the supply may be lost, or degeneration ensue."

THE SELECTION AND PRESERVATION OF VARIOLOUS LYMPH.

Lymph should never be selected from very large vesicles, as these are often filled with little else than serous exudation; small ones, when distinct, are therefore to be preferred.

The author has had no experience in the preservation of lymph, the reason for which will be sufficiently shown hereafter, when the benefit to be derived from, and the propriety of inoculating, will be discussed; consequently, for the use of those readers who believe in its prophylactic effects, the following passages are selected from Simonds' work on Ovina Variola:—"Various expedients have been adopted to preserve the lymph, so that it might be depended on for future ovinations; all these, however, have failed more or less. The method of collecting it in capillary tubes, and afterwards hermetically sealing them at the end, is probably the best. Mr. Ceely has long been accustomed to preserve the vaccine lymph in this manner, and speaks highly of it. Next to this plan, that of charging ivory points, and allowing it to dry, is to be recommended. How long lymph will retain its specific properties cannot be determined with accuracy; probably it will be useless after being kept a few months. The fresher the lymph the more it is to be depended upon for ovination, as undoubtedly it is deteriorated by age, and ultimately becomes inert."

Lymph, taken from a vesicle arising *de naturâ*, primary lymph, and used for the inoculation of sheep, is said to produce intense inflammation, and to cause sloughing; and consequently lymph of the first remove cannot be safely used. Mr. Serres writes—"If the ichor is transmitted through the systems of several sheep, we obtain by the tenth remove a fluid which merely produces a general eruption, so that the malady induced by inoculation is very mild, and unattended with danger." But, of course, when small-pox occurs naturally amongst two or three in a flock of sheep, and the owner determines to inoculate the re-

mainder, he has no choice left him; if he inoculates, he must do so with primary lymph. To remedy this, which by inoculators is considered an evil, many attempts years ago were made to purify the lymph by first ovinating other animals, as the ox, and then bringing it back to the sheep. The opinions of experimentalists on this subject, however, are at such variance, that it is impossible to place any reliance on their statements. Suffice it to say, that, when possible, it is safer to use lymph of the ninth or tenth remove; for when sheep are inoculated with primary lymph very dangerous symptoms occur, which constantly terminate in death. The above remarks on the ovination of sheep have been written in order to inform my readers of the *modus operandi* of the preventive influence said by many authorities to follow such operation. Having closely watched the progress of ovine small-pox during 1862 and 1863, I must state that my opinion is quite adverse to the authorities alluded to in the foregoing chapters: but that I do so with all respect to such, and particularly to Professor Simonds, who has investigated this subject of veterinary pathology more perhaps than any person living, and whose opinion is at all times much respected by the author. It will not, therefore, be out of place to introduce certain remarks made by Professor Simonds during 1862, in advocating inoculation as a treatment for ovine small-pox:—

"He believed that there was nothing which they could use so effectually, no means at their disposal so good, as that of artificially inducing the disease by inoculation. Supposing, for example, that they had to deal with one hundred sheep, five or six of which had given early evidence of the affection. Let them bear in mind that they had only two things at their disposal to arrest the progress of the disease, and lessen its fatality; one, the early separation of the diseased animals from the healthy, or apparently healthy; the other, the artificial production of the disease. The disease, artificially produced, was exceedingly benign compared with the natural form, and consequently this plan afforded the means of saving a great number of sheep. He had no desire to give utterance to a single expression which would militate against the plan of isolation; but he knew that it was frequently altogether impracticable. If they had merely to deal with tens, twenties, or even hundreds of sheep, there would be little difficulty. The sheep might be caught every day, turned, and carefully inspected; but it must be remembered that at the identical moment when it made its first appearance on the skin the disease was infectious, so that if the sheep were allowed to remain together ever so short a time after the eruption made its appearance, it was impossible to say how many would receive the infection. Early removal, therefore, necessitated a daily examination. With sixty or one hundred sheep such an examination was not difficult; but with flocks of thousands it was impossible that it could be practically or advantageously carried out. This being the case, they were thrown back completely upon inoculation. With regard to inoculation, certain rules had been laid down, which it was absolutely imperative should be well carried out so as to secure success. A great deal had been said and written within the last few weeks about inoculation; and persons who were well known in the agricultural world had thought fit to publish letters in the *Times* condemning inoculation. Those individuals, however, had drawn their deductions from incorrect data. He liked to be honest in these things, and he would say with regard to the letter of Sir John Tyrrell, with reference to the disease in Mr. Bramston's flock, that a greater mistake was never made. Sir John Tyrrell said truly that Mr. Bramston had his flock inoculated, and that he lost a great number of animals. But the fact was, that the greater number lost were natural cases. He did not lose any great number that were inoculated. Although they were not inoculated by himself, they were inoculated by an individual to whom he (Professor Simonds) supplied the lymph; indeed, the inoculation was carried out under his own superintendence. He had letters in his possession which would show, that Mr. Bramston did not lose one-third as many of his inoculated animals as he did of those suffering from natural causes. He (Professor Simonds) was therefore justified in saying, that Sir J. Tyrrell had drawn his deductions from wrong data. It should be borne in mind that one essential to success in inoculation, was that the operation should be performed in temperate weather. He stated this here because he had to mention that Mr. Bramston's sheep were inoculated at Christmas, a period when, as they knew, so much protection could not be given to sheep as at other times. The temperature was generally ill-adapted to preserve the health of the animal, and consequently operated against the success of inoculation. If, therefore, there was a little greater fatality in Mr. Bramston's flock than in other cases, it was partly, if not wholly, due to the period of the year when the operation was performed. Another rule to be laid down was, that animals which were not pregnant were the best to be inoculated. At the same time, if small-pox should make its appearance amongst our ewes in lamb, they must be inoculated, and the owner must take the consequences. There was undoubtedly a greater likelihood of fatal results in such cases; and he might mention that, in Mr. Bramston's case, the ewes were heavy in lamb at the time of their inoculation. There was, therefore, a second cause brought into operation to increase the fatality. But there was still another point, and an important one, that militated against inoculation in the case to which he had referred. With fluid lymph he never thought of inoculating in more than one place. One puncture was sufficient for the purpose, and could not be too superficially made. If he should be called upon to inoculate a flock of sheep to-morrow, he should have the sheep from which he proposed to take the lymph at one end of the table, and the sheep to be inoculated at the other. He should dip the end of the inoculating needle in the virus of each vesicle, and then insert it very superficially in the other animal; just one puncture. But then he must have a natural case to choose from, and he must have an

animal in a particular stage of the disease. Without such a case the only plan would be to collect lymph upon an ivory point, and use it in the same way as it was used upon a child. The lymph dried on the point, and of course lost some of its potency. So in the case of sheep. If they kept the lymph for several weeks it became exceedingly weak, and therefore it was important to make, not merely one puncture, but two, three, and occasionally even four. Assuming, then, that they made four punctures, and that all of them proved effectual, it was not difficult to see that if there was danger of one producing the death of the animal, there was more danger of four producing it. The consequence was that dry lymph was less successful in inoculation than fluid lymph, merely because the operator had to produce more punctures."

From the above it will be learned that Professor Simonds advises, first, inoculation as a modifier of ovina variola; secondly, how and in what manner he performs the operation; and thirdly, his reasons for advocating it as a valuable treatment for small-pox in sheep. In doing so, he remarks, you have two courses at your disposal—one, the separation of diseased animals from healthy ones, and the other, the artificial production of the disease by inoculation.

One of the chief reasons given by the professor in advising inoculation, was because a greater amount of time was necessarily expended in examining a flock, the diseased sheep from which were to be segregated, and afterwards to be isolated. I must confess that it seems to me quite as easy to examine 1000 sheep as to inoculate the same number; and moreover, more time would be consumed in inoculating 1000 animals than in examining them simply with a view to the separation and isolation of those diseased. Admitting that early removal demands daily inspection, which, when dealing with hundreds we are told is easy enough, but with thousands is impracticable, it therefore appears, that the only reason assigned against the separation system is an assumed, by no means great, difficulty. Did it not take Professor Simonds more time to inoculate 800 sheep in one place and 1000 in another, than it would have taken to have inspected each sheep, and to have separated the diseased from the healthy? Again, it is asserted that by inoculation a "benign" form of small-pox is produced. In very few instances indeed during 1862 did benign cases, following inoculation, come under my notice. In a flock, the property of Mr. Hitchcock—which I carefully examined whilst suffering with small-pox, the result of ovination—I met with the most virulent form of small-pox; there were animals with swollen faces standing outside the fold, and about to die as the subjects of diseased lungs, the result of inoculation, which we are told produces small-pox in an "exceedingly benign" form; but it could not have been more virulent, so my experience teaches me. The inspection and separation system can be easily carried out, provided a sufficient number of persons qualified are engaged to inspect flocks, and to separate the diseased from the healthy. This system Professor Simonds distinctly advocates—"he had no desire to give utterance to a single expression which would militate against the plan of isolation"—but prefers inoculation, because it takes less time, and consequently gives less trouble to the attending veterinarian.

No one will deny that inoculation propagates the disease, consequently it increases the amount of danger to be dreaded, and facilitates, by rendering more animals diseased, the actual spread of the malady; for who can predict that, out of a flock of 400 inoculated sheep, one would have taken the disease naturally, or how many would have died if they had? or if, in cases of small-pox in man, inoculation is prohibited because productive of such serious consequences, why should not the same rule similarly apply to our domestic animals? Again, inoculated sheep suffer almost as severely as those that take the disease naturally, and therefore every animal so situated is reduced to half its previous amount in money value; *i.e.*, if a flock is worth £1000 before inoculation has been practised, it is only worth £500 afterwards; and besides, there is always a certain amount of mortality; whereas separation, immediate destruction, and burial in lime, or still better, burning, diminishes the disease by, so to speak, actually destroying it. In Norfolk, where small-pox raged among the sheep during 1847 and 1848, a Mr. Bramston inoculated a flock of 600, which resulted in his losing ten daily. On the other hand, Sir J. Tyrrell possessed 500 sheep; he separated the diseased ones from the healthy, and he informed a friend of mine that £20 covered all his losses. Certainly, therefore, when it is proved by reasoning from analogy and from fact, that the effects produced upon animals by inoculation are to be dreaded nearly as much as the disease itself when occurring *de naturâ*, such a treatment in my humble opinion is to be deprecated; from personal observation, I am positive that it is better to destroy and so to suffer a slight loss at first, than to extend by inoculation an area containing the disease, as inoculated sheep will infect healthy ones as rapidly as those which have taken the disease from natural cases.

The adoption of the system of segregation, *i.e.*, the separation of diseased from healthy sheep, of course, is the first and most reasonable plan which is suggested to the mind of those even the most ignorant of the management of sheep. This system was during 1862 in many instances carefully carried out, and where isolation was early insured, several sheep escaped and less mortality occurred, than among inoculated flocks. The wholesale inoculation of flocks throughout a district, because, perhaps, two flocks within it are suffering from a contagious malady, can only have the effect of involving the whole in such disease, and of infecting the surrounding neighbourhood, whereas, early separation must confine the disease within certain limits, or at any rate we are not in so doing attempting to spread it by artificial means. One affected animal in a district is less likely to cause the extension of the malady than twenty; now, the system of isolation does all that is practicable to prevent No. 2 catching small-pox, whereas, by inoculation, we spread the disease from flock to flock, and by this means increase the

centres of contagious disease from one to an indefinite number, each centre becoming a nucleus, from which the malady is assisted in spreading to neighbouring flocks. Early separation and isolation is therefore here prescribed. This system worked well during 1862, and if it be carefully and strictly carried out, will similarly answer during any future outbreak, should it unfortunately ever again occur in Great Britain. A letter from Mr. Rose is reproduced here, as it clearly gives the opinions of a practical flock-master:—

To the Editor of the Times.

Sir,—I learn through your paper that small-pox has broken out among the sheep at Allington, and has already committed lamentable ravages. I was situated in the very focus of the epidemic when it occurred in West Norfolk in 1848, and I paid some attention to the subject.

The following is the statistical result of my experience at that invasion of the pestilence, having a knowledge of what occurred in various flocks comprising 19,526 sheep:—

Of the sheep that took the disease naturally nearly one-third died.

Of 9720 that were inoculated 345 died.

Of 4800 sheep among which the disease broke out naturally, and where the flocks were very carefully watched—viz., examined, and the diseased immediately separated from the unaffected (as far as could be judged of)—only twenty-two were affected, and of those eight died.

From the above results I came to the conclusion that separation would be the best plan of management on the occurrence of a similar epidemic, for inoculation must intensify and diffuse the poison, as every inoculated flock would be a fresh focus of contagion, and vaccination, as practised during the early period of the epidemic in Norfolk, was worse than useless.

I therefore advocate neither vaccination nor inoculation, but separation, provided the watchfulness of the shepherd can be depended on.—I am, Sir, your obedient servant,

C. B. ROSE.

Great Yarmouth, Aug. 14, 1862.

VACCINATION A PREVENTIVE OF SMALL-POX IN SHEEP.

Any sudden outbreak of disease amongst cattle, and the consequent loss incurred by it, necessarily causes the proprietors to consider what means can best be adopted to prevent disease or lessen its intensity. As men directly protect themselves against corporal aggression, so do they indirectly against mercantile loss; and this same spirit leads them to act on the defensive, and sometimes on the offensive, if circumstances demand it.

Now in the case before my readers, ovina variola, it will be remembered that the malady was not diagnosed in Wiltshire until after Professor Simonds had inspected, pronounced judgment, and prescribed treatment. Soon afterwards other veterinarians appeared amongst the diseased flocks; but, while agreeing with Professor Simonds' opinion, that the extant disease was small-pox, they deprecated the system of inoculation, as calculated to extend rather than circumscribe the area in which the malady existed. I, for one, advocated a system of separating the diseased from the healthy sheep, and destroying those in whom the hope of recovery was small; and this plan undoubtedly answered. For there were two farms, on each of which two variolous sheep in the early stage of the malady were removed from their companions, and in neither of these flocks did any fresh case occur; whereas the inoculated flock at Langley suffered severely.

The first idea which is naturally suggested to farmers and others when disease is devastating their herds, is, "What treatment shall I apply to eradicate disease? or, better still, what means can I adopt to prevent it?" The treatment has been alluded to above. When in Wiltshire, and bearing in mind that "prevention was better than cure," I suggested to Mr. George Brown, of Avebury, that although Professor Simonds disbelieved in the utility of vaccination, it would be worth trying a few experiments. In this Mr. Brown acquiesced; at the same time adding that several medical men had previously proposed vaccination as a preventive. Soon after this conversation a meeting was convened in Devizes by the Wiltshire Mutual Association for the Prevention of the Spread of Small-pox in Sheep, at which my presence was requested. At this gathering several matters were considered relative to the wording of certain rules to be printed for the guidance of the association; and afterwards the subjects of inoculation and vaccination were freely discussed. I there stated that it was our duty to obtain proof, and not to take statements for granted without investigating for ourselves. For this reason I advocated the propriety of testing the effect of vaccination as a preventive, on several sheep; and, in the event of the pock taking, to place such sheep in the midst of the previously diseased flocks. If the vaccinated sheep failed to contract the disease after a due time had been allowed for its production, then these sheep might be considered exempt from small-pox, and, consequently, vaccination might be looked upon as a preventive agent.

During 1863, experiments on a somewhat extended scale were carried on by the Royal Agricultural Society of England, under the supervision of Professor Simonds; and six ewes were also vaccinated by Mr. Parker, surgeon, Shrivenham. Four of these ewes, after the effects of vaccination had passed off, were allowed to remain eleven days with Mr. Hulbert's flock; the other two were placed during twenty days in the midst of variolous sheep at Aldbourne, but were afterwards removed to Mr. Hulbert's flock, where they stopped four days, without manifesting the slightest signs whatever of small-pox, "although during the whole of that time small-pox was raging in both flocks to a fearful and virulent extent." On Monday, Nov. 3, the six ewes were inspected at Langley by Mr. George Brown and Mr. Parker; they were found to be perfectly healthy, and the only sheep amongst the flock

free from small-pox: "the vaccinated ewes showed no symptoms of small-pox, and were, indeed, the only healthy ones in the flock."

Mr. Hulbert's sheep were then examined, and one, considered to have passed through the various stages of small-pox and to have recovered, was caught, and inspection revealed the fact that the inside of its thighs was covered with pustules in a confluent form. From this sheep Mr. Parker obtained lymph, and inoculated the six previously vaccinated ewes, and left them still with Mr. Hulbert's flock. On the 13th of November Mr. Parker wrote to Mr. Brown, informing him that he had inspected the ewes and found them affected by the inoculation, but not to the same extent as those which had not been vaccinated.

The question is often asked "What is the difference between inoculation and vaccination?" Inoculation is conveying a disease from one animal to another of the same species; whereas vaccination is taking a disease from one animal to another of a different species.

It seems that Mr. Webb, of Wick, in Gloucestershire, was the first person who gave to the world a knowledge of the protective power possessed by cow-pox in preventing small-pox in the human subject; but be this as it may, it was left to Dr. Jenner to prove beyond doubt that lymph taken from the cow while labouring under variola, if injected into the human arm, would produce a mild form of disease and act as a preventive to small-pox—or at least would modify the eruption. It is proved that milkmaids and people engaged in dairies have the power of resisting variolous poison, and this must be attributed to their continued contact with the udder of the cow, where the pocks occasionally occur (oftener than is supposed) in a very mild form, and by this means with these people an antidote to small-pox is continually exerting its influence. As the subjoined points out clearly the manner in which the operation for vaccination is performed, it is reproduced.

It is most puzzling to know why inoculation has been preferred, when vaccine lymph is so readily come-at-able. Vaccinia, or cow-pox, is a most common disease, and enough matter can be obtained from one vesicle to vaccinate many scores of sheep. A hard colourless eminence is found upon a cow's teat, upon the centre of which, when about three days old, a concave vesicle appears, gradually increasing in size, when, on the sixth or seventh day, it presents a tense, prominent head—the surrounding surface of a deep red colour. Matter, taken from the eruption at this latter period of its growth, should alone be used for vaccination; and it is a spurious vesicle unless marked by the peculiarities above-named.

Vaccination, although a simple operation, requires some little caution in its performance. Make a perpendicular parting of the wool at the outside of the arm of the sheep; take hold of the limb, including the wool round the inner side, drawing the skin tightly; and, with the other hand, introduce the point of a lancet, charged with vaccine lymph, into the skin, in an oblique direction, and allow to remain in the same position for a moment or two, and then withdraw: the puncture should be compressed for a few seconds, in order to prevent it from bleeding, and the operation is finished.

Report of the Wiltshire Mutual Association for the Prevention of Small-pox in Sheep; result of Vaccination as a preventive.—Mr. Norris narrated as follows the result of his experiments by vaccination instituted by the Association:—

Your committee would, however, but imperfectly have discharged their duty, had their intention been limited merely to the extinction of the disease where it was found to exist. They therefore put themselves into communication, through their secretary, with several gentlemen in Norfolk who had had considerable experience of the small-pox of sheep, when that disease was imported into England some ten years ago, and, among others, with Mr. Allan Ramsay, who was said to have tried with success the preventive effects of vaccination in several large flocks in that county.

The communications received from these gentlemen were of a very encouraging nature, and your committee proceeded forthwith to put the matter to a practical test. With this object in view your chairman (Mr. George Brown) procured six healthy sheep from Mr. Pritchard, of Loncot, near Swindon, and had them vaccinated by Mr. Parker, a medical gentleman of Shrivenham. Having taken the vaccine satisfactorily, two of these sheep were, on the 9th of October, forwarded to Mr. Church, at Aldbourne, where they were placed with two very bad cases of small-pox—so bad that the animals afterwards died in a most loathsome state of disease; the vaccinated sheep, however, appeared in no way affected, and on the 29th they were removed to Mr. Hulbert's flock, at Langley, where small-pox was raging in its most virulent form, and where, it should be stated, the four other vaccinated sheep had been previously sent on the 23rd of October. Here the six vaccinated sheep remained until the 3rd of November, mingling with a mass of diseased sheep, resisting all contagion, and continuing all of them in a perfectly healthy state.

But Mr. Brown determined to put the experiment to the most extreme test; and on Nov. 3 he accompanied Mr. Parker to Mr. Hulbert's, and there had the six sheep inoculated. That there might be no question about the matter, each sheep was inoculated in two places, and on the following week there was strong evidence of their having all taken the disease; indeed, the fact was soon placed beyond doubt, for on the 13th one of them died in a very bad state, followed by the death of another on the 19th, two more being at the same time exceedingly ill, with pustules fully out; but the remaining two appeared little affected, and, with the other two, have since quite recovered.

It will be observed, therefore, that up to the time of inoculation—during the twenty-five days that a portion of the vaccinated sheep were exposed to the small-pox in its most virulent form—the resisting effect of the vaccine was complete. How far the six sheep might have continued to escape contagion it is impossible to say; and your committee cannot but regret that the severe experiment of inoculation was not

limited to three of the sheep only, leaving the other three to test the permanent effect of vaccination. The experiment has, however, exemplified one result, that inoculation is not always certain to produce the disease in a mild form, two of the sheep thus artificially impregnated with the virus having died in a shocking state; and in Mr. Hulbert's flock the losses were greater, by about 14 per cent., among the inoculated cases than among the natural ones.

Another good result has also, in the opinion of your committee, been satisfactorily established, viz., that separation, and not inoculation, is the proper mode of dealing with affected cases; for in *every* instance that has come within the knowledge of your committee, and there were many, where separation was practised at the outbreak of the disease, its effects were confined to those animals only first affected in each flock, and these having been removed from the others, in no single case did the disease extend further; whereas, in *all* cases, where inoculation was practised, the disease has been extended, and its virulence and fatality have been as great, and in some instances greater, than where it was allowed to wear itself out naturally.

The inoculation or ovination of sheep was proposed by Chalette in 1762, by Bourgelat in 1765, by Coste in 1797, and by Simonds during 1847 and 1862. Hogg gives a very clear description of ovine small-pox which devastated French flocks on several occasions during the last century, and in a very excellent article details treatment, and informs us that both the proposers of inoculation and vaccination had their supporters.

The vaccination experiments which were carried out during 1863, were, as far as they went, satisfactory; but so small a number as six sheep was not sufficient to raise a theory into a fact. Hogg informs us, that on the Continent vaccination gave immunity to four-fifths of the sheep which were subjected to it. The article, which is here reproduced, gives a distinct description of small-pox in sheep, which received, it will be seen, the name La Clavelée, and was thought by many continental authorities to be a disease possessing certain characters which distinguished it from ovina variola. The following will settle the question better than a theoretical argument:—

"The sheep in France, and on the greater part of the Continent, used to be subject to a dreadful pustular disease, principally propagated by contagion, yet thought by some to rage at times as an epizootic. Scarcely a sheep escaped its attack in some period of its life. It never reached Great Britain, although it has thinned the sheep-flocks in every district of France opposite to the English coast. It was termed La Clavelée, and the virus by means of which it was propagated was called Le Claveau.

"It was a peculiar eruption chiefly, and always at first appearing on parts that are most denuded of wool, as the inside of the arms, and the thighs under the belly and tail, on the teats and scrotum, and around the eyes and nose, and not unfrequently spreading at last over the whole surface of the body. These pustules contained a purulent fluid, highly infectious, and when that is secreted they become dry, and fall off. La Clavelée appears at all seasons of the year, and attacks without distinction the strong and the weak, selecting however, the lambs in preference to the adult sheep. The animal in which the disease has once been fully developed, is ever afterwards free from its attacks; but a full half, and frequently two-thirds of the flock, are destroyed by it. The contagion was communicated in a variety of ways, or in almost every possible way; the slightest contact was sufficient to accomplish the purpose. A portion of the virus seems to be detached from the sick animal by everything which it touched, and there it remained for an indefinite period, detaining all its dangerous properties. Direct individual communication did not seem necessary. If it broke out in a flock, it was almost sure to be communicated, sooner or later, to all that were within a few hundred yards of it. It might be unknowingly conveyed, and probably was, by the butcher, the shepherd, the dog, the sheep-merchant, and the medical attendant. It spread by means of the transport of the wool and the skins. If a sound flock was turned into that in which a diseased one had been pastured two or three months before, or if it was driven along the same road over which an infected flock had lately travelled, the malady was sure to be developed. It was for many a century the scourge and the destruction of sheep. In the regular Clavelée there were four distinct periods: first, the symptoms which preceded the eruption, as dullness; loss of appetite and strength, and debility marked by a peculiar staggering gait, the suspension of animation, and slight symptoms of fever. This continued during about four days, when commenced the second period, or that of eruption. Little spots of violet colour appeared in various parts, and from their centre there sprung pustules, accompanied by more or less inflammation, isolated or confluented, and with a white head. Their base was well marked and distinct; they were surrounded by a red areola, and their centre was flattened; they were larger than an ordinary lentil. In some animals they were confined to few spots, in others they spread over the whole body. They were scattered here and there, or disposed in form of beads, or congregated together in a mass. When the disease was not of an acute character, and the eruption was not considerable, and the febrile symptoms were mitigated as soon as the pustule was developed, there was not much to fear. The eruption ran through its several stages, and no serious disorganization remained; but in too many cases the whole of the integument became reddened and inflamed, the flanks heaved, the pulse, whether strong or obscure, increased in frequency, the mouth was hot, the conjunctiva red, the breath fœtid, the head swelled, the eyelids almost closed, rumination had ceased, the muscular power was exhausted, the pustules died away with little apparent fluid secretion, fœtid diarrhœa ensued, and death speedily took place. The progress of the eruptive stage of the disease was frequently, however, a very unsatisfactory one. When the pustule had risen, and the suppuration had

commenced, a new state of febrile excitement ensued, accompanied by more than usual debility. It lasted from three to four days, and during its continuance the pustules became whiter at their summit, and the fluid which they contained was of a serous character, yellow or red, transparent or viscid, and by degrees it thickened and became opaque, and then puriform; and at this period, when danger was to be apprehended, a defluxion from the nose ensued, and swellings about the head, as already described. This was the contagious stage of the disease, and when it was too easily and fatally transmissible by accidental contact or by inoculation. Then came the last stage, that of desiccation; and about the twelfth day from the commencement of the disease, the pustules subsided or the integument gave way, and the fluid which they contained escaped, and a scale was formed of greater or less size and density, yellow or black, and which detached itself bodily or crumbled away in minute particles or powder. The contagion was now at an end, and the animal recovered his appetite, and spirits, and strength. This stage of desquamation frequently lasted three weeks or a month.

"A secondary eruption occasionally followed, of an erysipelatous character. There were no distinct suppurating pustules; but there was a more serous or watery secretion, which soon died. This was the regular and the fortunate course of the disease; but too frequently there was a fatal irregularity about it. Almost at the commencement there was an excessive fever, and prostration of strength and fœtid breath, and detachment of large patches of the wool, and more rapid and bounding or inappreciable pulse, and strange swellings about the throat and head, and difficult deglutition. There was also a discharge of adhesive spumy fluid from the mouth, and of ichorous, or thick and yellow, or bloody and fœtid, discharge from the nostrils, often completely occupying and obstructing them. The respiration became not only laborious, but every act of it could be heard at a considerable distance; there was a distressing cough; the lips, the nostrils and the eyelids, the head and every limb, became swelled; the pustules ran together, and formed large masses over the face and the articulations; diarrhœa, that bade defiance to every medicine, ensued; and the end was not far off. Medical men were much struck with the resemblance between this disease and the small-pox of the human being, and they believed them to be identical; and every shepherd, of course, adopted this opinion, and the Clavelée of the sheep was supposed to be the small-pox of the human being, modified by certain differences of structure and function. This, however, was very erroneous. There was an evident difference in the pustule; that of small-pox was developed in the texture of the skin, and surrounded by a rose-coloured areola; that of the Clavelée was evidently more deeply seated; it reached to the subcutaneous cellular tissue, and it was surrounded by an areola of a far deeper colour. The virus of small-pox was usually contained in a simple capsule, which elevated the scarf-skin. The virus of the sheep-pox seemed to be more diffused through the cutaneous and subcutaneous tissue, and there was abundantly more swelling and inflammation. The matter of small-pox was first limpid, it then became turbid, puriform, and at length assumed the form of white or yellow or thick pus, which became concrete; and scab was formed, which became at first yellow, and then brown, and then black, and when it fell off it left an impression or depression, more or less distinct, on the surface of the skin. The pustules of the sheep-pox, before there was any appearance of pus, degenerated into scabs, or formed a hard or thick crust under which the pus accumulated; and when that scab fell off there was a sore left behind, or sometimes a deep ulcer. There were other particulars of disagreement, but these would be sufficient to prove that they were not identical diseases.

"The treatment of this disease was necessarily very simple; it consisted, first, in separating the sound sheep from the diseased, and in being careful that having been thus separated they were not subjected to the influence of cold or wet, or insufficient food. The diseased sheep were supplied with wholesome food; during the febrile stage aperients of Epsom salts were administered. The state of fever having passed, mild tonics, as gentian and ginger, were administered; the Epsom salts being still retained, but in smaller doses. Common salt was a favourite and a very useful medicine, on account of its antiseptic and tonic properties. About the end of the seventeenth century it was discovered that the virulence of the small-pox could be modified and controlled by artificial means, and by those which would appear at first sight to have a kind of daring about them. The child was inoculated with the virus taken from an otherwise healthy subject, and a disease of a milder character, milder to a degree that was scarcely credible, was produced. Half a century and more passed before the experiment was tried on the sheep; but about the year 1760 it was attempted with the most perfect success; a disease with every character of the sheep-pox was produced, but much more mild, which rapidly ran its course, and left no bad consequences behind. This was not immediately acknowledged; the operation was ridiculed and abused at first; but experience has proved that it is an invaluable one. It is now adopted by almost every continental sheepmaster. When the sheep-pox used to break out in a flock, the owner lost a third, and sometimes half, and sometimes three-fourths of his stock. He now inoculates, and he does not lose more than one in a hundred. The professors at the veterinary school at Alfort say, that not more than one sheep in four hundred is lost. When it is seemingly followed by disastrous consequences it is because it is delayed until the Clavelée actually breaks out in the flock, and then the loss of those that die of the natural disease is unfairly attributed to the inoculation. Whenever the natural disease appears in his neighbourhood, it is now acknowledged to be the duty of the sheepmaster to subject the whole of his flock to inoculation, and the greater part of the owners of sheep do inoculate the whole of the lambs. The immunity lasts during the life of the animal. The spring and the autumn are the most favourable periods for inoculation, and the sooner after the

weaning of the animal the better. The ear or the inside of the forearm, or the thigh, are the parts usually selected for the inoculation. In process of time inoculation with the vaccine matter was introduced into Great Britain as a preservative against the small-pox, and the French veterinarians very naturally put the power of the vaccine matter to the test as a preservative against the sheep-pox. It had power, and to a very considerable degree. An experiment was made on a very large scale; 1523 sheep were vaccinated, and the disease passed through its different stages; they were all afterwards inoculated with the matter of sheep-pox, and in 308 of them the disease was produced in the usual mitigated form after this operation. Other experiments were made on a smaller scale, and with a similar result; and therefore the vaccine inoculation is now abandoned on the Continent, although it gives immunity to four-fifths of those that have been subjected to it, for inoculation with the claveau, or the virus of the sheep-pox, will give immunity to all. There is one disadvantage attending the use of the claveau, that it retains its power not more than a few days, whatever care may be taken of it. The vaccine matter retains all its properties a much longer period."

THE AGE OF THE OX AS INDICATED BY HIS TEETH.

PREHENSION OF FOOD.

Previously to explaining the dentition of the domestic animals under notice, it will be necessary to consider briefly the mode by which different animals, and particularly the ox, sheep, and pig, select and collect their food. Everybody knows that the act of prehension varies. Man, for instance, employs his hands and mouth, and is assisted in so doing by artificial means; the elephant by a prolongation of the nose, "trunk," accomplishes this act; the horse selects food with his lips, the ox gathers it with his tongue, the sheep collects the herbage from the pasture between his teeth, (incisors) and dental pad, and is assisted in so doing by his tongue. Consequently it is readily seen that several distinct organs, comprising what is commonly called the mouth, act either by themselves or in association with each other in the prehension of food. One animal first grasps his food with his teeth, which is immediately moved within his mouth by his tongue; another first collects food with his tongue, which organ conveys it to the teeth, and among other animals the lips constitute the prehensile organs; but in every case each organ assists in placing food in the mouth, to be afterwards conveyed between the molar teeth for the purpose of mastication and deglutition.

THE MOUTH

is bounded in front by the lips, on each side by the cheeks, below by the tongue, above by the palate, and terminates behind in the formation of the fauces. The mouth is lined throughout with mucous membrane. Immediately within the lips and cheeks the dental arches occur, consisting of gums and teeth, &c.; the gums are composed of fibrous tissue, are closely connected with the periosteum common to the alveolar processes, and are in adult life surmounted by teeth.

THE DENTAL PAD.

The incisor teeth, although placed in the front part of the mouth, are variously arranged in different animals: for instance, the pig possesses, like the horse, twelve incisors, six in the upper, and six in the lower jaw; the wearing surfaces of which immediately oppose each other in the act of collecting food. In the ox and sheep, however, a different arrangement is presented to our notice, as in them only eight incisors occur, all of which are placed in the lower jaw, and consequently cannot oppose their grinding surfaces to teeth in the upper jaw, as none exist. To make up for this lack of teeth, nature has provided for these ruminants a dense cushion, the dental pad, in the upper, to abut against the incisors situated in the lower jaw. The dental pad is formed by the bars of the mouth, which thicken, as they reach its anterior part, until they concentrate in the development of the pad. The pad, however, is of a more fibrous, elastic, nature than the bars, and of course in this position answers the purpose of teeth; in fact, teeth in these ruminants could not be retained in the mouth, as the incisors in the lower jaw possess small fangs, and are otherwise very loosely implanted in their sockets. Moreover, the shape of the teeth does not cause them to be capable of withstanding the effects produced by dental attrition; the ox and sheep in gathering their food can and do employ only that force which is sufficient, and can be easily withstood by the teeth when meeting the yielding substance of the dental pad. The Stenonian ducts, two in number, pass from the mouth to the nostrils, and open on the dental pad, and are placed there as a means whereby the odour of plants may be appreciated by the smell, to enable the creature possessing them to select good food from bad or poisonous substances. The ducts of Steno have not been discovered in the pig, but communications between the mouth and nostrils equally direct exist, as in the pig there is a large plexus of nerves running down each side of the nose and ramifying over the nostril, in which resides the peculiar power which enables the hog to detect (or, more correctly, smell out) food buried many inches below the surface of the ground. The olfactory nerve, too, is large; and although it is smaller than that of the dog, it is much larger than the same nerve common to the ox and sheep; in short, the omnivorous animal the pig holds, in this particular, an intermediate position between the herbivorous and carnivorous classes.

CLEAVAGE IN THE UPPER LIP OF THE SHEEP.

The prehensile organs of the sheep are his teeth and dental pad, assisted by his lips in a very marked and peculiar manner. Every sheepowner knows that a sheep will get fat where

an ox or horse would starve, *i.e.*, the horse and ox would waste in condition on a down, where a sheep would grow plethoric; and this is owing to the cleft in the upper lip, which by being pressed out from within outwards allows the sheep to bring its teeth or dental pad much nearer to the roots of plants than any other animal. The ox, perhaps, with a similar division in the lip, might bite the herbage nearly as close; but then the thickness of the nose as compared with that of the sheep, and the naked structure of it, *i.e*, its being denuded of hair, would prevent that close approximation to the ground which would be necessary in the collection of food. Nature, however, has given to the upper lip of the sheep a defence, in the shape of a dense coat of hair covering the whole of the lip with the exception of the direct fissure. By this beautiful arrangement it is almost impossible for any foreign substance, whether it be dirt, any thick or glutinous material, insect, or water, to penetrate to the skin. The portion of the lip denuded of hair is small in the sheep, as compared with the ox; it consists of the nostrils above, and terminates in a narrow channel which enters into the formation of the cleft in the upper lip, and is usually bedewed with moisture; this, again, also materially assists in protecting the lips, &c., against the invasion of foreign objects.

THE TEETH.

Generally in mammals two sets of teeth appear during the lifetime of the animal; the first which are *put up* constituting the temporary or milk teeth, whilst those which replace them or spring up afterwards, are named the permanent. Teeth, although divided into several classes, present certain characters in common; for instance, each tooth exhibits a crown, or that part of the tooth which projects above the gums, and immediately above and just within the gums, a constricted portion of tooth occurs, which has been named the cervix or neck, and below the cervix the tooth structure is lodged in the socket or alveolus, and in this position has been denominated the fang.

The tooth fangs are accurately adapted to the alveoli; so firmly are they fixed in their sockets, that a nail could not be driven into a garden wall more firmly, and for this reason the mode of union has received the name of gomphosis, from the Greek γομφος, a nail. The alveolus and the fang are both lined with a membrane which invests the external surface of bones, and is called periosteum. This membrane extends as high up as the neck of the tooth, and owing to its dental arrangement, by some anatomists has been called the periodontal membrane. Although for the sake of description a tooth has been divided into its crown, neck, and fang, we find in investigating the mouths of the horse, ox, and sheep, that more than half the body of the tooth is imbedded in the alveolus, and some of the molar teeth and tusks are in fact destitute of fangs and necks. This fact is to be observed in the incisors, &c., of the horse and pig.

THE TOOTH STRUCTURE.

On making a section of a tooth, we discover that three constituents, varying in density, and partaking somewhat of the character of bone, combine in forming the dental structure; these are named—enamel, dentine, and crusta petrosa. Enamel is the hardest; it is met with on the crown of the simple tooth, and invests the body and sides of the compound one. In the centre of a tooth a cavity occurs, which is called the pulp cavity, which during life is filled with a highly vascular and sensitive organism, the dental pulp, supplied with blood-vessels and nerves which enter the tooth by means of a small orifice at the point of the fang. The size of the pulp cavity depends upon its age, being always large in young animals, but decreases in size as age advances: this cavity is lined by dentine. "On inspecting an incisor of an ox, we observe that a white incrustation, having in the young subject more or less of a pearly white appearance, covers the crown of the tooth; this is enamel. If the tooth should have been recently put up, this substance forms also its cutting edge. It is thicker on the front surface of the crown than on the back, an arrangement which tends to keep up a sharp edge to the tooth; it extends, also, downwards to the neck, where it ceases. The enamel not only covers the exposed surface of a tooth, but in some teeth it enters deeply into their interior. It matters not what may be the size or shape of a tooth, or how numerous its projections, the whole of these are originally covered with a layer of enamel. Microscopically enamel has been discovered to be composed of several rods lying side by side, named enamel prisms or fibres, which always rest their ends upon the dentine to which they are immediately attached. Minute canals, also, have been detected in the enamel recently formed, the use of which is explained by Professor Simonds:—"In looking to the situation of enamel in compound teeth, it is stated that this structure dips inwards, forming cups of greater or less depth in different teeth, and which are always filled with crusta petrosa. On the slightest reflection we perceive, that the crusta here placed can only receive the fluid necessary for its support through the layer of enamel which is interposed between it and dentinal tubes; and there seems no reason to doubt that the tubes, from the boundary of the dentine, may extend to the canals between the prisms, and thus supply the materials of nutrition to the crusta petrosa within the cup. Mr. Tomes, many years since, drew attention to the fact that dentinal tubes passed in great numbers into the enamel of the Kangaroo and other animals of this class. From my own examinations I can also say that the dentinal tubes penetrate the enamel in the Herbivora; and it is more than probable that in consolidated enamel the passages referred to are united with these dentinal tubes, and thus become consolidated with them."

Todd & Bowman, in their work on Physiological Anatomy, support this view, that the enamel prisms "are arranged in the most suitable manner for the percolation of the fluids derived from the dentinal tubuli. These tubuli, indeed, may be seen to communicate directly with the interstitial passage of the enamel." Enamel, when subjected to the action of dilute acids yields scarcely any trace of animal matter, but contains cartilage, and not more than two-tenths of organic matter (apparently

membraneous tissue), in the enamel of the human tooth. Berzelius found—

Phosphate of lime with fluoride of calcium,	88·5
Carbonate of lime,	8·5
Phosphate of magnesia,	1·5
Membrane, alkali, and water,	2·0
	100

Nearly similar results have been obtained by Von Bibra and Frèmy. The former chemist found as much as four-tenths of fluoride of calcium in enamel.

Second in density to enamel is the ivory tooth substance, or dentine, which principally forms the mass, and gives the general configuration of the tooth structure. Dentine differs little from bone in appearance, but is not identical with it in structure; for although it appears to the unassisted vision to possess a compact subsistence, by the assistance of the microscope it is found to be composed of numerously arranged fine tubes (the dental tubuli), which terminate at their inner ends by minute orifices opening into the pulp cavity. These tubes describe a wavy course, which split into branches; first into two, and by further separation numerous ones are formed, which ultimately terminate in very fine inosculating branches. "Towards the terminal portion of the fang the dentinal tubes in some animals, of which the sheep is an example, are collected into little bundles, having between them a comparatively large space, which is occupied by the intertubular substance."*

The intertubular substance is translucent and finely granular. Henle describes the animal basis which remains after the substance has been treated by an acid, "as separable into bundles of pale, flattened, granular fibres, running in a direction parallel with the tubes;" and Nasmyth "that it consists of brick-shaped cells, built up as it were around the tubules." Dr. Sharpey disputes both these assertions, which are in opposition to observations that have been made in reference to the cachalot and sperm whale, in which the animal substance can readily be torn into fine lamellæ, "disposed parallelly with the internal surface of the pulp cavity, and therefore across the direction of the tubules." Moreover, the laminated structure of the dentine has been noticed by Salter and Czermak in the human tooth.

The chemical composition of dentine is very similar to that of bone; the quantitative ratio between the organic and inorganic constituents approximating very closely to that occurring in the denser bones, and averaging 28·72. From 3 to 8 tenths of carbonate of lime has been found, with from 65 to 67 tenths of the phosphate of lime, together with a little of the fluoride of calcium and phosphate of magnesia.

The third substance entering into the tooth formation is crusta petrosa, which closely resembles bone, both in its physical and chemical character, although it is slightly modified in structure. Crusta invests the entire fang of the tooth, and those parts of the dentine which are devoid of enamel. The quantity of crusta present depends more upon the character than the size of the tooth, owing to which we find crusta more largely developed on a compound than on a simple tooth, for the reason that this substance covers only the fangs in simple teeth, whereas it not only invests the fangs, but also covers with enamel the interior organization of compound ones.

As age advances the crusta grows thicker, especially at the apex of the fang, and sometimes is developed then to such an extent as to block up the orifice through which the nerves and bloodvessels pass to the pulp, for the support of the dental structure.

Under the microscope crusta is found to resemble bone, as it possesses cells, "lacunæ," from which minute canals emerge, called canaliculi, which anastomose with the terminal tubules of the dentine. Where the crusta is thick, numerous vascular canals occur, similar to the Haversian canals of bone.

On the fangs of teeth recently cut, little crusta is discovered when compared with that existing on old teeth. It may nevertheless be asked how the increased quantity upon old teeth is accounted for? Professor Simonds accounts for this difficulty as follows:—"I premise the explanation of this matter by stating, that anatomists are generally agreed that, after a given time, the pulp ceases to produce any more dentine, and becomes converted by ossification into a substance which Professor Owen designated osteo-dentine. This substance, therefore, would now fill the pulp cavity of the tooth. However true this statement may be of man or many species of animals, it does not appear to be positively correct when applied to our domesticated Herbivora. In the horse, as an example, obliteration of the cavity is gradually effected by the pulp continuing to form dentine. This, as its normal action, goes on, and is not supplanted by an abnormal or diseased one, as it would be were the pulp to become ossified. As the producing organ of dentine, the pulp simply gives way to its own product, which is ultimately made to occupy its place in the cavity. In proportion as the pulp diminishes, so is the supply of nutriment to the tooth lessened, and at length entirely cut off from the interior. To provide for the vitality of the tooth under these circumstances, the crusta increases in quantity on the fang, at the expense of the perfectly formed dentine which is lying in immediate contact with its inner surface. Through the medium of the canals of the crusta, which open on its border, the tooth now draws its nourishment from the bloodvessels of the socket, and thus it continues, long after the obliteration of its pulp cavity, to serve all its purposes as a part of the living organism."

Crusta petrosa chemically seems to be almost identical with bone. The researches of Lassaigne and Von Bibra, on the teeth of different animals, could detect no definite difference between the teeth of herbivorous and carnivorous animals.

THE DEVELOPMENT OF TEETH.

In considering the mode by which the teeth are formed, it is necessary to commence with a description of their creation in fœtal life; for we find that, even so early as this period, indications not only of the temporary or deciduous teeth, but also

* Simonds on the Formation of the Teeth.

of the permanent ones, or those which succeed them, exist. This process in the human fœtus, Professor Goodsir asserts, begins about the sixth week.

For the sake of description, we must first explain the origin and growth of teeth, and afterwards the mode by which their eruption in two sets, namely, the temporary and permanent sets, takes place. The process of dental formation has been divided into four separate stages, namely—1st, the papillary; 2nd, follicular; 3rd, saccular; and 4th, eruptive; and from the researches of eminent physiologists it is certain, that teeth are developed from the mucous membrane covering the bones in opposition to them. Professors Goodsir and Arnold discovered, independently of each other, that the first stage of development consisted of certain changes in the mucous membrane, and that about the sixth week in the life of the human fœtus a depression or groove, having "the form of a horse shoe," was noticeable "in the mucous membrane of the gum," named by Professor Goodsir the "primitive dental groove." This groove is lined by the membrane of the mouth, which consists of two layers almost identical with the epidermis and dermis of the cutis, or skin proper. From the floor of the dental groove papillæ spring up, which constitute the early formations of the dental pulps about to belong to the milk or temporary teeth; in the ox, for instance, eight papillæ in the lower jaw, and twelve in the upper and lower jaws, indicate the situations of the eight incisor teeth in the former, and the twelve temporary molars in the latter. Concurrently with the growth of the papillæ bony partitions spring up, which form a "series of four-sided cells," and by subsequent growth these cavities, called loculi, become established, when they are named alveoli. This formation of the papillæ constitutes the papillary stage. The papillary stage is succeeded by the follicular, which consists in the thickening and prominence of the dental groove, and the prolongation of the mucous membrane, which forms for each papilla a distinct cavity called a follicle, and, as time advances, grows so deep as to hide the papilla which corresponds to the shape of the future teeth; and now the edges of the dental groove begin to approach each other, and ultimately join, and thus close up the entrance to the cavity; and in so doing form a closed sac, at which time the saccular stage is said to be completed.

The fourth or eruptive stage, as it occurs in the human gums, is, as follows, very distinctly explained in Dr. Quain's "Anatomy," edited by Doctors Sharpey and Ellis:—

"The dental sacs formed by the closure of the follicles continue to enlarge, as well as their contained papillæ. The walls of the sacs, which soon begin to thicken, consist of an outer fibro-alveolar membrane, and an internal highly vascular layer, lined by epithelium; thin bloodvessels are derived partly from the dental arteries, and partly from those of the gums. The papillæ, now the dental pulps, adhere by a wide base to the bottom of the sacs, but are unattached elsewhere; and having acquired a perfect resemblance to the crowns of the future teeth, the formation of the hard substance commences in them. This process begins very early, and by the end of the fourth month of fœtal life thin shells or caps of dentine are formed on all the pulps of the milk teeth, and a little later on that of the first permanent molar. The mode in which it proceeds, taking a canine tooth as an example, may be stated as follows:—A thin osseous shell or cap of dentine appears on the point of the pulp; this increases in extent by a growth around its edges, and in thickness by a similar formation in its interior, the latter taking place at the expense of the substance of the pulp itself, which accordingly decreases in proportion. This growth of the tooth continues until the crown is completed of its proper width, and then the pulp undergoes a constriction at its base to form the cervix of the tooth. From that time the pulp elongates, and continues to become narrower, so as to construct the fang. During the whole period another process has been going on, by which the outer surface of the crown is covered with enamel. This substance is formed from a peculiarly organized body lying on the pulp, and accurately adapted to its surface and to its cap of dentine, and which was called by Hunter the outer pulp. Sooner or later after the completion of the crown this part of the tooth appears through the gum, whilst the growth of the dentine to complete the fang is continued at the surface of the elongating pulp, which gradually becomes encroached upon by successive formations of hard substance until only a small cavity is left in the centre of the tooth, containing nothing but the reduced pulp, supplied by a slender thread of vessels and nerves which enter by a little aperture left at the point of the fang after the dentine is completed. In the case of teeth having complex crowns, and more than a single fang, the process is somewhat modified. On the surface of the dental pulp of such a tooth, as many separate little shells of dental substance are formed as there are eminences or points; these soon coalesce, and the formation of the tooth proceeds as before as far as the cervix. The pulp then becomes divided into two or more portions, corresponding with the future fangs, and the ossification advances in each as it does in a single fang. A horizontal projection or bridge of dentine shoots across the base of the pulp, between the commencing fangs; so that, if the tooth be removed at this stage, and examined on its under surface, its shell presents as many apertures as there are separate fangs. In all teeth the pulp originally adheres by its entire base to the bottom of the sac; but when more than one fang is developed the pulp is, as it were, separated from the sac in certain parts, so that it comes to adhere at two or three insulated points only, whilst the dentine continues to be formed along the intermediate and surrounding free surface of the pulp." From this description it will be readily understood, that immediately after the crown of the tooth has penetrated the sac and gum, the eruptive stage has been established.

THE FORMATION OF THE HARD TISSUES OF TEETH.

The mode by which dentine is developed has been explained differently by various investigators; but the opinion of the ancients, and which since their time has been re-intro-

duced by Schwann, asserts that dentine is in reality the ossified pulp; but the exact manner in which this change is effected has not as yet been clearly exposed. It is well known, however, that bloodvessels exist at the points of commencing ossification, and that the exterior of the pulp is surrounded by superimposed layers of rounded cells; in addition to which, also, the pulp is lined by a thin membrane called the preformative or basement membrane. Simonds states that the dentine is first produced upon the apex of the papilla, and that from this point it extends downwards upon its sides, and thus incloses it as with a cap. "This may be better understood by supposing one's finger to be covered with a thumb-stall, and looking to the finger as the papilla, and the thumb-stall as the dentine. The papilla thus capped with dentine is now called the tooth-pulp."

During the process of ossification, as determined by Schwann, the preformative membrane and cells before mentioned gradually become impregnated with calcareous matter necessary to the formation of dentine; but in what manner the tubuli and intertubular substance are developed, remains for future investigators to discover. Suffice it to say, that when the dentine first appears it is very thin; but it hourly increases in thickness at the expense of the pulp, which decreases in extent, as does also the pulp cavity. The gradual diminishing of the pulp cavity can be seen in the transverse section of an incisor taken from the mouth of a calf. Simonds writes—"To the unassisted eye a preparation of this description shows concentric lines, one within the other, making fresh deposits of dentine. The varying size of these rings, and sudden curvature of the dentinal tubes in these places, would seem to indicate an irregularity in the rate of the formation of the structure. In the lower animals a similar disposition regarding the fangs of complex teeth, commonly called double, is noticed; for instance, a horizontal projection of dentine (as in the human subject) shoots across the base of the pulp, in order to cause the separation of the fangs, and then there individual development, which is accomplished in the same manner as noticed in the human tooth, and which has been explained above. On the surfaces of compound teeth several projections occur, which are caused by a similar formation existing on the papillæ previously to their being incoated with dentine. At the same time several indentations occur in the dentine, in which we find enamel. By this arrangement of two cusps, between which enamel exists, we find that the papilla divides and forms the points for the future development of the two cusps, when each becomes coated, first with dentine, and afterwards by enamel; between the cusps, therefore, it will be seen that a depression or hollow occurs. Simultaneously with the formation of dentine from the pulp, and immediately after the lips of the cavity have united to establish the sac, its membraneous wall grows thickened, and develops a soft pulpy mass which is adapted, in the first place, to the dental pulp, and afterwards to the dentine This structure is named the enamel membrane, and by many authors is considered to be a distinct organization for the formation of enamel; but Professor Huxley disputes this view. The enamel membrane "he conceives to be altered epithelium of the basement membrane of the pulp and sac; and that, although for a long time considered to be the enamel organ, it takes no part directly in the formation of the enamel, but is merely a continuation of the preformative membrane, previously described. Whatever may be the nature of this substance, it is generally admitted that the enamel is formed from a pulpy mass generated within the sac, which was called the outer pulp by Hunter. Enamel covers only the crown of a simple tooth, reaching as far down only as its neck, and is consequently never met with on the fang; the enamel membrane, however, always dips down into the hollows formed between the cusps of compound ones, and is not cut asunder, but merely adapts itself to the shape of the subjacent dental structure.

Professor Simonds evidently agrees with Professor Huxley that the enamel and preformative membranes are identical; "in fact, there are not two membranes, but only one. The general opinion seems to be that the outer pulp produces the enamel, and the inner surface of the sac; that is, the tooth capsule, the crusta which lies both upon the fangs of the tooth, and also upon the surface of the enamel, where it covers the dentine. This opinion is negatived, however, by the fact, that "the capsule is not reflected into the enamel cups of compound teeth, although these are always filled with crusta; and therefore it is evident that this crusta has some other source, and this I am inclined to think is the outer pulp. If this pulp produces the crusta in one part, it necessarily would do so in another; if within the enamel cups, then on the outer surface of the enamel, and also on the fangs of the teeth."*

From the above, therefore, it will be observed that the enamel membrane becomes altered in condition as the tooth grows, and that when the slightest layer of enamel is formed a membrane can be detected around that part of the tooth from which the fang takes its origin; *i.e.*, just below where the enamel commences. This pulp, Professor Simonds considers, is the "formative organ of the crusta," in which opinion he is supported by other investigators; others, however, assert that the enamel membrane pours out a material which subsequently becomes ossified. When the structures, dentine enamel and crusta petrosa, are fully developed, then the capsule becomes the lining membrane of the tooth and socket, and thus establishes a firm bond of union in the gum; and owing to their respective positions, they have received the names of the periodontal and periosteal membranes.

The dental constituents, therefore, in combining to form a tooth, grow, 1st, the dentine, beneath the membrane of the papilla; 2nd, this membrane produces the enamel, and according to Professors Huxley and Simonds, is identical with the preformative and enamel membranes, "these two being one and the same;" 3rd, from the pulpy mass the crusta petrosa is formed; and lastly, the capsule is converted into the periodontal and periosteal substances.

* Simonds on the Formation of the Teeth.

THE ERUPTION OF TEMPORARY TEETH.

Previously to the appearance of temporary teeth in the mouth, the gums become sharp; as the tooth increases in size they grow rounded and swollen, and present a congested appearance, and when the tooth is sufficiently developed a white speck marks the point at which it is about to protrude through the gum. Concurrently with these changes, the fang adapts itself to an alveolus, or bone socket, which is at the same time formed for its reception. On the mucous membrane of the gums Serres discovered numerous small pearl-like bodies, which he considered to be glands, and consequently named them "dental glands." Their use has not been discovered. Meckel described them as abscesses resulting from inflammatory action.

PERMANENT TEETH.

The development of the permanent teeth is more complex than that of the temporary ones, and consequently must be separately described; and to understand the matter fully, the reader must carry his thoughts back to the follicular stage of the temporary dental formation, when it will be noticed that behind each follicle a small indentation occurs, from which the sac and pulp, previously to birth, commences to develope. These being attached to the temporary sacs were thought to spring from them, until Professor Goodwin proved that they originated from the dental groove, and consequently existed quite independently of the milk sacs. These cavities, named by him cavities of reserve, elongate and enter the substance of the gum behind the follicles, when the papillæ appear; and lips, similarly as those noticed in the temporary sacs, meet and close the cavities, and in so doing divide them into two parts, the upper or narrow portions of which become obliterated, and the lower, containing the papillæ, form the sac and pulp of the future permanent teeth. As the dental structures attain certain growth, the permanent sac is separated from the milk tooth by a bony partition, and therefore the permanent tooth, in attempting its escape through the gum, must necessarily press against this bony partition, and also against the fang of the superimposed temporary tooth. Nature therefore, in order to assist in the development of the teeth, causes the absorption of the dental structures of the deciduous teeth, and in so doing deprives them of their fangs, which, together with the pressure from below (already explained), causes the expulsion of the temporary crowns. The absorption of the dental substance commences at the fangs, and proceeds upwards until nothing but the crown remains. The cement is first attacked, the enamel last; but the process is similar in each tissue." The permanent molars, which do not succeed temporary ones, spring up from successive extensions of the dental groove placed behind the temporary teeth, and called the "posterior cavities of reserve."

THE AGE OF THE OX AS INDICATED BY HIS TEETH.

In the foregoing chapters we have endeavoured to explain briefly the microscopical character of the teeth, and the mode by which they are developed, these remarks respecting them being equally applicable to all mammals. The teeth of the mammals under notice give evidence of their ages up to certain dates, in the changes to which their teeth are subjected by the fall of the deciduous, in making room for the permanent teeth, and in the gradual development of the latter to maturity. Certain causes, such as the rapid growth of the teeth, the enlargement of the jaws, the diversion of the nutriment to the permanent sacs, the absorption of the fangs and consequent partial loss of the dental structure, and the pressure of the youthful teeth upwards, all combine in forcing the deciduous teeth from their respective positions, and in their places establishing their permanent followers. Many persons experienced in the habits and management of the ox tribe often assert that the horn manifests certain signs by which the age of this animal can be determined. In some cases, and up to a certain period, the horns may furnish such indications, but they are never so distinctly marked that a correct conclusion as to age can be established. The age is told from the horn, as follows:—"Shortly after birth the development of the frontal processes on each side of the head indicates the position of the future horn, which appears through the skin within the first month. At the age of four or five months the little horn is firm, and protected by a scaly cuticular covering, which exfoliates when an animal is about one year old. At this period the base of the horn becomes knotty, and a circular depression between the skin and the bulging horn is the sign that the animal has fully attained its first year; a second bulge forms, and a depression below it, by the second year; a third by the third, and so on as long as the animal lives. But in calculating the age of a cow at five or six, an error may be incurred by supposing that the first marks can be readily perceived. It is only the third year's circle which is very distinct, consequently we should count from the ring nearest the point; and if we found six, one of which represents the third year, the animal would be eight years."*

The above representations relative to the age of the ox, as evidenced by the markings on the horn, are considered by many stockowners to be unerring guides; but, as before said, there are others, and with them the author, who believe them to be worthless. For instance, sometimes one or two bulges become entirely obliterated, or so fused one into the other, that it is impossible to draw a true line of demarcation between them. Again, the castrated animal usually possesses very long horns, upon which the marks are situated at longer distances than noticed in the cow, and are often very faintly discernible. Add to this the accidents which are likely to occur to the horns, such as their entire or partial removal, and we are obliged to conclude that little dependence can be placed upon the horn-markings, as indications of age. Consequently, the only sure guide, and that only up to a certain age, is to be found in the teeth, the explanation of which we will continue.

* Gamgee on Dairy Stock.

The absorption of the temporary fang is facilitated by the pressure from below upwards of the permanent crown, and in the horse and pig the pressure into the original socket is more direct than that obtained in the ox and sheep; and for this reason we notice that sometimes the permanent incisors spring through the gums in an irregular manner; *i.e.*, the permanent teeth arrive in the mouth previously to the removal of their predecessors, the deciduous incisors. This state happens more readily in the ox and sheep than in the horse, owing to the smallness of the fangs noticed in the teeth of the former animals, and to the ease with which the bone of the jaw seems to recede; and for these reasons it often happens that the permanent crown passes into the gum at the side of the temporary socket, and by this means the said alveolus to a certain extent escapes that amount of pressure of the coming tooth which is necessary in obtaining its removal previous to the appearance of the permanent tooth, which was destined to fill its place. Moreover, as the temporary teeth only serve their purpose in collecting and masticating food for a limited period, their formation is not so perfect as their followers, the permanent; for the former are constantly hollow from above, and to such an extent as to permit of slow decay, often leading to disease of the gums, which prevents the animal, the subject of such disease, from gathering his food. Above we have spoken of the tardy removal of the deciduous teeth; sometimes, however, these teeth are prematurely removed by disease or accident. This constantly happens to lambs when feeding on heath plants, or those wherein the wood is hard, and of which sheep delight to partake; and this premature removal has been said by many to hasten the development of the permanent incisors, and consequently to throw investigators out of their reckoning in determining the age of animals so injured. But the examination from time to time of such mouths leads to the conclusion, that the early removal of temporary teeth does not hasten the development of their permanent successors.

The presentation of teeth in the mouth varies; sometimes two, and sometimes even six, are *in situ* at birth, said to depend by some on the period of utero-gestation having been exceeded or prematurely ended. This is the opinion of Youatt, but Professor Simonds does not think this sufficient to account for "all the variations we observe;" for instance, a cow often carries a bull calf longer than a cow calf, and yet, in examining their mouths, it happens that often the development of teeth is as forward in the one as the other, and sometimes more teeth appear in the mouth of the female than in that of the male; consequently little reliance can be placed on the "utero-gestation" theory, and particularly so as it was advanced by Youatt, who in his work on Cattle Diseases certainly could not have written from personal knowledge, but from information received from cattle-owners, who must have ventured opinions never the result of careful investigation or actual observation. Nevertheless, in Youatt's day, cattle, owing to lack of forcing, might have come to maturity later than in ours, and when the teeth might have participated in the general tardy growth; but even allowing such to have been the case, it is impossible to imagine how the full development of the ox's mouth could have been retarded until the age of five years. Such is Youatt's statement, and moreover, he illustrates his book with drawings, which are as incorrect and contrary to fact as are his assertions. Until 1854 Youatt was an accepted authority in the matter of the age of cattle, when Professor Simonds, after years of careful research, gave publicity to his ideas on this subject in a pamphlet printed at the request of the Royal Agricultural Society, in which he entirely upset the teachings of Youatt and others, and demonstrated most clearly how easily, up to a certain date, the age of the ox could be determined by his teeth. Of course, difference in breed operates largely in causing the early or later eruption of teeth, and perhaps also climate may exert its influence in early producing or retarding development. Professor Gamgee informs us, "we must not imagine that the periods of eruption and change set forth in his (Professor Simonds') tables are applicable all over the world. Thus, in examining the herds of Brittany cows recently sold in Edinburgh, I found that the whole indicated a more tardy development of teeth than is observed in the finest breeds of this country, and the tables framed by Girard and others are substantially correct, according to my observations on these animals." Professor Bonley, in commenting on Girard's work on teeth, writes, "In rendering animals more precocious, in order to hasten the day of their death, and to furnish more rapidly their flesh for the growing exigencies of human consumption, agricultural enterprise has succeeded in accelerating the development of all the organs; and the teeth, which by periodic appearances, as by modifications in form which they undergo, enable us to measure the duration of life, participate also in the rapidity of growth. Thus, that which was perfectly true in the days of Girard is not so for those animals which art has improved."

Two periods occur in the dentition of the ox, the first consisting in the eruption of the temporary teeth, and the second in their fall, in making room for their permanent successors, and in the after development of the molars. The calf at birth is usually possessed of four incisors, and in about a fortnight afterwards two more, the third pair, make their appearance, and within ten days from the latter period the two corner incisors are cut—making in all eight teeth. At the same time that the dentition of the incisor teeth is being effected, that of the temporary molars is progressing to completion, which is obtained also within one month after birth. It is therefore evident that within four weeks from birth the temporary dentition both of incisors and molars is completed; but although such is the case, yet the molars at birth are never met with in the gum, their eruption, like the incisors, following no special order, but usually the first in position; *i.e.* the anterior molar tooth is cut last, or, about three weeks after birth. The first and second temporary molars in the upper jaw are larger than those situated in the lower, but in shape differ very slightly from their permanent successors. This however, cannot be said of the third temporary molar situated

in the lower jaw, as it is dissimilar to the other molars, and also differs materially from the tooth which afterwards fills its place permanently. Professor Simonds writes, "It is the last of all temporary molars which, as a rule, is renewed, and consequently throughout it furnishes much assistance in determining a question of age. It occupies a space in the jaw equal to, or even greater than, both the other molars together which stand before it, in consequence of its increased width from front to back, which however, would be more correctly called its long diameter. It is composed of three main parts or lobes of a semi-cylindrical form, having in the hollows between them, on the outer side, two smaller portions, which also rise into asperities or cusps. The latter, when the tooth is somewhat worn down, add to the strength of the body, as well as to the irregularity of its grinding surface. Each of the three principal lobes likewise rises into cusps, an inner and an outer, of which the inner are always the higher. This tooth, for brevity's sake, might be called a tricuspid tooth; but this, critically speaking, is far from correct, for originally, as we have seen, it has six principal with two minor projections or cusps."

After the first month of the animal's life, *i.e.*, when the temporary dentition has become perfected, we have no change occurring in the teeth, with the exception of slight wear; consequently, until the calf is six months old, the general appearance of the creature must be alone considered in determining its age. Many persons have asserted that the first permanent molar, viz., the fourth in position, escapes through the gum when its possessor is one year old. Youatt says, "the fourth appears about the expiration of the eighth month;" but my examinations prove that these teeth are *in situ* at the end of the sixth month, and sometimes before. Professor Simonds' investigations relative to the fourth permanent molar corroborate my statement, that sometimes this tooth is put up "before the expiration of the sixth month after birth." He writes, "I have found as a rule, that this molar in the lower jaw is usually a little more forward than its fellow in the upper, and that now and then it appears even before the sixth month." This molar is wider than the third if measured from side to side, but in length—*i.e.*, from before backwards—is much shorter. At nine months old these four permanent molars, *i.e.*, two in the upper and two in the lower jaw, have grown to the same level with the temporary teeth placed just anteriorly to them. At fifteen months old the fifth molar in position, or second permanent, escapes through the gum; it does not differ much in shape from the fourth molar placed anteriorly to it, and like its neighbour assumes the same level with the other molars at the expiration of eighteen months from birth. When the ox has reached two years of life the sixth permanent molar is cut, and attains its general configuration within three months; that is, when the animal is two years and three months old. This tooth is dissimilar to the two teeth just before it, but resembles in some particulars the third molar, in that it possesses three cusps, in fact, is tricuspid; the prominences, however, are not so well delineated, and the one situated farthest back in the jaw is often concealed by the gum. This tooth is somewhat triangular in shape, presenting its base towards the mouth, and its apex to the fauces; that is, it gradually decreases in width from before backwards. Immediately after the temporary incisors are well delineated, it will be readily understood that, as time progresses, their surfaces during the process of feeding wear down from attrition, and consequently become blunted; and not only is such the case, but the mouth expands, and with it the jaw, when the necks of the teeth present a separating appearance, and sometimes are detained in the jaw by very slight adhesions. This last fact is particularly manifest in the central pair of incisors when the animal is about eighteen months old, at which period these teeth usually possess little or no fangs, and are about to vacate the gum in order to make room for their permanent successors, which are just coming into position. Sometimes even they are present before the deciduous teeth have been shed, and give to the mouth, when such is the case, a very irregular appearance; but as a rule, the centre temporary incisors are not replaced by permanent ones until the animal is one year and nine months old, and this occurs only amongst cattle that have been "forced," and more properly amongst those breeds which years of careful breeding and high feeding have forced to early maturity. Examples of such are met with at our prize cattle shows in the short horn and Devon and Hereford breeds, and all animals similarly treated as above indicated; but among cattle which from youth are allowed to enjoy a less artificial life we find that the process of dentition is more tardily developed, and that in the mouth of an animal of this nature we notice, that the central pair of deciduous teeth are not replaced by permanent ones until the expiration of the second year. This proves that it is impossible to state the precise period (*i.e.*, within two months) at which the teeth fall and rise; consequently we must always take the average, when repeated and careful examinations of the teeth will enable us to form a very correct opinion of age.

The permanent incisors (central pair) soon after their appearance in the gums often overlap each other; but as they grow firmly within their sockets, and the jaw expands, and dental growth is obtained, they separate from each other. The gums recede from the bases of the crowns which they at first surround, and become concentrated around their necks. Of course the size and growth of these teeth, and the position of the gum around the crown or neck (if around the crown base, the animal is younger than if it be developed below, that is, around the neck), must be carefully considered in determining the age of the ox. The overlapping of the permanent incisors is noticeable in all of them when first put up, as is also the fact, that when fully developed they assume an upright and separate appearance. This is markedly the case in the next pair of permanent incisors, which usually cut the gums when the animal is one year and three months. Professor Simonds has observed very few cases in which the second pair of permanent incisors have been cut, and he has always found them

in those animals certified at cattle shows to be two years and two months. He writes, "My note-book furnishes so many cases of the second pair of incisors being cut at two years and a quarter, especially in short-horn and Hereford bulls, that I have taken this date in the preparation of the table on early dentition as the time of cutting these teeth. In our Devon cattle there are fewer instances of this; but both they and our other breeds furnish some cases of the same kind. I have only met with about half a dozen cases where a second pair of incisors was cut before two years and three months, and these were in animals certified to be two years and two months old. At an agricultural meeting a heifer was exhibited (in the class for bulls and heifers under two years old) to which objection was taken. The examination showed that there were four incisors well up. Satisfactory proof of the correctness of the certificate was called for, which having failed to be given, the animal was disqualified." This animal, according to the table of early average, was three years old; but doubtless its age only amounted to two years and a quarter. This occurrence in the age of cattle proves beyond doubt that two tables of dental development are demanded in classifying the age of cattle; for, as a rule, especially in the advanced classes, an animal with four permanent incisors well up in the mouth would represent the possessor to be two years and a half old, whereas, in the coarser-bred creatures, the second pair of teeth do not even appear in the mouth until the expiration of this period.

At two years and nine months old, the third pair of incisors are replaced by permanent ones. This is noticed in the forced classes, and consequently finds a place in the early dentition table. These teeth, however, among slowly developed animals, do not escape through the gums until the age of three years and so many months, and consequently are classified in the late average table, at which very time in the higher-bred animals, which I have termed "forced classes," the fourth or corner temporary incisors fall out, to make room for their permanent followers; whereas, in lower-bred cattle, their appearance in the mouth does not occur until six months later. Thus we observe, as regards the incisor dentition, that among high-bred animals, namely, those prepared for cattle shows, the temporary incisors are replaced by permanent ones as follows:—The centre incisors at one year and nine months old; the second pair, at two years and three months; the third, at two years and nine months, and the last or corner pair, at three years and three months. Among coarser-bred cattle, those animals which have been compelled to rough it, and to lead a less artificial life from their youth, develop their teeth more tardily: *i.e.*, at two years and three months the centre pair of teeth are replaced by permanent ones; at two years and nine months the second pair appear; at three years and three months the third permanent pair are cut; and lastly, at three years and nine months the incisor dentition is completed by the escape from the gums of the fourth or corner milk teeth, and by the development in their place of permanent ones.

In referring to the fourth pair, or corner incisors, Professor Simonds writes:—"By far the greater number of oxen will not put up the corner pair of permanent incisors until after three years and a quarter, and I have repeatedly examined animals whose ages ranged from three and three-quarters to four years, and found these teeth to be in the act of cutting. On the other hand, I have occasionally seen them in short-horn bulls fairly through the gum at three years and one month. These things should guide the opinion of the examiner. If an animal is certified to be three years old or wanting that time by a week or two, and all the incisors are permanent, it most certainly is a proper case for investigation, so few are the exceptions to these teeth being cut before three years and a quarter. In these early cases of dentition the judgment will often be assisted by the examiner noticing the amount of the overlapping of the incisors, and which is best seen on their upper surface. Thus the outer edges of the middle teeth are partially covered by the inner edges of the second, the second by the third, and the third by the fourth, or corner incisors. This overlapping of the edges of these teeth arises from the broad and flat crowns being at their height of development when they penetrate the gums, and from the rapidity with which one pair has been succeeded by another, the jaw not having fully adapted itself to their larger size. In judging of age, also, the fulness and redness of the gums, combined with the extent of protrusion of the incisors last cut, is to be considered. In about two months from the appearance of the first, second, or third pair, these teeth will have acquired their full development, the second pair becoming nearly level with the first, or the third with the second, as the case may be. The corner incisors, however, although they more quickly acquire their full size after being put up, rarely gain the proportionate level of the others."

We must now return to the consideration of the molar teeth, when it will be remembered that we left them having six molars in position on each side of both jaws; the three anterior ones being temporary, and the three posterior, permanent teeth. Now the changes which the three anterior molars undergo in vacating their places for their permanent successors, give us certain indications of the ox's age, even if the incisors should present any irregularities in their development; and for this reason, a careful study of these phases is necessary. After the animal is two years and a half to eight months old, we find that the two anterior temporary teeth have been shed, and the permanent ones are filling their places. These teeth follow no precise order in their removal; sometimes the first in position gives way for its permanent follower before the second; and sometimes the second, which is usually the case, has the start of the first in developing its succeeding molar; and sometimes these teeth are replaced at one and the same time. This, however, is the exception, the rule being, that the second in position is a very short time before the first in developing its permanent successor. During the second half of the third year, *i.e.*, when the ox is past two years and a half old, the third temporary molar is shed and

exchanged for a permanent one; and when this is effected, the dentition of the molar or double teeth is completed. It has been before explained how, in many important respects, the third temporary molar differed from all the other double teeth, and the same may be said of its successor, as it resembles it in every particular, with the sole exception of its being much larger; in fact, of its being merely an enlarged edition of its forerunner, as it is longer than the two anterior teeth put together and is much wider than either. It moreover possesses three divisions or lobes on its outer side, and between the hollows formed by the three lobes two asperities, called cusps, arise; from the upper surface also of the lobes three large cusps spring. This tooth, therefore, is readily distinguished from its partners on either side, the fourth and fifth, if it is remembered that the latter possess only two lobes, and are much shorter, and not so wide. The molar dentition may be thus again explained: at six months old the fourth molar in position is cut; at one year and three months, the fifth; and at two years, the sixth. At two years and a half the two anterior molars are replaced by permanent ones, and at three years old the third tooth in position makes room for its permanent successor. When dentition is completed, that is, when all the permanent teeth are in position, our judgment relative to the age of the ox must be guided more by general appearances, than from any indications the teeth themselves can afford; but, at the same time, these organs will manifest certain signs. At four years old the four centre incisors will present worn edges; and at five years old the hollows will increase, and will show to what an extent attrition has enlarged and blunted the wearing surfaces; at this age also, the edges of the incisors will have ceased to overlap one another. As age increases, the wearing surfaces grow broader, and the teeth consequently become shorter, and the dental constituents manifest discoloration. These appearances in the teeth, together with the general external configuration of the animal after the expiration of the fifth year, will afford us certain data, upon which we are enabled to found a moderately accurate guess relative to the age of the full-mouthed ox.

Youatt, in his book on the management and diseases of cattle—a work that for years was received as an authority in this matter, and on the age of the ox as indicated by his teeth, in particular—considered that an ox was not full-mouthed until he was six years old. He wrote, "At the commencement of the fifth year the eight permanent incisors will be up, but the corner ones will be small, so that the beast cannot be said to be full-mouthed, *i.e.*, all incisors up, until it is six years old." This assertion does not, as will be seen by the foregoing, coincide with recent investigations; it does not even apply to animals of common breed, as such animals are, with very few exceptions, full-mouthed at four years old. That oxen in Youatt's time might have exhibited later development of teeth, or in other words, that the progress of dentition might have been slower, is possible; but that so late an average occurred could not have been the fact. Youatt, in framing his chapter on dentition, must have trusted to information, instead of relying on actual knowledge based on practical investigation and diligent research—a process always demanded in examining intricate subjects. The development of teeth is doubtless sometimes retarded beyond the natural period; this usually occurs owing to the persistency with which the temporary teeth cleave to the gums, and thus become obstacles to the permanent in their progress upwards; and as they constantly will make an exit through the gums, we frequently find both the temporary teeth and their succeeding permanent ones side by side in the mouth at one and the same time, thus causing great inconvenience to the animal during the act of collecting herbage. This irregularity, Professor Simonds says, applies more commonly to the third and fourth pairs, than to the first or second;" but the existence of this abnormal appearance ought not to mislead a practical examiner; and even should it throw him somewhat out of his reckoning, the molars will come to his rescue, and cause him to form a correct opinion of age.

THE AGE OF THE SHEEP AS INDICATED BY HIS TEETH.

In the preceding chapter attention was drawn to the incorrect statements made by Youatt on the age of the ox. The same remarks may with equal truth be applied to his assertions relative to the teeth of sheep; and as this is the case, portions selected from his book on the management of sheep will be reproduced, in order that this subject may be more fully ventilated, and to show how injuriously to the exhibitors of stock his inaccuracies must have operated. He writes: —"The mouth of the lamb newly dropped is either without incisor teeth, or it has two. They rapidly succeed to each other, and before the animal is two years old he has the whole of the eight. They continue to grow with his growth until he is fourteen or sixteen months old, when the two central incisors are shed; and attain their full growth when the sheep is two years old. Between two and three years old the next two incisors are shed, and when the sheep is actually three years old the four central teeth are fully grown; at four years old he has six teeth fully grown, and at five years old all the teeth are perfectly developed. This is one year before the horse or ox can be said to be full-mouthed.

"In examining a flock of sheep, however, there will often be very considerable difference in the teeth of hogs, or one shears, in some measure to be accounted for by the difference in the time of lambing, and likewise by the general health and vigour of the animal. There will be a material difference in different flocks, attributable to the good or bad keep which they have had. Those fed on good land, or otherwise well kept, will take the start of others that have been half starved, and renew their teeth some months sooner than these. There are, however, exceptions to this. Mr. Price says that a Romney Marsh teg was exhibited at the show at Ashford, weighing fifteen stones, and the largest ever shown there of that breed; and that it had not one of its permanent broad teeth. There are also irregularities in the times of renewing teeth,

not to be accounted for by either of these circumstances relating to the breed and keep of sheep. The same author remarks that he has known tups have four broad and permanent teeth when, according to their age, they should have had but two. Mr. Culley, in his excellent work on Live Stock, says, "A friend of mine, and an eminent breeder, Mr. Charge of Cleasby, a few years ago showed a shearing-tup at Richmond, in Yorkshire, for a premium given by the Agricultural Society there, which had six broad teeth, in consequence of which the judges rejected his tup, although confessedly the best sheep, because they believed him to be more than a shearing; however, Mr. Charge afterwards proved to their satisfaction that the tup was no more than a shearing. Mr. Price, on the other hand, states that he once saw a yearling wether which became quite fat with only one tooth, that had worked a cavity in the upper jaw, the corresponding central tooth having been accidentally lost."

Such are the opinions of Youatt, and others, which will be referred to presently. From him it will be observed that the sheep is said not to be full-mouthed until the expiration of the fifth year; such late development not being the result of dental irregularity or disease, but occurring as a natural consequence. Mr. Youatt, in all his assertions relative to the escape through the gums, progressive growth, and replacement of ovine teeth, is incorrect, excepting in the detail given of the lamb's mouth at birth, and within a month afterwards.

The sheep is usually born with no teeth: in some instances, however, two incisors are observed just cutting the gums; but within a week after birth four teeth, namely, the two central pairs, make their appearance, and three or four days afterwards the third pair escape into the mouth, and before the animal is a month old all the temporary incisors are cut. In this, and this alone, Youatt's opinion is in consonance with that of recent investigators; namely, that the eight temporary incisors are developed when the lamb is one month old. The incisors differ in size one from the other. The central pair are longer and broader than the second pair; and from the second to the fourth pair the teeth similarly and gradually decrease in size. This fact is more marked in the mouth of the sheep than that of the ox, perhaps owing to the former animal possessing more semicircular gums than those noticed in the ox; hence the more gradual slope from the centre tooth to the corner one, and the decrease in size noticed from the former to the latter tooth, and when these teeth are replaced by permanent ones, their successors although much larger always observe the same physical exterior and slope as noticed in the deciduous teeth. The sheep, like the ox, possesses when full-mouthed thirty-two teeth—eight incisors and twenty-four molars—twenty of which first occur as deciduous teeth and are afterwards replaced by permanent ones; viz., eight incisors and twelve molars. The temporary molars are always situated in front, viz., three anteriorly on either side of each jaw. These teeth also, like the incisors, are developed before the lamb is one month old, the two anterior ones usually making their appearance before the third or posterior molar. The permanent teeth that replace them possess the same external features, and only are presented as a larger type of the same edition. The third molar is composed of three divisions or lobes, and does not differ materially from the same tooth noticed in the ox, and described above as being longer, broader, lobular, &c. An interval of two months occurs between the development of the deciduous teeth, and the appearance of the first permanent molar namely, the fourth in position; *i.e.*, when the lamb is three months old this tooth cannot be confounded with the third temporary molar, as it possesses only two lobes, and is not so long nor broad as its companion anteriorly situated. Between the cutting of the fourth and fifth permanent molar, a period of six months intervenes; *i.e.*, the fifth molar does not escape through the gum until the animal is nine months old, consequently we have at this time of life very marked signs to rely upon, in determining the age of the lamb at this date. The fifth permanent molar very closely resembles the fourth in its physical characteristics. Both the fourth and fifth molar teeth consist of two main parts or lobes, which are blended together. Each tooth, therefore, when first cut has four cusps of enamel, of which the inner are always higher in the lower teeth, and the outer in the upper. It is, however, to be remembered that the points of these cusps are soon worn away, and that consequently each of them is thus made to form two ridges of enamel, and thereby to give to the tooth eight elevations of this substance of varying height, instead of four.

At eighteen months old the sixth permanent molar is cut, when the six molars on each side of either jaw are in position, the three anterior ones being temporary, and the three posteriorly situated representing three permanent teeth. When the sheep has reached the age of two years, the sixth molar has attained the same level as those teeth placed before it, viz., the fifth, fourth, &c. Soon after the appearance of the sixth molar, the first and second temporary molars are replaced by permanent ones, when sometimes the first is displanted before the second, and sometimes the reverse occurs. In fact, this exchange of teeth follows no direct rule; all that can be said is, that the first and second molars, when the sheep is about one year and seven months old, are shed to make room for permanent ones, and that they are replaced at almost one and the same time, and often simultaneously. The same indeed might be related concerning the third temporary molar, if it were not for the almost invariable rule that this tooth never leaves the gum until its anterior companions have been shed, although they all three escape from their sockets, and are replaced by permanent teeth in very immediate succession; *i.e.*, between the age of one year and six months, and one year and seven months, the sheep is provided with its three anterior and permanent double teeth, and this change is effected within the short space of one month, when the molar dentition is completed.

We must now recur to the incisors, which were left

when the lamb had completed its fourth week, from which period, until the time the animal has lived eleven months, no replacement takes place. The teeth, however, attain their full size, and give evidence of the effects of attrition by their edges becoming somewhat blunted. The jaw expands, the fangs grow out of the gums and are consequently exposed, and between them hollow spaces occur. At about this time the central teeth possess only a slight hold within the sockets, and give signs that they have served their purpose, and that the permanent crowns are forcing them out of their positions; and such in reality is the case, for when the sheep is twelve or thirteen months old the central pair of deciduous teeth are shed, and are replaced by their permanent successors. This change takes place, thus soon, only in such breeds as have arrived early at maturity—those that have been well fed and tended from infancy upwards; whereas in coarser-bred sheep—those that had to rough it, and have been scantily provided with provender or herbage—the development of the central teeth does not take place until four or five months later. It has been asserted by many, that some breeds of sheep arrive at maturity earlier than others, and consequently the latter cut their teeth later than the former, and that the ram lamb exhibits his two first permanent incisors before the ewe of the same age. Professor Simonds in considering this subject writes, "It is a matter of great practical import for us to decide, if possible, whether any of the established breeds of sheep are likely to cut the first or central pair of teeth earlier than others, and what other causes besides breed may hasten the process. With reference to the former part of this inquiry, it may be affirmed that Cotswold sheep as a rule, have their first permanent teeth before either Southdowns, Shropshire, or Hampshire downs. Leicesters tread so closely on the heels of the Cotswolds, that it is only by comparing numbers that any decision can be come to with regard to this question; but when it is done, Cotswolds are found to be earliest in their dentition. How much of this may depend upon a naturally large frame, and general increase of the size of this variety of breed over others, and how much upon the efforts that have been successfully made to bring such animals to early maturity, are matters requiring an extended series of experiments of feeding, &c., to decide. An opinion prevails pretty generally among sheep-breeders, that the ram lambs cut their first pair of permanent molars before ewe lambs. In our examinations this should be borne in mind, and allowance always made in cases where a point to be decided is a nice one, as it frequently happens to be at this particular period of the animal's life. It must be observed, however, that sex has not so great an influence as is commonly supposed. I find in comparing Southdown ewes with ram hoggets which have been bred and reared on the same farm, that there is but very slight difference in favour of young rams."

At about one year and nine months, the second pair of temporary incisors are replaced by permanent ones; although cases do occur in which these teeth are developed within one year and six months from birth. In fact, this is the period Professor Simonds gives as his early average; but although such is the case, on the other hand instances of later dentition with these particular teeth sometimes come to our knowledge, in which the second pair of deciduous teeth have been in the mouth of an animal two years old. But we never have met with them in the gums of sheep between two and three years of age—the period assigned by Youatt for their fall, and six months more for their full development, namely, when the sheep has reached his third year. Simonds asserts, and such is our experience, that one year and three quarters is the average time when sheep will cut their second pair of permanent incisors. The third pair of incisors are replaced by their successors when the sheep is two years and a half old; but instances are of common occurrence in which, especially among advanced breeds, these teeth are shed when the animal has lived only two years and three months. This of course is the early average, whereas the late average represents sheep as not cutting the third pair of permanent incisors until six months later, *i.e.*, when the sheep is two years and nine months old. The same latitude, or a period of six months, must also be allowed in considering the time when the fourth pair of milk teeth make room for their succeeding ones; the mean average being when the sheep is three years and three months old. Sometimes however, these teeth appear three months earlier (the early average); at other times three months later than the mean average, *i.e.*, when the animal's life extends to three years and six months. At the time the above teeth are cut, the central and second pair of permanent incisors will give indication of considerable wear, and not uncommonly rise in their sockets to compensate for their decreased height, which has been effected by attrition. These central teeth, also, are frequently broken whilst the sheep is biting the wood of hard plants, which are constantly met with on heath lands, &c. This gives to the mouth an old appearance, and sheep with such injured teeth are often said to be very old, and for this reason have been named "crones" (old women), from the Greek word *χρόνος*, "time." In this consideration however, we are likely to be much mistaken, as this accident may occur, and sometimes does, before the sheep is three years old. Such animals often lose condition, and consequently require more care than those having these teeth intact. "The Norfolk heath-land farmer has to look well to his flock, and to draft such sheep. When removed into other districts where they can live on good grass land and have manger food, these animals, however, are profitable for breeding purposes until they are ten, twelve, or fifteen years old, as we see in Leicestershire and other counties. There is this important difference, however, between the old sheep of Leicestershire and the crones of Norfolk; namely, that in one instance the incisors have been gradually worn down, while in the other they have been prematurely forced out or broken off. A broken incisor often leads to the displacement of other teeth. It will also occasionally lacerate the dental pad, and not unfrequently works its way through the

substance of the pad to the bone itself." From the foregoing it will be understood, that when the sheep is three years and six months old, the permanent dentition of this animal is completed, although sometimes the process terminates three months before, and at times three months, or more, later. After this period therefore, our judgment in determining the age of the sheep must be guided, first, by the wear and tear of the teeth, and secondly, by the general appearance of the animal. Although as a rule, the sheep is full-mouthed when three years and six months old, yet a few instances are not wanting in which the corner temporary incisors are in the mouth at four years; but this is an exception to the rule, which seldom varies, in that the sheep, before the expiration of the fourth year of life, possesses all its permanent incisors and molars, and consequently is full-mouthed.

THE AGE OF THE PIG AS INDICATED BY THE TEETH.

Correct information relative to the age of the pig as indicated by the teeth, was never given to the public by Girard or Youatt, although these writers were received as authorities on this important matter for years previously to the appearance of Professor Simonds' work "On the Age of the Pig." Youatt doubtless translated from Girard, and in so doing repeated his errors, which a slight examination of the dentition of this animal would have prevented. In fact, he copied without investigating the subject for himself, and consequently we find Girard and Youatt writing in the self-same strain; the latter repeating all the mistakes of the former. "The hog," writes Youatt, "has fourteen molar teeth in each jaw, six incisors and two canines; these latter are curved upwards, and commonly denominated tushes. The molar teeth are all slightly different in structure, and increase in size from first to last; they bear no slight resemblance to those of the human being. The incisors are so fantastic in form as to baffle description, and their destined functions are by no means clear. Those in the lower jaw are long, round, and nearly straight; of those in the upper jaw, four closely resemble the corresponding teeth in the horse, while the two corner incisors bear something of the fleur de lis shape of those of the dog. These latter are placed so near to the tushes as often to obstruct their growth, and it is sometimes necessary to draw them in order to relieve the animal and enable him to feed.

"The calculation of the age of the hog by means of reference to the mouth has not yet been carried beyond three years—no writer seems to have gone much beyond the protrusion of the adult middle teeth of the lower jaw. The hog is born with two molars on each side of the jaw; by the time he is three or four months old he is provided with his incisive milk teeth and two tushes. The supernumerary molars protrude between the fifth and seventh months, as does the first back molar; the second back molar is cut at the age of about ten months, and the third generally not until the animal is three years old. The upper corner teeth are shed at about six or eight months, and the lower ones at about seven, nine, or ten months old, and replaced by permanent ones. The milk tushes also are shed and replaced between six and ten months old. The age of twenty months and from that to two years, is denoted by the shedding and replacement of the middle incisors or pincers in both jaws, and the formation of a black circle at the base of each of the tushes. At about two years and a half or three years of age the adult middle teeth in both jaws protrude, and the pincers are becoming black and rounded at the ends. After three years the age may be computed by the growth of the tushes: at about four years, or rather before, the upper tushes begin to raise the lip; at five they protrude through the lips; at six years of age the tushes of the lower jaw begin to show themselves out of the mouth and assume a spiral form. These acquire a prodigious growth in old animals, and particularly in uncastrated boars. As they increase in size they become curved backwards and outwards, and at length are so crooked as to interfere with the motion of the jaws to such a degree that it is necessary to cut off these projecting teeth, which is done with a file or with nippers."

The above contains the views of Youatt respecting the development of the pig's teeth; these views were considered correct until Professor Simonds found that little reliance could be placed on Youatt's assertions, and therefore determined to study the teething of the pig "from the period of its birth onwards until the permanent set of teeth should be completed, and to mark the changes these organs might undergo, depending on wear or increasing age."

The incisors of the pig differ in their external outline from those of any other domesticated animals. Their formation and arrangement in the upper jaw differs from that noticed in the lower; for instance, the fangs of the teeth fixed in the sockets of the former take a curved course backwards and inwards, and their crowns pass down into the mouth almost vertically, *i.e.*, at right angles to the lower jaw, from which the incisor teeth common to it run out almost in the same straight line with the jaw. Their fangs, also, slightly curve backwards and upwards, but are much longer than the fangs of the corresponding teeth in the upper jaw. The fangs, however, common to the upper teeth gradually decrease in length from the middle to the corner ones, whereas the fangs of the middle pair of the lower incisors are not quite so long nor thick throughout their entire length as the lateral teeth situated next to them. These last-named teeth possess fangs more than double the length of the corner incisors, which are in every respect much smaller teeth, both as regards their fangs and crowns. The pig is born with four teeth in each jaw, in all eight; and by taking one side of the lower jaw for examination, we find one tooth in the place of the corner incisor, and another in that of the tush. Simonds has named these teeth, respectively, the fœtal incisor and fœtal tush, owing to the place they occupy in the mouth during fœtal life. The situation of these at the sides of the mouth leaves a space between them in the middle of the mouth, and consequently the nipple of the sow can be brought into the young pig's mouth through the space created between the eight teeth

above mentioned. Moreover, the nipple of the sow is yet further protected from injury by the tongue of the sucking pig, which in this act may always be seen surrounding and firmly adhering to its mother's teat. This grasping power of the tongue is greatly facilitated by the existence of a fringed border which surrounds it when "in the act of sucking; the tongue is doubled along its middle, so that these fringes are brought into such a position that they can partially overlap the nipple, and thus produce the grasping power alluded to." At one month old, four incisors being then situated in front of the mouth, viz., the middle temporary teeth, two in the upper and two in the lower jaw, appear in the gums, as also do the two temporary molars, being the second and third in position. The first or anterior deciduous molar sometimes is cut at the expiration of the first month, but as a rule this tooth does not make its appearance until five or six days later. The third molar in the lower jaw presents a very similar configuration to that noticed in the ox and sheep, described under their respective headings as being composed of lobes and cusps, and as occupying a much greater space both in diameter and length than its two anterior companions. When the young pig has reached the age of three months, four more temporary incisors, the lateral teeth, issue from their sockets, and in so doing complete the temporary dentition of the pig, both that of the incisors and that of the molars; consequently, before the pig is three months and a half old its mouth exhibits (taking one side of a lower jaw for description) a fœtal tush, a fœtal incisor occupying the situation of the corner incisor of other animals, and two middle incisors and two lateral ones; these last-named pairs occupying the front part of the mouth. In addition to the above, three temporary molars are situated anteriorily to the three permanent molars, which enter the jaw at a later period, afterwards to be considered. From three months and a half to six months, no new teeth escape into the mouth, neither does any replacement of teeth occur. On the wearing surfaces of the temporary teeth, however, signs of attrition indicate that the pig is nearing the age of six months, soon after which period, on each side of both jaws, just in front of the molars and behind the fœtal tush in the lower, and directly in front of the molars in the upper, two teeth are added to the previously described set. These have been named by Professor Simonds "Premolars," which appellation he has borrowed from Professor Owen, but has mistaken the latter's reason for naming certain teeth premolars. Simonds writes, "Professor Owen has applied the term premolars to the teeth which succeed the temporary or deciduous set of molars. He limits the ordinary word molar *to those teeth which are not preceded by similar ones.* The term premolar therefore, is intended to signify the pre-existence of other teeth in the situation of these molars." Such is Professor Simonds' explanation of the peculiarities of premolars; now the description given of these teeth by Professor Owen leads me to believe that by premolars he meant to signify that such teeth existed in the jaw anteriorly to the permanent molars, and such would be the true meaning of the Latin preposition *(præ*, before), and not on account of such teeth being preceded by deciduous ones. For instance, Professor Owen calls the tooth now under notice (the premolar of Simonds), the first premolar, and the three molars situated posteriorly to it, respectively premolars No. 2, No. 3, No. 4. Now, in further confirmation of my view, it is known that the premolar of Simonds and the first premolar of Owen is not a deciduous tooth; it is never shed to make room for a successor; consequently Owen would not have called this tooth the first premolar, if he had intended to convey the idea, that by premolar he meant to signify the pre-existence of another tooth in the situation of this molar. The word premolar is a very well applied and distinctive term in describing the dentition of the pig, especially so, as the terms temporary molars and permanent molars in the present chapter have been used; and therefore the first premolar of Owen can be called the premolar, as no other tooth of this name has been mentioned in our above nomenclature. In other animals, similar teeth to the premolar of the pig exist. For instance, in the sheep and ox these teeth are called supernumerary molars; in the horse they are named wolf's teeth. These teeth are permanent ones, and consequently if removed by accident or as the result of a surgical operation, are not renewed. At six months, or soon after, the first permanent molar, viz., the fourth in position, breaks through the gum. At from nine to ten months the fœtal incisor and the fœtal tush are replaced by permanent teeth; these, it will be remembered, were existing in the mouth at the period of birth, on each side of the jaws. Just previously to the fall of these teeth, a slight inspection of the mouth will demonstrate to how great an extent, during the past nine months of life, they have been exposed to the effects of attrition, as they will appear nearly ground down to a level with the gums. The tusk of the hog is the same tooth as the canine of other animals, and holds in the mouth a similar position. Professor Owen usually calls them canines, and in describing their development in the wild boar, writes:—"The upper canines in the wild boar curve forward, outward, and upward, their sockets inclining in the same direction, and being strengthened above by a ridge of bone which is extraordinarily developed in the masked boar of Africa. The enamel covering the convex inferior side of this tusk is longitudinally ribbed, but is not limited to that part; a narrow strip of the same hard substance is laid upon the anterior part, and another upon the posterior concave angle forming the point of the tusk, which is worn obliquely upward from before, and backwards from that point. In the sow the canines are much smaller than in the boar. Castration arrests the development of the tusks in the male."

The lower tusks are much longer than the upper ones, and take a direction upwards and backwards; their fangs assume a downward and backward course, but as age advances, they become vertically disposed. From ten months we pass on to twelve or thirteen months, at which period the middle temporary incisors are shed, and replaced by their permanent

successors. The middle permanent incisors differ little from their temporary forerunners. They are broader and flatter, but their chief difference consists "in the existence on their upper and inner surface, of a well-marked ridge running parallel with their long axis, and bounded on either side by a deepish hollow. In the recently cut incisor, these hollows unite at the apex of the tooth, giving a pointed extremity to the ridge just described." The same remarks apply equally to the middle permanent incisors, both of the upper and lower jaws. At this period also it will be observed that the corner incisors and tusks have considerably grown, the lower tusks to nearly an inch long. Soon after the appearance of the permanent middle incisors, the three anterior temporary molars escape from the gums and are replaced by permanent teeth; the two anterior teeth generally fall before the third, and consequently their places are filled with permanent molars. A short time before, a similar exchange is noticed in the third molar, and that situated posteriorly to the second (now) permanent double tooth. Before the pig has attained the age of sixteen months, the permanent molars will be nearly on the same level, the middle incisor will have become almost fully developed, and the tusks also commence assuming a circular course upwards and backwards. The only temporary teeth now remaining in the mouth, it will be recognized, are the lateral incisors; these, however, before the animal is one year and seven months old, are replaced by permanent teeth; at the same period the last or sixth permanent molar makes its appearance, and before two months have elapsed it will be on a level with the other double teeth. The dentition of the pig is, as a rule, therefore completed by the time the creature has lived one year and seven months, and after this time its age must be guessed at by its general appearance. In the boar, however, the greater or lesser development of the tusks will afford some guide in determining its age up to three or four years. Professor Owen, in describing the molar dentition of the hog, writes:—"The teeth of the molar series progressively increase in size from first to last. The first premolar (the premolar of Simonds), has a simple, compressed, conical crown, thickest behind, and has two fangs. The second premolar (the first molar of Simonds), has a broader crown, with a hind lobe having a depression on its inner surface, and each fang begins to be subdivided. The third premolar (second molar of Simonds), has a similar but broader crown implanted by four fangs. The fourth premolar (third molar of Simonds), has two principal tubercles and some irregular vertical pits on the inner half of the crown. The first true molar (fourth of Simonds), when the permanent dentition is completed, exhibits the effects of early development in a more marked degree than in most other mammals, and in the wild boar has its tubercles worn down, and a smooth field of dentine exposed by the time the last molar has come into place. It originally bears four primary cones with smaller subdivisions formed by the wrinkled enamel, and an anterior and posterior ridge. The four cones produced by the crucial impression, of which the transverse part is the deepest, are repeated on the second true molar (fifth of Simonds), with more complex shallow divisions, and a larger tuberculate posterior ridge. The greater extent of the last molar (third of Owen, sixth and last of Simonds), is chiefly produced by the development of the back ridge into a cluster of tubercles; the four primary cones being distinguishable on the anterior main body of the tooth. The crowns of the lower molars are very similar to those above, but are rather narrower, and the inner and outer basal tubercles are much smaller, or are wanting." The sixth molar is, as stated by Owen, much larger than its fellows, and consequently cannot be mistaken. It resembles somewhat the form of the third molar of the lower jaw, in that it possesses three divisions, *i.e.*, is trilobate; and that from each lobe two cusps arise, which are intersected by small subdivisions. This development is readily noticed on the newly cut tooth, but in a short time daily attrition causes its obliteration.

THE PIG.

THE CONSTRUCTION OF PIGGERIES.

Nothing to those keeping or about to keep pigs can be more important, if the well-being of these creatures is considered, than the selection of suitable ground whereon to build proper habitations—"Principio sedes" porcis. Many persons, in past years and even at the present time, think any hovel is good enough for the pig's home, and that he delights to wallow in his own mire. This is a most unfortunate mistake; one that has retarded both the growth and fattening tendency of such animals, and sometimes produced disease, and consequently caused great loss to owners. The land suitable for building piggeries on is not very different to that which is required for other animals, viz., rising ground from which the drainage can flow naturally. The back of the sties, also, should be so constructed as to afford shelter from the north and east winds; and if this arrangement be carried out, it is obvious that the open parts and yards in front must face the south or south-west; it is also very important to insure perfect ventilation. The above items mentioned as being necessary to the health of pigs, can with very little forethought and expense be thoroughly and efficiently obtained. Having chosen a plot of rising ground, the extent of which must of course be defined according to the size and number of sties required, it will be our next endeavour to build the dormitories and yard walls. It matters little of what material these are composed, so long as they are impervious to wind and weather (this remark particularly applies to the sleeping compartments); but perhaps brick or stone, when these can be readily and cheaply procured, recommend themselves more particularly to our notice, as being likely to form the most durable fabric. In order to explain the mode of constructing piggeries and of keeping them clean, and of insuring easy drainage and perfect ventilation within them, it will be con-

venient for the sake of plainness to describe the construction and the system of hygiene to be adapted to one. Given then a plot of ground, as above described, sufficient to build one sty upon. The walls composing the sleeping shed should be built of brick or stone; but if these materials are not of easy access, then rough wood covered outside by mud walls will form a perfect protection against wind and bad weather. The walls at the back of the sty should be at least five feet high, and those at the side should gradually slope downwards to the yard, to about three feet and a half. The roof always productive of the greatest comfort to the inmates is found in good straw thatch; for this substance tends not only to keep the apartment warm in winter, but also forms the best protection against the sun's rays during the excessive summer heat. The floor of the sleeping compartment should consist of boards resting on planks raised at least six inches from the ground, when the sleeping chamber can be shut in two-thirds of the way across, by boards, bricks, or any other building material that is ready to hand. The sties in which breeding sows are kept will be beneficially supplied with a ledge running round the chamber, and raised about six inches from the floor and extending over it about one foot. This arrangement prevents the sow lying close against the wall, an operation which she constantly performs when about to suckle her pigs, and in so doing often crushes one or more of them. The barrier above mentioned keeps the sow from close proximity with the wall; and forms a bridge under which the young pigs can shelter themselves against the crushing effect likely to be produced by the heavy fall of their mother's body, during the act of lying down.

THE YARD IN FRONT OF THE SLEEPING CHAMBER.

The extent of the yard, like the sty, must be large or small, depending upon the number of pigs kept, but in either case the floor should consist of some hard substance; large flagstones about three or four feet square (like those noticed in Oxfordshire) are best. These stones being large, do not admit of so many apertures as those noticed in brick and pitched floorings, which allow the moisture to pass between them and thus undermine the structure. This, of course, is constantly noticed where the drainage is imperfectly obtained. To insure the rapid escape of all liquid from the sty yard, it is necessary that the floor should be so arranged as to gradually incline towards a middle, side, or centre drain, which should be continued at some distance from the yard to a main (liquid manure) tank outside. The drain in the best-constructed yards generally runs up half the middle of the yard, and is partially open at the top. Of course, when the drain is so arranged the floorings slope down towards it, as they should do to the side when the drain is there situated, but to the centre when central drainage is intended. The yard must be inclosed by a wall about four feet and a half high, and can be built of brick or stone, when a wooden gate either at the right or left hand corner will secure the safe keeping of the inmates.

TROUGHS.

Pigmasters do not all agree as to the best position for the feeding troughs. In our opinion troughs are better kept outside the dormitory—in the first place, because the pigs during the process of eating and drinking always throw over some food and a large quantity of liquid, and by this means saturate their beds with moisture; secondly, wash not disposed of during a meal may ferment, when certain gases are likely to be generated, which constantly prove deleterious to porcine health; the only good to be derived from placing pig troughs under the roof of the piggery, is that the rain cannot find its way within them, and for this reason alone many owners have thus placed them inside the sty. The best position for the feeding trough is found in the front wall not far from the door, where it must be a fixture, and should (if the wall be brick or stone) be placed on the ground in the middle of the wall, which raised about two feet above it forms a covering and an opening for the reception of the trough, and for the application of a door, or more properly, a falling lid, which can be opened and shut as occasion requires. At feeding time the lid can be raised, and the wash food can be readily emptied into the trough. The lids, or as I may call them trough doors, are sometimes (in fact, nearly always so now) arranged that they can be closed either on the inside or outside of the wall; *i.e.*, when the pigs are to be fed the wash can be poured into the trough whilst the lid is closed on the inside. This prevents the usual porcine rush at the wash bucket, which often wastes much of the spoil. When the trough has been filled, the lid can be drawn forward until it reaches the rim of the trough on the outside, where it can be fastened until the meal has been completed. By placing the trough in the wall it is sheltered from the rain, and the escape of food or liquid from it will cause little or no harm. By these means the evil mentioned by the advocates for inside troughs is removed, and the existence of a dry and clean bed is insured.

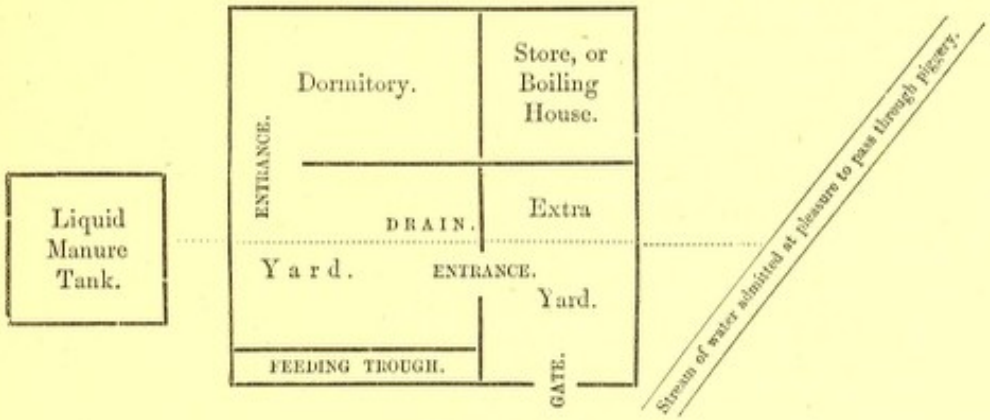
EXTRA YARD.

Pigs, as before stated, are naturally clean animals, and when in a domesticated state they are otherwise, the fault must be owing to the carelessness of the owner. How constantly do we see the sty yard with filthy litter in it up to the pigs' knees, in which during hot weather the inmates are compelled to lie; for in the period of intense heat it will be noticed, if pigs are allowed to roam over a pasture through which a rivulet runs, that they will seek such stream and wallow in the mud at its banks; and this they do with a view to cool their bodies by the application of the cold water. When confined within a piggery, a similar tendency to cool themselves is noticeable in placing their over-heated bodies on the dung and litter that has been previously saturated with urine, which often proves a fertile source of disease, and consequently we ought to use all means at our disposal for its prevention. This end can be attained by a very simple

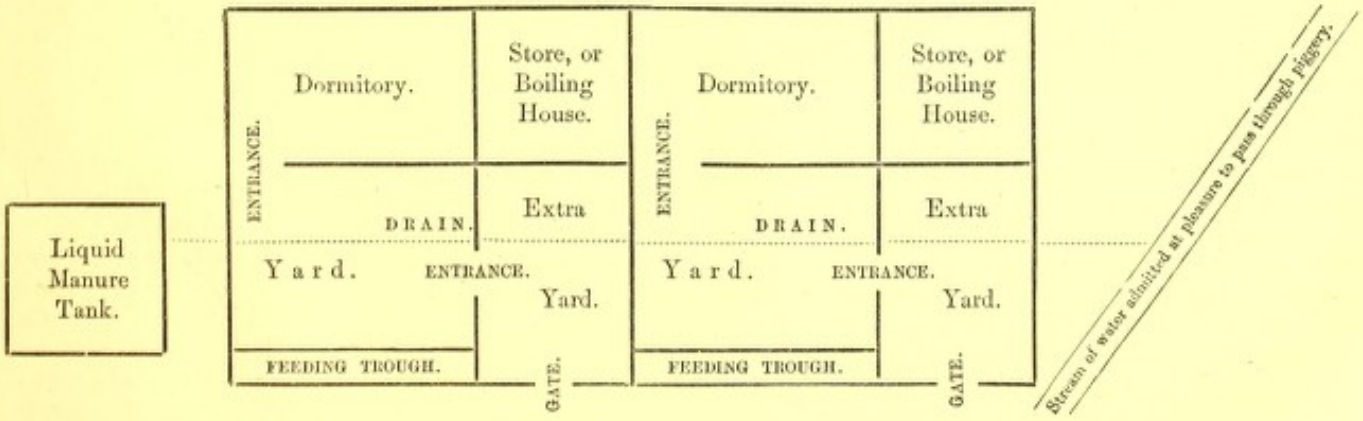
and inexpensive arrangement, in the construction of an extra yard. As I have never heard that the arrangement about to be proposed was ever advocated previously, it will not be out of place to narrate the reasons which operated in suggesting the advantages likely to be derived from its adoption. Some years ago I possessed four pigs, each about six months old, that were placed in a piggery, the sty doors of which opened one into the other. As the sty next to it was without occupants, the door communicating from the one to the other was removed, and the pigs were allowed the range of both sties; and the result was that the animals used the sty A to sleep and feed in, and the far end of sty B, namely, the one from which the door had been removed, to dung and urinate in. The result was that sty A was always clean and dry, whereas sty B was used as a urinal, &c., and was seldom entered except for the purposes of nature just indicated. Such being the case, at the side of each yard, and separated from it, a second yard smaller in dimensions than the preceding, might run at a parallel to it, an inlet into which could be made sufficient to allow two pigs to pass through at the same time. This yard should also possess a gate through which the dung could be removed; in fact, there need be no other doorway through which to enter than this. The doorway of each sty ought to be so hung that it will open outwards or inwards, so as to give the animals free ingress and egress; and to do this it should be hung across from side to side, and the pig should be able to push it in to effect its entry and out for its exit: for if it were hung in the usual way, it would derange the litter every time it opened inwards and be very liable to catch. The construction of the extra yard has some advantages: namely, 1st. Its presence causes pigs to perform the offices of nature therein. 2nd. For this reason, it necessarily follows that the feeding yard will always remain dry and clean. 3rd. The animal will be able to feed at a distance from the dung yard, and, better still, in one quite clean and consequently free from polluting gases. 4th. The sleeping compartment and feeding yard will not so frequently require fresh straw nor cleansing; moreover, in an extra yard all the droppings and dirty litter will be located in one spot, and can therefore be readily removed, after which the floors of both yards can with advantage be washed. It is a good practice to sprinkle coal or wood ashes over the floor of the extra yard, to act as a disinfectant, and purify the whole building, as well as to help the dung heap.

The following diagrams will explain how the extra yard can be arranged either for a single or double piggery:—

1.—SINGLE PIGGERY.



2.—DOUBLE PIGGERY.



Where there is unlimited space, as in large farm yards, it is always wise to allow store pigs an extensive range, to be met with in straw yards protected from the north-east wind by sheds. In such locations the more elaborate construction of a piggery is not required for swine until the period when fattening is to commence arrives, when, of course, the piggery comes into requisition. Some persons, however, prefer, from the very first, keeping their pigs within bounds, even if a large quantity are housed, when the piggeries have to be constructed on a large scale, but should always be built on the hygienic principles above directed. The drain running through the piggery yards should be washed out daily, and for this purpose a stream can with advantage be admitted from without. This can be effected either by causing the water from a brook to be diverted from its course, when required, into the drain; or it may be obtained from a tank, through the medium of an india rubber tube being directed into the drain at its highest elevation. Of course, if these means are not easily procurable, then buckets of water thrown through the drain will sufficiently well answer the purpose of cleansing. As before stated, the drain should run into the liquid manure tank, which must always, where convenient, be situated at least five or six yards, if not farther, from the piggery. It is always well to build piggeries near that part of the establishment from which the supply of food can be readily collected. Wash, grain, and roots, can be stored under the dormitory roof of the extra yard; in large establishments in one of these a copper can be fixed in which to boil the various foods intended for the pigs.—See Diagram.

FOOD FOR PIGS.

DAIRY REFUSE.

Sour milk, butter-milk, and dairy washings constitute, with the addition of barley, oat, or pea meal, a very nutritious food for fattening purposes. "Farmers are of opinion that this mode of employing their sour milk is more profitable than making cheese." But it must be remembered that, when pigs have for any length of time been fed upon milk, they will fall off in condition if it be afterwards denied them. In the year 1846, Earl Radnor exhibited some very handsome pigs, aged about six months, which had been fattened on forty-eight bushels of barley meal and six bushels of potatoes, with an adequate quantity of whey; these pigs were in prime condition, and no pig could have presented better quality or quantity for the age. Dairy-fed pork—namely, that produced from dairy refuse—is without doubt more delicate and wholesome than that reared and fattened on other aliments.

THE REFUSE OF BREWERIES AND DISTILLERIES.

Brewers and distillers, who brew extensively, often keep a large herd of pigs for the purpose of having the wash and grains consumed by them. This is constantly the case in the country; but in large towns, and especially in the suburbs around London, there are classes who make a good living by keeping pigs upon the wash purchased from the brewers and distillers. Wash and grains by themselves do not constitute wholesome food for pigs, as they are said to be too heating, and consequently can with advantage be mixed with a little water or kitchen wash, combined with pollard or barley meal. Thäer "advises that the refuse of brandy distilleries should always be diluted with water first, otherwise the animals will reject it, or, if they take it, become giddy and unable to keep their feet; afterwards the quantity of this food may be increased until they are completely accustomed to it." Neuenbahn says "that the refuse of the brandy distillery cannot be given to pigs too warm, or too soon after removal from the still, and that it never heats their blood; but that, if it be allowed to get cold and stale, it is rather injurious than beneficial to them. On the other hand, many experienced distillers, who fatten large numbers of hogs, assure us that it requires great attention, and the employment of a man on whose care we can rely, to prevent this residue from being given to animals while too warm, for it is then that it injures and materially retards their growth. It should be sometimes thick, sometimes diluted with water, and at others mixed with meal or pollard, in order, by thus varying the food, to keep up the appetite of the animals."

REFUSE FROM STARCH MANUFACTORIES.

Thäer, in his "Principles of Agriculture," very clearly explains the advantages to be derived from employing the residue from starch manufactories as food for pigs. He writes:—"The residue of the manufacture of starch, the products of the various washings which this precaution involves, and the refuse of wheat, are far superior to brewers or distillers' grains. Hogs fed upon these articles fatten more quickly, produce firmer flesh, more substantial bacon, and a greater quantity of lard. At first the animals will often eat these matters with great avidity, and even to excess; and when this is the case, they invariably become disgusted, and refuse them after a time. The quantity, therefore, must be carefully regulated, and the troughs kept very clean. If this kind of food be used alternately with one of a different nature, the fattening will be effected with greater certainty. The quantity of this refuse collected at once, is often greater than can be consumed at the time; and it is difficult therefore to store it, because it so soon putrefies. The only mode of preservation is to dry it, make it into cakes, and bake it." Starch, the first cousin to sugar, contains within itself the fat-producing material, and the residue from the starch manufactories, also, is largely pregnant with fat-giving elements; consequently, it may be readily seen that if the hydrocarbon starch be given as food to an animal, it will within it cause the formation of the hydrocarbon fat. All the artificial foods for fattening pigs contain such substances as starch and sugar, combined with aromatics, materials which incite the animals

to eat greedily. Starch and sugar stand prominently forward as fat-producers; and as the residue of the starch manufacture contains both, it is very plain that this refuse constitutes, when mixed with meal, an excellent food for pigs during the process of fattening.

ROOTS AND VEGETABLES.

Nearly every root and vegetable grown has been pressed into the service for feeding pigs, and experience has proved that cabbage and lettuce-leaves and turnip tops are of little value as fat-producers. They form, however, a very good food for store pigs, and for this purpose are largely used. Roots, on the other hand, contain the fatty elements, as starch and sugar largely enter into their composition. This is particularly the case with the starch-yielding potato, and among the sugar-givers, such as the beet-root, carrot, and parsnip. These roots, even in the raw state, are exceedingly nutritive, but by cooking they are rendered more digestible, and their nutritive and fattening properties are increased. This fact has been attested by numerous experiments carried out during more than a century. On the Continent, parsnips and carrots are extensively used in fattening pigs, but these roots by themselves are not sufficient to give tenacity to muscle. They always require to be given in conjunction with barley or some other meal; yet such substances, and especially carrots, when treated as above directed, are said to impart a very delicate flavour to pork. For store pigs potatoes may form a staple food, and in Ireland, upon this root alone, without the addition of any other feeding material, hogs are constantly fattened; but in animals so tended, the flesh when boiled is liable to shrink instead of plumping, which should occur, and always does, when the creature has been fed upon corn in addition to the potato.

Previously to giving potatoes as a food to pigs, they should be boiled or steamed; the latter, perhaps, is the better course to adopt with some kinds of potatoes, whereas others require the former treatment, as steaming will never sufficiently cook them. But whether steamed or boiled, when thoroughly done the water in which they have been boiled should be immediately strained off and thrown away, when the potatoes can be well mashed up, mixed with meal or pollard in sour milk or whey, and if these are not procurable, then in kitchen wash, until the whole mass assumes a pulpy form. "This root," writes Youatt, "should only be given for a short time, as it is by no means a rapid fattener, and does not make good firm fat, and never alone if it can be avoided." This assertion, that the potato is by no means a rapid fattener, is contrary to my experience. Both chemical science and practical observation prove, first, that the potato contains a large quantity of starch, a potent fat-producing substance; and secondly, that this root, when given to pigs, not only acts powerfully in developing fat, but in producing it rapidly. I have fattened many pigs on potatoes and barley meal for five consecutive months, and have always been satisfied with the result; and consequently have proved, that pigs always fatten better on potatoes than any other known root, when they are judiciously combined with some kind of meal.

GRAIN.

Without grain pigs cannot be kept at a profit, as it affords both the means of bringing them to early maturity, developing size, and when the period arrives of preparing them for the butcher, of producing fat. Store pigs, if they are to be done well, should be fed on wash, either that derived from the dairy or the kitchen, mixed sparingly with pollard or finely ground oats; and where little wash can be obtained and no pollard or meal is allowed, and especially when the range of a paddock is permitted, turnip tops, cabbage leaves, &c., will prove useful in filling the pigs' stomachs. Such food, however, alone will not keep the animal even in good case without some additional supply, and this should be selected from the grain series. Beans and peas, especially the former, constitute the best food for animals daily devouring green stuff, as it tends, as pigowners say, *to bind the lot together;* therefore, half a pint of beans given daily to each pig will assist markedly in developing its form, and in facilitating its growth. In rearing pigs, it has always been my habit, at about ten months old, to wean them and keep them for about a month in a large shed, and feed them upon dairy refuse and oatmeal twice daily, and during the daytime to turn them into a paddock or some place where they could take as much exercise as was pleasurable to them; at the expiration of the month, to diminish the quantity of oatmeal, and in its place to give each pig daily half a pint of old beans or peas. I cannot too strongly advocate the necessity of allowing growing pigs plenty of exercise. Common sense tells us that they cannot breathe such pure air within the sty as outside; and particularly in a grass field not only is pure air obtained, but amusement is afforded and exercise necessitated during the frolics which the creatures are compelled to take whilst collecting the herbage, &c. Moreover, the sty in which they are located during the night is all the better for its daily airing; and besides, as the bulk of the urine and dung is not deposited therein, the piggery is sweetened by the adoption of the course recommended. Some people are unable, owing to restricted space, to allow their pigs sufficient range for exercise, when, of course, confinement to the sty is compelled. Under these circumstances the sties should always be kept scrupulously clean, and to effect this end daily cleansing is necessary. Feeding similar to the above may be resorted to, but the beans or peas, if given, should not be thrown on the floorings, but must be placed in the troughs, after these have been well cleaned out. Mr. Fermore exhibited a contrivance he had for feeding his swine with beans, which was like the hopper of a mill placed over the sty, "into which a certain quantity of beans having been put sufficient to fatten so many hogs, these continually descend about half way down the sty in a large square pipe, which there divides itself into six smaller ones, which terminate, each of them, in a small trough just large enough to admit the nose of the hog, and come all of them with their ends so

near the bottom that there is never more than a handful of beans in the trough at one time, which being taken away by the hog, there follows another, and so on; and he having drawn a rivulet of water through the sty, the daily trouble of waiting on the hog is saved, the animals are constantly kept supplied, and are unable to waste or dirt their food."

In preparing grain for pigs' food, there are some who consider it is better macerated; by which, they say, its fattening properties are increased, and especially so if it be afterwards allowed to lie and ferment, when it can be dried and malted, and then placed in water until it turns sour. This process does not answer, as pigs sometimes will not eat such food, and moreover, it is not so digestible as meal.

The best mode of giving grain to pigs is in the form of meal moistened with milk, or wash of any kind, which has been previously mixed with potatoes or boiled roots of some sort. The mass never should be given too warm, as, when in this state, sometimes a recently boiled potato, and even hot meal, will scald the internal coats of the stomach, and may thus act as a proximate cause of death. The fluid medium, whatever it may be, is better administered cold, or at any rate lukewarm, as boiling liquid when poured on meal often causes the conglomeration of it into lumps, which never become intimately blended with the mass, and consequently, if eaten in this form, are likely to create indigestion followed by obstinate constipation. Arthur Young, in his book on fattening cattle and swine, writes as follows:—"The most profitable method of converting corn of any kind into food for hogs, is to grind it into meal and mix it with water in cisterns, in the proportion of five bushels of meal to 100 gallons of water; stir it well several times in a day, for three weeks in cold weather, or for a fortnight in a warmer season, by which it will have fermented well and become acid, till which time it is not ready to give. It should be stirred immediately before feeding. Two or three cisterns should be kept fermenting in succession, that no necessity may occur of giving it not duly prepared. The difference in profit in feeding in this manner and giving the grain whole, is very great; so great, that, whoever tries it once will not be apt to change it for the common method."

There are many people who speak lightly of Indian corn as a food for pigs; it certainly produces fat, but is not to be depended upon equally with barley, beans, or peas, as maize does not cause flesh or fat to be laid on so surely or rapidly as the three species of grain mentioned. I have watched pigs during the period they have been fed on rice, and from experience cannot recommend it as a fattener; but at the same time some practical pig-keepers speak in its praise. One in particular writes, "We fattened our pigs on rice, and such pork I never saw before or since; the fat was as firm and solid as the lean, and the flavour of the meat was superior. The way the rice was prepared was as follows:—My copper held forty gallons; in the afternoon it was filled, or nearly so, with water. As soon as the water boiled the fire was raked out, two pails of rice were immersed in the water, and the whole covered closely down and left to stand until the morning. On the following day the copper was emptied of its contents, which consisted of a thick jelly, so firm as only to be taken out with a shovel; and on these contents the pigs were fed. The effect was perfect. As to the economy of the plan, that of course must be a matter depending on circumstances; we found it more profitable than almost any other kind of food we could have given, from the price at which we were able to purchase the rice, and its goodness. From some slight experiences, I am induced to think that equal parts of rice jelly and mashed potatoes would constitute an excellent food."

"Another person who tried rice as a food for pigs, put up two weighing five stone each, and fed them entirely on equal parts of boiled rice and steamed potatoes. At first they progressed but slowly, but eventually attained the weight of fifteen stones each. Their flesh was fine and delicate, the fat white and firm, and the flavour of both excellent." It will be observed from the above that, although rice was used to increase the weight of pigs from five to fifteen stone, yet the writer "from some slight experiments" is led to the conclusion, that the addition to it of mashed potatoes would answer better; and we cannot find sufficient reason for this advocacy, excepting it be found in the fact, that in the experiments alluded to, the potatoes played an important part in producing better fattened animals than those that were fed exclusively upon "rice jelly." Of course, rice in combination with meal or potatoes will fatten pigs to a great size; but unless rice can be bought at a very moderate rate, its place can be more advantageously filled by other species of grain, which fatten both well and rapidly. Moreover, rice has a tendency to cause constipation, and nearly always does, unless some laxative diet consisting of vegetables be supplied; for this reason, and for others which experiments have proved, we cannot recommend boiled rice as a staple food for fattening swine.

FEEDING AND FATTENING.

In feeding pigs, either store to be fattened, regularity should be the order for every day. Once, I remember, an extensive fattener of oxen told me, that if cattle were not fed until some time after their usual hour, they would fret and become irritated, and he had known them lose condition as the result of the herdsman's repeated neglect to attend to them at the prescribed hours. The same remark applies with equal force to pigs. Swine from habit learn to expect their meals at certain times, at which the stomach is usually empty and ready to be re-supplied with food; consequently, if this demand of nature is not attended to for hours perhaps after the appointed period, it can be readily understood that the animals grow irritated, and the healthy working of their digestive powers is interfered with, which prevents the due performance of that functional activity necessary in causing perfect digestion. Consequently, as evils are likely to occur from irregularity in feeding, I cannot too strongly impress upon my readers the importance of supplying pigs with food at regularly appointed hours. When pigs are first put up to fatten, they will eat more than they do after the

process has been continued, when they become plump. At first, therefore, three meals a day can be given, provided they always clean their troughs out previously to the second time of feeding; but afterwards smaller meals, and those more frequently supplied, can be allowed with advantage, as swine if over plentifully fed are apt to gorge themselves, and thus to impair the digestive functions and retard their progress to obesity. It will be found that pigs, when advanced in fat, eat very little. At such times, therefore, it is necessary to give them a highly nutritious food, one that shall contain the elements of nutrition in a concentrated form; and sometimes, as their appetites are capricious, to tempt them to eat with delicate food, varied from time to time: that is, in the place of barley-meal use pea-meal, &c., and instead of potatoes employ carrots or beet-root, or any other vegetables the animals may show a disposition to devour; for when swine are far advanced in fat, not only will such change tempt them to eat, but, will be actually demanded, as one kind of food will not supply all the nutriment required to develop the fat, and increase the size looked for in the fattened hog.

THE PERIOD AT WHICH TO FATTEN SWINE.

The best time to commence fattening pigs is about the month of August, but, of course, this must be regulated by the period in which these animals are intended for the butcher. Pork has in recent times been killed "all the year round;" to supply this demand it necessarily follows that certain pigs must be fattened during every month in the year. But the usual course adopted is to "shut" pigs up during July or August, in order to make them into delicate pork by October or November. Let it be remembered we are now considering pigs calculated to grow into small porkers, not those animals which appear as juvenile monsters at our cattle shows. These latter are fed sumptuously from their youth to the day of their slaughter; they require similar feeding and treatment to other pigs, with this exception that they do not demand the fattening process to be carried to so great an extent. Porkers should not be fattened exactly in the same way as bacon pigs, neither should they be allowed to accumulate too much fat; and this rule should be strictly carried out with those animals reared and intended for domestic consumption. The pig-keeper who fattens for profit will tell you, that fat represents weight, and weight yields profit; and as long as such is the case he intends to make his porkers as fat as possible. This course no doubt keeps a "good balance at the banker's," but it does not produce that delicate pork which the epicure pronounces to be toothsome. A porker, to be properly prepared for the butcher, should not be made fat to the extent of plethoric; he should possess a plump form, showing that plenty of firm flesh and sufficient fat exist, but should not manifest that condition of body which scarcely allows him to see, breathe, or move. The porkers intended for domestic consumption should be placed in the fattening sty about the end of August, as the weather at that time is neither too hot nor too cold, and moreover, the slaughtering period arrives at that time when it can be carried out with the greatest advantage, and the flesh can be kept longer both during the process of curing and for purposes of disposal. In the summer, on the other hand, meat must be salted and pickled without delay, or be sold immediately, as in hot weather it soon goes into a state of decomposition. Various opinions are entertained, by practical pig-feeders, as to the best mode of preparing porkers for the table. Some advocate shutting them up and allowing no exercise excepting that obtainable in the sty yard, supporting this treatment by asserting that if pigs are allowed to run about they will "run off" their condition; and as condition is the prime object in view they consider it their duty to remove any obstacle calculated to defeat it: whilst others prefer allowing their pigs to graze or run in woods during the day, saying that exercise causes growth, and that the roots and earth they sometimes eat correct any acidity that may occur in their systems. Pigs thus given their liberty should be fed twice daily, namely, in the morning before being turned out, and in the evening on their immediate return. By the turning-out system, doubtless, pigs are kept at less expense than by that of housing, for by this plan one meal during the day is dispensed with; and moreover, swine, as above stated, grow more rapidly with than without exercise, and the medicinal substances found in the ground are known to act beneficially on the health of such animals. But whichever plan be adopted, artificial food must be given to those housed three or four times, and to those grazed, twice daily; when the question arises what substances constitute the best kind of food for fattening porkers. This cannot be better answered than by recounting the result of my own experience and that of practical owners with whom I have conversed on that subject. Having selected out of a litter five or six pigs, about three or four months old, place them in a sty and supply them with a bed of clean straw. Having thus obtained a suitable habitation for the youngsters, it should be our endeavour, in the next place, to provide them with that food best calculated to cause growth and produce a certain amount of fat. As grain contains the elements of nutrition and the fatty principles in abundance, it should always constitute the staple upon which we feed; but while this is the case, it is at the same time better to gradually introduce the pigs to their new mode of life necessitated by different feeding. This can be done by feeding the animals, for the first month or six weeks, upon milk mixed with pollard and mashed potatoes, and by giving each pig twice daily half a pint of peas, and by allowing them in the daytime a run in the field. By the adoption of this plan it will be from day to day noticed, not only that the animals grow, but that they both fatten and thrive, better than those subjected to permanent confinement; and as they increase in bulk they cease to run about and frolic so frequently as when first put up, consequently the accumulation of fat is little interfered with. This system, however, though desirable at first, is by no means so after the expiration of five or six weeks; for then the animal likes to lie down more,

and will not, if turned out, hunt for roots, &c., so eagerly as formerly. Therefore, at such time it is wise to close the door of the sty against them, and feed more frequently than twice a day upon a more highly nutritious diet; which consists in giving in the place of bran, and instead of the peas scattered in the trough or on the ground, a mixture of barley and pea meal, with carrots or potatoes mashed in whey, sour milk, or wash. Pea meal and carrots both give a very delicate flavour to pork, and the change in the diet from that given during the past five or six weeks causes the animals to eat with a greater relish, and thus tends to facilitate the fattening process. If after a time the latter-mentioned is not devoured with avidity, the meal may be changed for some other, such as oatmeal; and the potatoes and carrots can be supplanted by beet root or parsnips. In fact, any change of food beneficially acts, both in creating an appetite, and in giving a fresh impulse to the system to assimilate food, and to appropriate it for the purpose of producing condition. Pigs when shut up should always have fresh water before them, both to drink and cleanse their snouts in; and a piggery is always better arranged that has a stream of water passing through it, whether it it be obtained from a stream or by artificial means. Pigs treated as above directed will be found about the middle of November to be very plethoric, and only a few touches of the feeder are required to make them fat. At this time they will eat very little; consequently food must be given repeatedly and in very small quantities until near Christmas time, when, unless "anything has gone amiss," they will "be fit" for the butcher, to whom they can be sold or killed for home consumption.

Pigs which are designed for bacon require a longer period for the process of fattening; and if large meat be desired, they are better put up between their first and second year. These require no liberty, but in other respects should be treated similarly to those intended for pork. Patent foods for cattle, carefully prepared by this or that Company, the cattle-feeding public largely use. These foods contain, as a rule, stimulating compounds, aromatics, and sometimes tonics combined with various kinds of meal. Such compounds, nine times out of ten, are not needed; as a change of food, as above presented, would provoke the appetite and give that fresh vigour to the stomach, which the patented foods profess to effect. When medicine is required, give it under proper advice; but to administer it to an animal in health is most foolish, and very injurious in its effect. By feeding on "Aliquis's" food for cattle, you are always giving to the animal some compound calculated to stimulate the stomach; in short, you every day administer medicine. Such a course we have never adopted, and yet have been able to produce as good, if not better pigs, than those fed on the various patented foods. We have seldom used medicine, but have usually added a little salt to each meal. Cleanliness, both as regards the sty and its appointments is a *sine quâ non*, and if this necessity be not strictly observed, pigs will not thrive. Moreover, the skins of these creatures should always be kept free from dirt or dust of any sort, as such filth blocks up the pores, and prevents the performance of their transpiratory function. To keep the skin clean and the pores of it open, it will be necessary from time to time to groom your pigs, and sometimes to wash them. This ablution can be better performed by the pigs themselves in a tank, about one foot deep, situated on a level with the floor of the yard; in this, especially during warm weather, they will lie and bask for hours, and will afterwards dry their bodies on the clean straw placed in the dormitory or elsewhere for that purpose. Indeed, if a tank be arranged in the sty, the grooming can be dispensed with, as the washing cleanses, and the rolling in the straw answers the purposes of the wisp. Some people may consider the remarks relative to cleanliness are out of place, as regards pigs. No more mistaken notion exists than to suppose that swine like filth, and thrive better in dirt. A Norfolk farmer instituted the following experiment:—"He put up six pigs of almost equal weight, and in equal health, to fatten; treated them with one exception all exactly the same; and fed them on similar food, given in equal quantities to each for seven weeks. Three of these pigs were left to shift for themselves, so far as cleanliness went, and the other three were carefully curried, brushed, and washed. These latter consumed less food by five bushels than the other three, and yet, when killed, weighed more by two stone four pounds on the average." From this experiment it is evident that cleanliness of body insures health, and produces weight, which represents profit.

During the period of fattening, even when a system of hygiene has been fully carried out in the construction of the piggery, and the greatest care has been bestowed on its inmates, we find they are occasionally troubled with slight ailments, the most prominent of which are indigestion, often caused by acidity on the stomach, and overgorging. The former of these is usually corrected by the administration of a small dose of finely powdered charcoal and sulphur, mixed together in a pellet of butter, when it can be thrown into the trough, and in this form the pig will quickly devour it; a little lime added to the meal will also act beneficially. "On the duke of Montrose's estate the pigs have ashes and cinders given them occasionally to correct the acidity of the stomach, and they are frequently turned out on a piece of ground sprinkled with lime, which they root in and eat, or else if this is not possible on account of the weather, a little magnesia is now and then mingled in the milk. These simple precautions are always more or less necessary to animals that are highly fed and have little or no exercise, and we should recommend them to the attention of all owners of pigs." The above rules for fattening pigs will, if strictly attended to, produce fat animals, but at the same time overfattening is neither profitable to the seller nor buyer, neither is overfat meat so useful for the table as that which is less so. Moreover, animals in such a state are in reality diseased, suffering and sometimes dying from the result of obesity; consequently, our readers are recommended in this particular to take a medium

course, by preparing their pigs fairly fattened for the butcher, remembering the motto, "Est modus in rebus."

In conclusion, observe the following:—

1. Feed at regular intervals, avoid foul feeding, and do not overfeed.
2. Change the bill of fare when occasion requires.
3. Keep your sties clean and dry, and do not neglect afterwards to sprinkle over the floors ashes or dry earth.
4. Cleanse the troughs previously to each feeding.
5. Do not forget to keep your pigs clean, dry, and warm, either by allowing them a bath in the piggery, or by washing and afterwards brushing.

BREEDING.

Before proceeding to consider the rules which should be observed in obtaining parents likely to produce good pigs, our investigation in this matter will be greatly assisted by describing the laws generally which regulate the selection of males and females, with a view to develop the strongest, and in the case of our domesticated animals, the most profitable offspring.

LAWS REGULATING THE RESEMBLANCE OF PROGENY TO PARENTS.

Walker, in his book on intermarriage, states that the laws which regulate the mode in which the organization of parents affects that of offspring are the most curious and interesting, but somehow appear to have escaped the notice of philosophic observers, although it requires very little analytical power to detect them; that in the propagation of organs from parents to offspring organization is nearly indestructible, and that each parent communicates a distinct series of organs; or, in other words, a portion of each parent may be said to live again in its offspring.

I will now endeavour to explain the laws as laid down by Walker. In the first place, "where both parents are of the same variety," he assumes that either parent may communicate either system of organs. In this case, one parent communicates the anterior part of the head, the osseous or bony part of the face, the forms of the organs of sense (the external ear, under lip, lower part of the nose), and the whole of the internal and nutritive system (the contents of the trunk, or the thoracic and abdominal viscera).

The resemblance to that parent is consequently found in the forehead and the bony parts of the face, as the orbits, cheek-bones, jaws, chin, and teeth, as well as in the shape of the organs of sense and the tone of the voice.

The other parent communicates the posterior part of the head, the cerebellum or little brain, situated within the skull, just at its junction with the cervical vertebræ, and the whole of the locomotive system—the bones, ligaments, and muscles.

The resemblance to this parent is consequently found in the backhead, and the few more movable parts of the face—as the external ear, under lip, lower part of the nose, eyebrows—and the external forms of the body, in so far as they depend on muscles, as well as the form of the limbs, even to the fingers, toes, nails, &c. "Several circumstances indicate that with this series of organs go the skin and its appendages. They evidently have much affinity with the osseous system."

Mr. Walker thinks that on an average the male and female influence over their progeny is equal, but that sometimes the male, and sometimes the female, predominates. Mr. Knight, on the contrary, gives it as his opinion, that the influence of the male and female is always very nicely balanced when both parents are of the same species, size, and variety. In confirmation of this theory, "that either parent may communicate either series of organs," Walker gives many illustrations existing in man—that is, between parents and their children—which it is needless here to detail.

Many authors, however, previous to Walker, have given it as their opinion that the influence of the male predominated over the exterior life, while that of the female predominated over the interior life, of their offspring. Vicq-d'Azyr stated, with regard to mules, that the exterior and extremities were communicated by the father, and the viscera (internal organs) by the mother. In this opinion he is also supported by Buffon.

This theory does not coincide with that of Walker, in which he states that either series of organs may be given by either parent; but in cross-breeding—that is, breeding from a male and female of a different family, though of the same variety—he states, greater vigour is given to the offspring than when the parents are nearly related; and in crossing, when each parent is of a different breed, then the male communicates the backhead and locomotive organs, while the female communicates the face and the nutritive organs. As an example, he gives the cross between the male European and female negro. The male here communicates the backhead and general figure. Neither the bones of the thighs nor legs are bent as with the negro, the heels long, nor the calves high; while the under lip and nose are less, and quite European in character. The negro mother communicates the narrow retreating forehead, high cheek-bones, the large eyes, the long upper lip, and the remaining parts of the face.

Thus, in human crosses, Walker considers the male gives the locomotive system, and the female the nutritive one. Of the power of the horse to communicate his locomotive system generally, Knight gives the following examples. He obtained offspring from Norwegian pony mares and cart stallions, of which the legs were very short, the shoulders and body unusually deep. In attempting this experiment Knight was very careful, fearing he might subject the female to a painful death, owing, as he then thought, to the too great size of the fœtus; but such did not happen: from which we learn, that the size of the fœtus is governed by the size of the female. Thus, in this equine cross, the male gave the locomotive system, while the female gave the vital one.

As to mules, Knight says the fact, in mule quadrupeds, that the influence of the male predominates over the female

in giving form to the offspring is beyond all doubt; as also the disposition and the mind of the beast.

Mr. Orton very nicely exposes this fact. The mule, says Orton, the produce of the male ass and mare, is essentially a modified ass. The ears are those of the ass, somewhat shortened; the mane is that of the ass, erect; the tail is that of the ass; the skin and colour are those of the ass, somewhat modified; the legs are slender, and the hoofs high, narrow, and contracted, like those of an ass. In fact, in all these respects it is a somewhat modified ass. The body and barrel of the mule are round and full, in which it differs from the ass and resembles the mare.

The hinney, on the other hand, the produce of the stallion and she-ass, is essentially a modified horse. The ears are those of a horse, somewhat lengthened; the mane flowing; the tail bushy, like that of the horse; the skin fine, the legs stronger, the hoofs broad and expanded, like those of the horse. In fact, in all respects it is a modified horse. The barrel and body of the hinney are flat and narrow, in which it differs from the horse, and resembles its mother, the ass.

It is clearly evident that these two hybrid animals have followed the male parent in all external characteristics. In two respects, however, there is a striking departure from him. First, in size, they both follow the female parent, the mule being in all respects a larger and a finer animal than his sire, the ass; while the hinney is the reverse, being smaller and less spirited than his sire, the horse. The mule also brays, like its sire the ass; whilst the hinney, on the other hand, neighs, like its sire the horse. This is easily accounted for, as the bone of the tongue (os hyoides) and the laryngeal muscles cause the voice—parts given by Walker under the locomotive system, and stated by him, in cross-breeding, always to be communicated by the male parent.

Mr. Cline, speaking of crosses, says:—"The characters of both parents may be observed in their offspring, but that of the male more frequently predominates. This may be illustrated in the breeding between a hornless ram and a horned ewe, when the lambs will be hornless, and partake more of the characters of the male than the female parent. Also, if a hornless bull be put to a horned cow, the offspring generally has no horns, and resembles its male more than its female parent.

An offspring without horns may be obtained from the Devonshire cattle, by crossing with hornless bulls of the Galloway breed. Mr. Charless Colling put a short-horned bull to a hornless Galloway cow. The cross was successful, and exists at present in the most improved short-horned cattle. It is difficult to distinguish this cross from the pure short-horned breed. Mr. Vansittart used a well-bred short-horned bull to well-bred Hereford cows. The produce had all the appearance of the short-horned cattle.

Thus in crosses of cattle, as well as of horses, the male (except when feebler, or of an inferior voluntary and locomotive power) gives the locomotive system; the female the vital one.

As to dogs, the breeder states that, in a cross between the bulldog and terrier, if the bulldog be the father, the progeny have the shape of the bulldog—that is, his locomotive system; if the terrier is the father, they have the shape of the terrier. Mr. Helps states that, when a dog and bitch are both equally vigorous, such is the case; but if the dog is old and enfeebled, and the bitch, on the contrary, young and vigorous, the reverse is the case. The same rule applies to all crosses of dogs.

Thus, in crosses of dogs, the male gives the locomotive system, the female the vital one.

Respecting birds, the breeders state that, in the cross between the male goldfinch and female canary, the shape and the skeleton of the mule produced is always that of the male.

Mr. Nash states that in crosses, as in that between the cock goldfinch and hen canary, the male not only gives the beak and skull to the mule, but the longer neck, the wider chest, the longer sternum, and the longer legs. Walker makes the following remark on this circumstance:—"The cause of this evidently is, that in a mule all growth contributes only to individual life; and as to the sternum, we know that it is always shortest in the female, to facilitate the producing and laying of eggs; and it is evidently longer in mules, because they are incapable of the due performance of any reproductive process.

Thus, in crosses of birds, the male gives the locomotive system, the female the vital.

As to fish, Sir A. Carlisle's statement shows that in the mule between the female salmon and male trout, the skeleton is given by the male, as appears from the following letter addressed to Walker:—

"More than thirty years since the breeding of trout was tried by impregnating their ova in confined water cages, made to protect the young against their natural enemies. As I had some share in those experiments, I undertook to breed those mule fishes known to be a produce between male trouts and salmon-roe, or the reverse. I accordingly procured a quart jug full of ripe salmon-roe from the freshest fish just arrived at Billingsgate, in the month of January; and I proceeded with them directly to Carshalton, where they were carefully deposited by a man who waded the stream, and raked the ova among the gravel in the trout-spawning gravel heaps.

"In the month of April a new sort of fish appeared for the first time in that river, which proved to be the mules called skeggers in the Thames, smelts in the north of England rivers, and gravel last springs in many of the western and southern counties. They were, in this case, very abundant, and apparently their numbers corresponded with the salmon-spawn deposited in the trout gravel hills.

"These mules never appear but where the salmon invade the breeding gravel hills of trout; and in my experiment the impregnators were necessarily male trouts, because salmon never pass the mills upon the Wandle. The influence of the male trout in this instance was, therefore, unquestionable.

"These mules partook of the character of trout more than

salmon. They had bright red spots on their sides, but the black colour was shaded downwards, in bars, like those of the perch. The tails were not forked like those of salmon, as I have seen them in the Thames skeggers, from which I infer the male salmon in that case to have been the impregnators. They grew to the length of the male parent, and to the weight of a quarter of a pound. They disappeared before autumn.—Yours, &c.,

"A. CARLISLE."

Mr. Knight says: "The natural history of the mule between the male trout and the salmon is, I suspect, very little known, after the first nine months of that animal's life. Instead of going off to the sea with the first spring floods, they remain till autumn, when they go off; and nothing more is, I believe, known respecting them. They are almost wholly males."

From all these cases it is evident that the locomotive system in crosses is given by the male, and from the general law it follows that the vital and nutritive system is given by the female.

REMARKS ON BREEDING FROM ANIMALS THE OFFSPRING OF CROSSES.

Mr. Knight says: "If I were to breed from a female and male, both crosses between the Hereford bull and the Alderney cow, the offspring would be extremely dissimilar to each other. Some would appear nearly pure Herefords, and some nearly pure Alderneys; and if such a stock were to become the stock of a farm, some apparently perfect Herefords, and some perfect Alderneys, however begotten, would be produced during a long succeeding period."

Sir John Sebright also says: "Although I believe the occasional intermixture of different families to be necessary, I do not by any means approve of mixing two distinct breeds with the view of uniting the valuable properties of both. This experiment has been tried frequently by others, as well as myself, but has, I believe, never succeeded. The first cross frequently produces a tolerable animal; but it is a breed which cannot be continued. If it were possible, by a cross between the new Leicestershire and Merino breeds of sheep, to produce an animal uniting the excellencies of both, that is, the carcase of the one with the fleece of the other, even such an animal, so produced, would be of little value to the breeder; a race of the same could not be perpetuated, and no dependence could be placed on such animals. They would be mongrels; some like the new Leicester, some like the Merino, and most of them with the faults of both."

Now, according to Walker, the cross between the Alderney and Hereford is a reasonable one; that between the Leicester and Merino is not so, because the carcase and wool go together with the locomotive system, and whichever animal gives one, would, in reality, give both. Walker explains these difficulties thus:—

"A and B, who are more or less perfectly crossed, may have very different vital and locomotive systems. Of their immediate progeny, C may have the vital system of A, and the locomotive system of B; and D may, on the contrary, have the locomotive system of A and the vital system of B (for in feeble and imperfect crosses such variations may occur). And of the progeny of these last, E may have from C the vital system of A, and from D the locomotive system of A; and F may have from C the locomotive system of B, and from D the vital system of B. Thus A and B may be re-formed in the third generation."

In order to explain fully the principles of the physiology of breeding, it will be necessary, in the first place, to briefly explain the natural system of anatomy, by describing the particular structure of organs, and dividing the body of the vertebrate animal (after Bichat), into three classes of organs possessing different functions:—

1. The locomotive organs and functions, consisting of bones and ligaments which connect them together—that is, "one piece of bone to another," thus forming joints, and which, as a whole, support the body and its parts—and finally of muscles, which, together with other parts, form an apparatus of levers which enable the animal to perform its various necessary movements.

2. The vital or nutritive organs and functions, consisting of fine tubular vessels (lacteals), which absorb nutritious matter from the food taken into the intestines, and carry it towards the heart to be converted into blood; bloodvessels, which circulate the blood thus formed; and various glands, which secrete or deposit not only the various substances composing the different organs, but the fat, milk, hair or wool, and other animal products.

3. The nervous or mental organs and functions, consisting of the organs of sense, the eye, the ear, &c., which receive impressions from external bodies; the cerebrum, or brain, which perceives, compares, &c.; and the cerebellum, or little brain, situated at the back part of the cerebrum, which wills, and consequently throws the muscles into those actions which fulfil its purposes. Although these three systems thus exist, they do not, like three distinct families, reside in separate parts or stories of the body, but co-exist in one point, and by their combination form a whole; yet it is evident that each of them has its peculiar station, when it more especially unfolds itself and acts; and if one of these systems was injured, the two others would suffer with it; if one were removed, the other two would perish—or in other words, death would follow. The three systems, therefore, co-exist so as to form one grand whole—a living animal.

The more perfect animals, as well as man, are not born with the faculty of immediate reproduction of their like. The organs which at a future period perform that important function remain entirely torpid long after birth, and the appetites connected with them do not exist. The longer the infancy, the longer the period of puberty is delayed. Puberty, as a rule, is earlier developed in the female than the male. Some animals arrive at puberty before others—for example, the sow arrives at puberty before the mare; and in animals of the same species the same thing occurs.

The temperature of the climate tends greatly to hasten the period of puberty. Heat increases the vital energies in all organized bodies, and renders their growth more rapid; it must, therefore, necessarily hasten the period of puberty. It is notorious that warm climates increase the development of the generative organs, and excite erotic desires in both sexes.

The quantity and the quality of aliment is a second cause of hurrying on puberty. Very nutritious and stimulating food, for instance, greatly accelerates it; and horses having a great development of nervous energy, namely, those of an excitable temperament, arrive at puberty before those of a more sluggish disposition. On the other hand, the period of puberty may be retarded, its retardation being, of course, attended with most disastrous results—more particularly noticed in man. Retardation of puberty in man retards often the intellectual powers, &c. Insufficiency of food, especially during winter, tends to retard its development in animals. The too early development of the reproductive functions is equally disadvantageous; it diminishes stature, and causes the body to fade and perish early. *Citius pubescunt, citius senescunt.*

The following changes take place in the body, but more especially in the reproductive organs of both sexes.

In the male, great development of the bones, and especially the joints, takes place, which gives the animal a somewhat awkward appearance. While growth is thus proceeding in all directions, the weaker parts appear not always to receive sufficient supplies, while the strong parts acquire an excess of energy, which accounts for some portions of the animal at this period being out of proportion: for example, a three-year-old stallion will exhibit perhaps a big head with long ears, big hocks and knees, &c. The same will apply to other domestic animals, and to man.

At this period, also, the motive organs connected with the voice are affected. The formation of the bone of the tongue (the os hyoides) is completed, and the muscles of the glottis increase in growth, which renders the voice of the man deeper than that of the youth, and the neigh of the stallion deeper and more sonorous than that of the colt, and enables the songbird to put forth his melodious note, indicating that the period of puberty has arrived. In the female the same, as regards the development of bones, takes place, but not to so great an extent. The formation of the os hyoides is accomplished, but the difference of the voice is not so well marked as in the male; there is great difference between the bleat of a lamb and that of a ewe.

At the time of puberty the circulation is increased, the vessels which enter into the secretory organs redouble their action. The glands often swell, and become painful; this tendency necessarily extends to the glandular parts of the generative organs. That the blood is specially directed to the parts subservient to reproduction at this period is common to both sexes.

In the male the flow of blood towards the reproductive organs, accompanied by sensibility, turgescence, and heat, causes the secretion of the reproductive fluid. While this is going on internally, the external generative organs are further developed, by the production of horn and of certain callous protuberances.

In some animals the reproductive fluid communicates to all the other liquids a strong odour, which causes both the species and the sex to be easily distinguished. The effluvium is a natural stimulant between the sexes.

In the female the ovaries, bodies in the uterus, secrete a particular liquid, which concurs in furnishing elements for the embryo. This is contained in vesicles, which are denominated eggs (ova), as they occur in the ovaries. An excess of vitality seems to pass to the parts which are sympathetically connected with the ovaries. The organs neighbouring the genitals swell, as also the labia, &c., and become sensitive. The bones of the pelvis increase in strength and width.

Let me briefly describe how impregnation takes place: the female at the time of puberty has, as before stated, ova existing in the uterus; these ova become ripe, and leave the ovaries, and only require, in order to form the rudiment of a fœtus, contact with the male reproductive fluid, "semen," which the copulatory act accomplishes.

BREEDING AND REARING.

From the foregoing chapter it is evident that a slight knowledge of physiology is needed by those who breed animals, either for purposes of show-exhibiting or for profit; consequently, in breeding pigs, care and judgment must be devoted to the selection of suitable parents. Sometimes even a good sow and good boar, if brought together, will not produce perfect progeny; and, on the other hand, if an indifferent sow be put to a good boar, the latter will often supply, in the produce, the points lacking in the female, and *vice versa*. Much practical experience, therefore, in this matter is needed for those seeking to be successful breeders of stock. Many mistakes are made in the purchasing of pigs by persons ignorant of the properties of live stock. For instance, the vicar of a country parish, possessing a large garden, thinks he must keep a pig or two to eat the refuse, and thus turn it to account; he sends his man John to market, to purchase the required commodity. John, perhaps, who has never had any experience in such matters, goes to market and returns with two animals, bony and poor, and of no particular breed. These, with a smile of knowingness, are presented to the owner, whose knowledge of such creatures does not appertain to them in a live state, although perhaps in the flesh his opinion might be taken for a correct one. John informs the vicar they "wuss very cheap," and he likes "'em poor, 'cause they'll be sure to eat all the garden refuse, and get fat on't." This view coincides with that previously entertained by the master, and consequently both he and his servant are mutually satisfied with the "day's deal." Three or four days after the establishment of a piggery at the vicarage, Farmer Dobs, who lives about a mile off, pays the vicar a visit, who wishes at once for the opinion of Mr. Dobs,

who has bred pigs "all his life." Dobs inspects the animals, declares them "not to be his sort," and states his reasons why. They are too large of bone; too long in the leg; of a large sort, that will not come early to maturity; their coats are too long, no well-bred animal could possess such long bristles; and, moreover, two hogs, he should think, would have answered the vicar's purpose better than two sows. Oh! the vicar strictly enjoined John to buy sows for the purpose of breeding. Dobs retreats, saying, "Well, sir, then you will have a rum lot of young pigs, for the best boar in England could not bring anything good from such sows. Give a little more money, and ask some one who understands the thing to buy for you. What does John know about pigs? Why, he has been all his life, before he came to you, in Farmer Jump's nag-stable, and don't know a good pig from a bad one. How should he?" The vicar, however, having laid out his money once, does not care to do so a second time; and as he thinks his pigs will eat the garden refuse with greater avidity than purer bred ones, determines both to keep his present stock and breed from them; for whatever Dobs may say, he feels convinced that the black and white sow is decidedly handsome; his wife thought so the moment she saw it. The above short story is founded on fact, and other instances could be cited, bearing testimony to the evils likely to result from selecting coarse and ill-bred animals to breed from. Like begets like; therefore, if you seek the possession of handsome pigs, buy, in the first place, and keep only ever afterwards, parents of quality and of "good family," as the offspring from such will most likely inherit their excellent properties, and perhaps in a superlative degree.

CHOICE OF PARENTS.

In commencing a stock from which to breed swine, it is important not to be led a stray by a mere name, which denotes a particular breed supposed to be held in high estimation, for often a pig is said to be a pure Berkshire, when it possesses neither the blood nor points of such animal; and during late years fresh breeds have sprung up, differing from former ones more in name than reality; consequently upon good form we must chiefly rely in judging and selecting parents from which to breed our future stock. Of course the history of particular breeds should be taken into account; that is, whether animals coming to early maturity are required, whether small or large breeds are desired, &c.; but in whatever direction our wish may preponderate, it is essential to procure animals with good *points*. In this particular, different judges have their own opinions as to what external configuration of body constitutes good points; and for this reason it will not be out of place to enumerate the different ideas entertained on this subject by others. "Good one-year bacon hogs being much in request, we must do all we can to obtain a breed well adapted for producing them. Swine of such a breed may be known by their long bodies, low bellies, and short legs. Long pendulous ears are usually coupled with these qualities, and attract purchasers."—*Youatt.* "Sufficient depth of carcase, and such an elongation of body as will insure a sufficient lateral expansion. Let the loin and breast be broad. The bone should be small and the joints fine: nothing is more indicative of high breeding than this; and the legs should be no longer than, when fully fat, would just prevent the animal's belly from trailing the ground. The leg is the least profitable portion of the hog, and we therefore require no more of it than is absolutely necessary for the support of the rest. See that the feet are firm and sound, that the toes lie well together, and press straightly upon the ground, as also that the claws are even, upright, and healthy. Many say that the form of the head is of little or no consequence, and that a good pig may have an ugly head, it being no affair to any one but the animal himself, who has to carry it; but I regard the head of all animals as one of the very principal points in which pure or impure breeding will be most obviously indicated. A high-bred animal will invariably be found to arrive at maturity, to make flesh earlier and with greater facility, and altogether to turn out more profitably than one of a questionable or impure stock; and such being the case, I consider the head of the hog is by no means a point to be overlooked by the intending purchaser. The description of head most likely to promise, or rather to be concomitant of high breeding, is one not carrying heavy bone, not too flat on the forehead, or possessing a too elongated snout; indeed the snout, on the other hand, should be short, and the forehead rather convex, recurving upwards, and the ear should be white, pendulous, inclining somewhat forwards, and at the same time light and thin. Nor would I have a buyer pass over the carriage of a pig. If this be dull, heavy, and dejected, I would be disposed to reject him on suspicion of ill health, if not of some concealed disorder actually existing, or just about to break forth; and there cannot be a more unfavourable symptom than a hung-down, slouching head, carried as it were about to be employed as a fifth leg. Nor is colour altogether to be lost sight of. In the case of pigs I would, in reference to any description of live stock, prefer those colours which are characteristic of the most esteemed breeds. If the hair be scant I would look for black, as denoting connection with the delicate Neopolitan; but if too bare of hair I would be disposed to apprehend too intimate an alliance with that variety, and a consequent want of hardihood that, however unimportant if pork be the object, renders such animals hazardous speculations as store pigs, from their extreme susceptibility to cold, and consequent liability to disease. If white and too small, I would like them as exhibiting connection with the Chinese. If light or sandy, or red with black marks, I would recognize our favourite Berkshire, and so on to every possible variety of hue."—*Richardson on the Pig.*

Our choice in the selection of a breeding sow must be guided by the class of animal we seek, and by the purposes for which it is intended. She must consequently be selected from a breed well suited to the requirements; for instance, if pork be our object, a cross between the Berkshire and Chinese constitutes a sow likely to produce animals that come easily

to maturity, and at the same time grow into very delicate pork, and therefore demand the attention of small owners who rear pigs for domestic use. If, however, larger (and, as it is generally considered, large meat represents larger profit than small), then perhaps the pure Berkshire is the animal to procure, as it grows into excellent pork, grows to a large size, and arrives early at maturity. Whatever kind of sow we select, it is essential that she be free from blemishes and hereditary defects and bad habits, such as eating her pigs, bringing forth dead ones, difficult and protracted labour, &c. It is also important that a sow possess at least fourteen teats, as a sow with only twelve nipples could not bring up a larger number of pigs, as each pig has a teat to himself, and keeps to it, so that one pig born beyond the number of teats on the mother would starve, and usually does so (when such occurs), as numerous examples have proved. The habit of lying upon young pigs, which some sows are prone to do, cannot be reckoned under the title of bad habits, but is due more to the lack of care than of a bad disposition. This evil can in a great measure be obviated by placing around the wall, and above the floor of the dormitory, a large boarding, as mentioned in the chapter on the construction of piggeries. (See page 74.)

The selection of a good boar is quite as important as the possession of a good sow, and in my opinion more so, as the male, if vigorous, gives the stronger impress to the progeny. A boar, to be good, should present a long cylindrical form, small bones, broad back, shoulders, and neck, wide chest, thick head between the ears, but short and small at the snout, loose skin, slight quantity of hair, few bristles, and small, short legs, with a belly rather pendulous than otherwise. The ears, also, should be small and erect, not drooping (a point which Richardson, as quoted above, admires in sows). In my opinion neither in the sow nor boar is a long pendulous ear a sign of superiority in any particular. Years ago, when pigs were not tended as now, and when coarse breeds existed and had not been toned down by judicious crossing, then doubtless instances occurred in which animals with these elongated appendages proved themselves to be good breeders, and producers of good pork and bacon. Such animals, in their day, were considered best, because their owners, not knowing any better—*i.e.*, seldom being able to find pigs with fine, short, and erect ears—rested satisfied with what they possessed; and if a particular sow with a long ear proved to be a good breeder, &c., then the conclusion was arrived at that a pig having a long, pendulous ear possessed one point indicative of superiority. I have seen, especially in the west of England, pigs with long, drooping ears, but such animals have usually shown bad form, and generally been coarse and ill-bred. Sometimes, of course, a good animal may possess a pendulous ear, but it is the exception, and not the rule.

BREEDING.

In bringing the males and females together it is always important to determine that the one be adapted to the other; in other words, that any over or under development in the former does not exist in the latter, else most likely the progeny from such animals would manifest such defect to a greater degree than either parent. It is, moreover, well to select animals from a good stock, known to produce large litters. The system of in and in breeding is much to be deprecated, and particularly so with swine, as no other domesticated animal degenerates so rapidly under the operation of this injurious custom. Where this course is persisted in, it is found that the litters gradually decrease in size and number, until the sows become almost barren. Should, however, degeneracy occur, even under careful management, and where in and in breeding is not resorted to, then the breed should be crossed from time to time. "The Chinese and Siamese pigs will generally be found the best that can be used for this purpose, as a single, and sometimes even two crosses with one of these animals, will seldom do harm, but often effect considerable improvement. Selection, with judicious and careful admixture, is the true secret of forming and improving a breed. Repeated and indiscriminate crosses are as injurious as an obstinate adherence to one particular breed, and as much to be avoided."—*Youatt.*

In crossing, great care and knowledge of each particular breed is requisite, in order to insure success. This being known, I trust that the chapter on the physiology of breeding will afford sufficient information to enable the breeder to pair his animals in such a manner, so as to obtain a "good cross." By judicious crossing our present excellent breed of pigs has been obtained, instances of which are met with in the Berkshire, Improved Essex, Suffolk, and Bedfordshire breeds. Our improved swine in England owe their great merits, not to a long line of ancestors of the same breed, but to judicious crossing, carried into effect under the advice of persons possessing scientific and practical knowledge on the important subject—the physiology of breeding.

A sow is capable of conceiving at a very early age; but to allow her intercourse with the boar at six or seven months old is most unwise, as this course tends to retard growth, and to spoil ever afterwards the breeding properties of such sow. Thäer writes—"Sows are almost always in heat until they have received the boar. This state commences even as early as at four or five months, but they are usually a year old before they are allowed to be put to the boar." About ten months or a year old is quite early enough for a sow to be allowed intercourse with the boar; and even at a later period, say two years old, she is more likely then to produce a strong, numerous litter than she would be if bred from a few months sooner. There is only one reason which should operate in making breeders put their sows to the boar when very young, and that is when a sow shows an unusual tendency to accumulate fat. This plethoric state of body is never a good omen of a numerous litter, nor of easy delivery, and consequently for young sows is not a desirable exhibition. To prevent this state, as above indicated, it is a good plan to put a sow about eight months old to the boar, and within two

or three days of the birth of her litter to introduce her to the male, and so continue this course until it is deemed wise to fatten her, when it will be found that she will with unusual rapidity, and with comparatively little food, become prepared for the butcher.

The period of utero-gestation continues sixteen weeks, and very few instances have come under my notice where this period has been curtailed or exceeded, although some authorities give rather an extended margin. Youatt tells us that "the period of gestation averages from seventeen to twenty weeks, according to age, constitution, &c., of the mother. Young or weakly sows farrow earlier than those of more mature age or stronger constitutions. It is commonly asserted that three months, three weeks, and three days is the period of gestation." From M. Tissier's observations on twenty-five sows, it would appear that the period varies from 109 to 123 days. Be this as it may, experience tells me that sows carry their young in utero not longer than sixteen weeks, certainly never more than three days before or beyond this time—of course, barring accident and disease.

A good breeding sow can produce with impunity two litters in the course of the year; but for how many years she could continue to breed at this rate can hardly be determined, as few sows are allowed to have litters after they are three years old. Cases, however, are on record where sows have for a number of years been most prolific. White, in his "Natural History of Selborne," cites a case in which a sow continued to produce large litters until she was seventeen years old. "For about ten years this prolific mother produced two litters in the year, of about ten at a time, and once above twenty at a litter; but as these were double the number of pigs to that of teats, many died." Although sows will continue to breed successfully until they are seven or eight years old, it is generally considered more profitable to obtain from them only five or six litters, and immediately after the birth of the last pigs to shut them up to fatten. The plan I adopted for some years always was attended with success, or, more properly, by it strong and unusually large litters were obtained, and the mothers, after they ceased to breed, always grew into fine animals and fattened well. The sows bred from were put to the boar when about ten months old, and it was so arranged that the young pigs should be born during the month of March. Immediately after the birth of the March litter—*i.e.*, as soon as the sow was in heat—she was allowed to have intercourse with the boar. By this means two litters were farrowed during the year. For the third time the same sow was bred from during the next year, but was then only allowed to have one litter, which was usually born about the month of May. After suckling her pigs for about two months, the sow was allowed to roam about a yard and paddock until August, when she was put up for fattening. The pigs born in March were kept as stores; the hogs sometimes were fattened for early pork, but more frequently were kept until they were sixteen months old, when they were "made into bacon." The second litter, immediately after leaving the mother, was fattened, and usually obtained a good price as delicate pork. My reason for always fattening the pigs born during the latter half of the year was, because, 1st, animals born just upon the approach of cold weather never grow into such good animals as those born in the spring; and, 2ndly, they never thrive so well as those early bred, unless they are fed upon a highly nutritious food, which would be too expensive for stores; and, lastly, these young creatures, during the process of fattening, receive nutritious food, which amply remunerates the owner when they are sold to the butcher. The pigs born in May were fattened for pork or kept as stores for a time, and afterwards put up for bacon; of course the sows, in either of the spring litters, if promising, were retained for breeding purposes. The mother of the three litters was, about the month of August, placed in a sty, with a view of preparing her for the knife; and such animal was usually made into large bacon, and was fully developed in flesh and fat about the end of February of the following year, when she was sold. From the above it will be observed that the sow, when killed, was about three years old, at which age she was fully grown, and was at a good age to make into bacon; in fact, sows treated as above described have, in many instances, weighed at killing time over twenty-five score, and even a greater weight than this has been recorded.

Instances do occur where it is advisable to keep sows for a number of years, but only when they prove unusually prolific, and at the same time produce good pigs. Some of our prize-winners are the offspring of old sows, which it would be bad policy to kill, so long as they are able to stamp their excellence on their progeny. The treatment advocated for sows will, however, for the general owner, be found profitable. The advice is based on the observations of practical men, and an experience of many years.

PARTURITION.

During the period of pregnancy a sow requires good food, gradually increased in quality until a fortnight before parturition, when the diet should be somewhat limited in quantity. She should never be left to suffer from thirst, and should always be allowed daily exercise, which can easily be done by turning her into a paddock or field during the daytime, where she can roam about at pleasure. Pregnant sows should be kept by themselves. About one month before farrowing time they must be kept in separate pens, as at this period they are heavy, and are consequently unable to withstand the effects of blows, &c., which they are in the habit of inflicting on one another. The injury arising from such rough usage is by no means an uncommon cause of miscarriage, and hence the necessity of this precaution to prevent its occurrence. The sow gives indication of her near approach of farrowing time by the swelling of the vagina, depression of the back, increased size of the belly, and distension of the teats; and for a few hours previously to the birth of the young pigs, the mother will be seen carrying about straw and hay, or some substance, wherewith to form her bed. When this is noticed she must be

immediately placed in a sty, the dormitory in which should be very sparingly supplied with litter, as young pigs constantly burrow under the straw, and when unobserved in this position, the mother is very apt to crush them with the weight of her body during the act of lying down. The sow also should be watched, and as the farrowing progresses each pig, as soon as born, should be placed in a warm situation. When the after-birth has been removed the sucklings can be placed upon the teats, the weaker ones upon those which contain the most milk. If two or three be born beyond the number of nipples possessed by the mother, the weaker ones in excess should be destroyed, or given to the care of a foster-mother, to suckle them. Parturition, unfortunately, is not always effected without danger to the sow or offspring. Sometimes before the expiration of the period of utero-gestation, the pregnant sow will manifest symptoms similar to those indicating approaching parturition, only more intense. There is generally restlessness, irritation, and shiverings, and the cries of the animal testify the presence of severe labour-pains. Sometimes the rectum, vagina, or uterus becomes relaxed, and one or the other protrudes, and often becomes inverted at the moment of the expulsion of the fœtus, preceded by the placenta, which presents itself foremost. This is not so common to sows as to other domesticated animals, and is usually in swine the result of injury from blows, shocks, or other accident, which either directly or indirectly acts upon the nervous system, and ultimately upon the womb, and thus disturbs the connection between the uterus and fœtus. Youatt says, "there are various causes which will tend to produce it—insufficiency of food, eating too much succulent vegetable food, or unwholesome, unsubstantial diet. Blows and falls will also induce it; and one very prevalent cause arises from this animal's habit of rubbing itself against hard bodies, in order to allay the irritation produced by vermin, or cutaneous eruptions, to which some swine are subject."

Abortion is, in nine cases out of ten, the result of nervous derangement. It may arise, as Youatt says, from improper diet, but this acts directly upon the nervous system, ultimately impairs the nervous influence of the uterus, and consequently interferes with the health of the fœtal life. The same might be said regarding the irritation caused by the existence of cutaneous disease and vermin. In cases of abortion the fœtal pigs are usually dead, and it is therefore necessary to give some assistance to the sow in her efforts to remove them. This done, the parts should be cleansed and the mother treated in the same manner as after parturition. If a putrid and unpleasant smell arises after a thorough washing with warm water, a mild solution of disinfecting fluid (Burnett's) can be used as an injection with benefit. Avoid administering purgatives, and on no account bleed, which would only be adding fuel to fire. If abortion occurs from lack of nervous force, we must endeavour to restore the due balance, which depletive measures would reduce. A teaspoonful of sulphuric acid in half a bucket of oatmeal wash will usually, in a short time, allay all irritation, both uterine and systemic. A sow, however, that has once aborted, is better placed in the fattening than in the breeding pen, unless the cause can be traced to some accident or direct injury, for a sow that has aborted with her first litter is likely to do so with her second; it is therefore better for the owner to insure himself against a recurrence of this mishap by preparing her for the butcher. Accidents also occur to pregnant sows, at the end of the period of gestation, in the form of false presentations, monstrosities, diseased uterus, and debility, which render the expulsion of the fœtus difficult and often dangerous. Perhaps the most troublesome disease the veterinarian has to contend with in parturient swine is prolapsed or inverted uterus, both caused by the violent efforts made by the sow in attempting the expulsion of the fœtus. The uterus, when protruded, should be washed with tepid water, freed from all grit and dirt, and then gradually, with the greatest care and with only slight pressure, returned and kept in its proper position, through the medium of an instrument similar to that used for cows, as mentioned in my article on cattle. Youatt considers that "the easiest, and perhaps best way, is not to return the protruded parts at all, but merely to tie a ligature around them and leave them to slough off, which they will do in the course of a few days, without the effusion of blood or further injury to the animal." Many persons, even now, immediately uterine protrusion occurs, resort to the operation recommended by Youatt, but it is much to be deprecated in cases of recent prolapsus. In these cases we should use all means at our disposal to reduce it. If the bandages and instruments applied fail in this, then, and then only, as a last resource, should the above operation be performed. The pessary, an instrument for particular kinds of rupture, may be used with success for preventing prolapsus of the uterus and vagina in the sow; but it cannot be applied except by a qualified veterinarian, who understands the anatomy of the parts involved in the malady. The judicious application of this instrument will, however, as experience has proved, reduce uterine rupture when all other means have failed.

THE TREATMENT OF SOWS AND THEIR SUCKLINGS.

The way a sow is fed when suckling her young is more important than many would imagine. Sometimes immediately after farrowing a sow shows symptoms of fever; at other times, and more frequently, she suffers from debility. In the former case a scanty diet, consisting of a small quantity of oatmeal and boiled cabbages, should be given for a few days, and fresh water, with a little nitrate of potash in it, should be placed in the sty, that the animal may sip of it from time to time. In a case of debility our treatment must be conservative. We must give a highly nutritive food in small quantities, six or seven times daily, gradually increasing the quantity as strength is gained. A sow should always be fed well, but not to excess. "The more carefully she is fed the more abundant and nutritious will her milk be, the better will the sucking pigs thrive, and the less will she be pulled down by suckling them." Regularity in meals should also be strictly insisted

on, and these should be given five or six times a day, in rather small quantities, yet at the same time sufficient. Oft-repeated meals are, in small quantities, to be preferred, as large ones, given twice daily, injuriously affect the function of digestion, and thus cause a vitiated secretion of milk, which, on finding its way to the stomach and intestines of the young pigs, is likely to produce diarrhœa and other concomitant diseases. Where possible, sows should be turned out daily to exercise, either in a paddock or field; but for the first fortnight the young pigs must not accompany her, as at this early age they are unable to follow her during her perambulations. About weaning time, when the sucklings are about two months old, the sow must be fed less plentifully, and the young should get peas and other food in greater abundance. Sometimes, after weaning, a dose of physic may with advantage be given to the sow; but, as a rule, if care be exercised in weaning, and the supply of food be gradually diminished, little anxiety need be experienced on this score. Young pigs, during the first two or three weeks, can obtain all the sustenance they require from the sow, but after this they require some food in addition to her milk. At first warm cow's milk can be given, and afterwards dairy refuse, thickened with oatmeal and bran, will constitute a very substantial diet. It is never advisable to allow the sucklings to feed out of the same trough as the mother, for in nine cases out of ten she will scarcely allow them a mouthful, and will often injure them in the act of pushing them from the trough with her snout. Lastly, the food proper for the sow is of too stimulating a nature for her family. In establishments in which several breeding sows are kept, apertures, just sufficiently large to admit one young pig at a time, are made in the wall of the breeding sty, communicating with the one next to it. By this arrangement the sucklings can be fed in the yard next to the breeding sty, and thus escape maternal molestation, and be dieted in whatever manner the owner pleases.

Young pigs should not be taken from their mother until they are about ten weeks old, and some two or three weeks previously to this they should be gradually weaned in the following way:—The sow must not be fed too abundantly, and should be removed from the pigs for two or three hours daily. As time goes on this period of absence must be increased, until the young are able to obtain sufficient food from the trough, and seem to thrive with only a small quantity of the maternal milk. Sucklings, after they are two weeks old, should be allowed to follow their mother; and when she is removed from them, during the process of weaning, they can be turned into a paddock by themselves. By this means exercise, so essential to their health and growth, is necessitated.

DISEASES INCIDENT TO PIGS.

Space will not permit our entering minutely into the subject of the diseases incident to swine, but we shall endeavour to give an account of the ailments most common to pigs, considering chiefly those which retard the progress of fattening, or render the flesh unwholesome for human consumption:—

APOPLEXY.

This is a malady common to swine, which, in nine cases out of ten, owes its origin to over-fattening. At the cattle show at Islington, in 1870, two pigs died of this disease; and that it should frequently occur can surprise no one. As high feeding and lack of exercise produces plethora, the bloodvessels become congested, particularly those of the brain, when, owing to their distended state, they press injuriously upon the cerebral substance, and thus produce torpor, leading to immobility, which, if not quickly relieved, terminates fatally. Sometimes, again, the bloodvessels of the brain become ruptured, and death immediately results; in fact, of apoplexy we are seldom able to prognosticate favourably. Youatt informs us that sometimes it will run like an epizootic through a whole piggery. If so, it is evident that some potent cause (most likely to be found in the feeding) operates in producing it. The prominent symptoms of this affection are general dullness, drooping head, staggering gait if locomotion be attempted, congested eyeballs, associated with partial or entire loss of sight, and insensibility to pain. When these symptoms are observed, our treatment must be directed to relieving the distended bloodvessels, which may be accomplished indirectly by bleeding at the ear, or any part the owner may determine, and emptying the stomach and intestines of their contents by administering an emetic (potassio-tartrate of antimony) to induce vomiting, and afterwards by evacuating the intestines through the medium of a brisk purgative, consisting of two to three ounces of Epsom salts. The application, also, of cold water, or still better, ice, to the head, in the region of the brain, will be attended with benefit. If the patient recovers, great attention must be paid to the diet; no stimulating food must be given, and from time to time small quantities of nitrate of potash and sulphur may be mixed in the wash with advantage. If this affection assumes an epizootic type, the pigs within the piggery must be judiciously dieted. Stimulating food must be withheld, and doses of Epsom salts, about two ounces to each pig, must be given occasionally until health is restored.

MEASLES.

This is a disease which injuriously affects pigs during life, and, after slaughter, renders the flesh unfit for human food. Many authors have described the symptoms and *post mortem* appearances of this malady, but few have "told the whole truth" regarding it, simply because the knowledge they possessed of it was very limited. One, for instance, writes—"The symptoms are redness of the eyes, foulness of the skin, depression of spirits, decline or total departure of appetite, small pustules about the throat, and red and purple eruptions on the skin. These are more plainly visible after death, when they impart a peculiar appearance to the grain of the meat, with fading of its colour and distension of fibre, so as to give an appearance similar to that which might be produced by puncturing the flesh." M. Dupuy records a case of para-

lysis of the hind extremities, noticed in a pig the subject of measles, which was produced by the existence in the muscles (*psoæ*) of "numerous cysts, inclosing hydatids; these being in close contact with the lumbar vertebræ, had caused softening of the spinal marrow in that region, and consequent paralysis." Youatt tells us that measles has been regarded by many as a mild form of leprosy, and he considers this opinion as not erroneous. But whatever may be in this, measles, it is evident, are a subcutaneous disease, produced by inattention to hygienic laws, and so injuriously interfering with the sale of pigs, that in several parts of Germany a law has for many years existed, which compels the vendor to give a "warranty of four weeks against measles, and other cutaneous eruptions, in swine." Youatt, although he was by no means confident in his opinion, had an idea that perhaps this malady was of a parasitic nature, as appears from what follows:—"It yet remains to be discovered whether measles in swine is an epidemic like that disorder in the human being, or whether it is hereditary, or whether, as many suppose, it arises from the development and presence of a variety of the cysticercus." It has of late years been ascertained, and proved beyond doubt, by the researches and experiments of Küchenmeister and Von Siebold, that measles in the pig is produced by the presence of a vesicular worm, which invades the muscular tissue. This hydatid, the Cysticercus cellulosa, is (like the Cœnurus cerebralis of the sheep, before described) an incomplete individual; *i.e.*, the Cysticercus cellulosa, if eaten by the dog, would develop in his intestines into a tape-worm, or complete individual; and again, if segments of this tape-worm were devoured by the pig, they would cause the existence, in his muscular tissue (the proper *habitat*), of numerous Cysticerci cellulosæ; in fact, would create measles. From this, therefore, it will be observed that, if no tape-worms existed, no Cysticerci cellulosæ could be created. The hydatid is, by metamorphosis, converted into a tænia, which breeds the cysticercus, or primary generation, which in the intestines of another animal develops into a tape-worm. The ordinary habitation of the cysticercus is the flesh of the pig; and we find the Tænia solium is almost entirely unknown where the use of the flesh is avoided—as, for example, amongst those whose religion forbids them to eat pork, the flesh, as they consider, of an unclean animal. "The reason why we find Tænia solium so plentifully in butchers and their families is, that the butchers contaminate their own hands in sausage-making, and also the blades of their knives in cutting up and selling beef. When they now wipe their mouths with the hands thus contaminated, or place the knife bedaubed with cysticerci in their mouths, or, lastly, transfer these cysticerci from the knife to the bread or sausages which they cut up for themselves, their families, or servants, the insignificant and scarcely perceptible cysticerci are introduced into the mouth and swallowed." These cysticerci, as before explained, in the intestines of man produce the tape-worm known as the Tænia solium, provided the meat infested with them be raw or partially cooked; for it appears from numerous experiments, that during the process of roasting or boiling meat the cysticercus is destroyed, and consequently rendered incapable of developing into the Tænia solium.

EXPERIMENTS OF FEEDING WITH TAPE-WORM.

Küchenmeister administered to three sucking pigs the segments of tape-worms on the 7th, 24th, and 26th of June, and 2nd July. One of these pigs was killed on the 26th of July, and "exhibited young cysticerci, corresponding with the day's administration, of which the largest individuals formed vesicles of the size of a hemp-seed, with a certain turbidity; *i.e.*, the commencement of a head. The second pig was killed on the 9th of August, when thousands of cysticerci were found in all parts of the body. The largest individuals were as large as peas, and exhibited a distinct head, whilst the smallest were only of the size of hemp-seed. The third pig, which was killed on the 23rd of August, was uniformly set, throughout all parts of the body, with cysticerci of various degrees of growth and development. I undertook the examination of a weighed piece of flesh, and found 133 Cysticerci cellulosæ in four and a half drachms of it. If we calculate from this quantity the number of cysticerci which would have existed in one stone of pork, we obtain the great number of 88,000 individuals in this weight. A fourth pig of the same litter, to which no tæniæ had been administered, exhibited no traces of the cysticerci on dissection.

EXPERIMENTS OF FEEDING WITH CYSTICERCUS CELLULOSA.

In order to discover from which kind of tape-worm the Cysticercus cellulosa was produced, Von Siebold instituted the following experiments:—1st, a young dog was fed on the 22nd of May with forty-four cysticerci; on the 24th, fourteen more were given him, and on the following day, thirty-five. Before the worms were given they were taken out of their cysts. The dog was killed on the 3rd of July, which was thirty-nine days after the last feeding, and forty-two days after the first. Only four tape-worms of two inches in length were found in the dog's small intestine. From their appearance they were evidently the product of the cysticerci which the dog had swallowed. 2nd, Having procured two cysticerci from a human brain, which when put into water thirty-six hours after the death of the subject, still moved, I would not, few as they were, allow the opportunity to pass of making an experiment of feeding with them. The young dog fed upon them, however, when killed, showed not the slightest trace of tape-worm or scolex. 3rd, On the 18th of June a young poodle swallowed forty-two cysticerci from the pig, deprived of their cysts. The examination of this dog on the 4th of August, fifty-one days after feeding, showed eight tape-worms of different lengths. The smallest individual measured 1¼ inch, a few others measured 5½ to 17¼ inches, a larger individual was 25¼ inches long, whilst the three largest had attained the length of 51 inches. Notwithstanding the length which the worms had attained, and the great number

of their joints, Von Siebold could discover no perfectly developed eggs in any of the latter. 4th, To a young pug dog thirty cysticerci without cysts were administered on the 11th of July, and forty-five on the 17th. On the 21st of July the dog was killed. On inspecting the small intestines forty-eight scolices were found, of which the shortest measured one line, and the longest six. All bore the characteristic scar on the posterior extremities. The smallest individuals consisted of nothing else than the head and neck of the Cysticercus cellulosa. The remaining and somewhat longer individuals had a transversely wrinkled body, which as yet bore no traces of joints. 5th, On the 8th of August, a young setter was fed with forty-five cysticerci, which were still in the cysts and inclosed flesh. On the 21st of August this dog was likewise killed. In his small intestines a few tape-worms were found in course of development, of $\frac{3}{4}$ of an inch in length.

From the recorded experiments, it is evident, first, that if tape-worms, either the Tænia solium or Tænia serrata, be administered to pigs, they will produce within them the cysticerci; and second, if the cysticercus be given to dogs, it will develop in their intestines into a tape-worm. The old doctrine of spontaneous generation, caused by the accumulation of filth and other causes, which the advocates of this theory have from time to time brought forward, and particularly regarding measles in pigs, entirely falls to the ground; and as fresh light is thrown upon the important subject of parasitic existence, I feel confident that not only will it be proved that many intestinal worms commence life as hydatids, but that other parasites of a microscopic character are produced by a metamorphosis from some still smaller creature, which the microscope has as yet failed to detect.

VON SIEBOLD'S REMARKS ON THE EXPERIMENTS OF FEEDING WITH CYSTICERCI, AND THE SIMILARITY OF THE TÆNIA SOLIUM AND TÆNIA SERRATA.

"I must here remark that the dogs I made use of for the second, fourth, and fifth experiments, were troubled with the distemper, a thing of common occurrence amongst young dogs, and that the disease had probably had an injurious effect upon the development of the tape-worms. Notwithstanding these experiments of feeding the dogs with Cysticercus cellulosa afforded no such completely favourable results as the foregoing series, they nevertheless went far enough to prove that the Cysticercus cellulosa may also, in the intestine of the dog, become developed into a tænia.

"The few tænia which were obtained from these cysticerci were, moreover, a source of great perplexity to me; for when I attempted to define the species to which they belonged, I was doubtful whether to consider them as appertaining to the Tænia serrata or to the Tænia solium. The head and perfectly developed joints accorded with either species, only the neck was longer and more slender than that of Tænia serrata, so that I was inclined to regard them as Tænia solium. Owing to the resemblance of these tape-worms, Tænia serrata and solium, to one another, I was induced to submit the specimens of Tænia solium in my collection to a more searching examination, and to compare them with the examples of the Tænia serrata taken out of the dogs. To my no small astonishment I found individuals amongst tænia which had been taken from the human subject, that were not to be distinguished from Tænia serrata. They had the short broad joints, with transversely wrinkled integument and undulating posterior edge, just like Tænia serrata; the head, too, was formed exactly like that of the latter, though the neck was more elongated. Besides these, there were a few feeble individuals amongst them which fully corresponded with some of the tape-worms produced from Cysticercus fusiformis; and the eggs of the Tænia solium were not distinguishable from those of the Tænia serrata, so that I was forced to conclude that Tænia solium and Tænia serrata were identical. In order to obtain a still clearer insight into the matter, I further compared the heads, with their apparatus of hooks, of Cysticercus fusiformis, longicollis, and cellulosa with one another, and in these also I could find no difference.

"With regard to the length of the neck, and the circumference and contour of the joints, though there are, as I have already partly shown, discoverable differences, they are not sufficiently marked to rank as distinctive characters of two species of tape-worms, and I must therefore maintain that Tænia solium and Tænia serrata belong to one and the same species; that they are the extreme forms of a single species, connected by a series of transitional forms."

In the year 1857, Mr. Rainey presented the Royal Society of London with a paper on the structure and development of the Cysticercus cellulosa, in which he proved that this hydatid's presence in the muscular tissue of pigs constituted the "measled pork" of the London markets, and which, owing to its importance, is transcribed below.

THE DEVELOPMENT OF THE CYSTICERCUS CELLULOSA.

"The earliest indication of this species of cysticercus which admits of certain recognition as a form of cystic entozoon, is the presence of a collection of reniform corpuscles of about 1-2666th of an inch in length, and 1-8000th in breadth, mixed with very minute, highly refractive molecules, of different sizes, in the substance of a primary fasciculus of a muscular fibre, or between its sarcolemma and the sarcous elements.

"Though such a collection of corpuscles has a moderately definite shape, being somewhat fusiform, yet it has not a complete investment. It soon, however, acquires a very distinct membranous covering, which is first apparent at its middle, and afterwards at its extremities. Its dimensions in this stage of formation may be about 1-150th of an inch in length, and 1-1500th in breadth, but these are by no means regular. The external investment at first appears as a bright line of homogeneous substance, best defined on the side next the sarcous matter. It soon, however, increases in thickness, and afterwards becomes converted into short fibres, which increase in size and distinctness as the animalcule grows

larger. These fibres are peculiar; there is nothing that I am acquainted with analogous to them. They have not the sharp and well defined outline of true cilia, nor are they pointed like setæ, or curled like cirri. They have somewhat the nature of white fibrous tissue, their distinctness being impaired by acetic acid. They are of different lengths in the same entozoon, and generally longer, though not thicker, in the large than in the small ones. Their length averages about 1-2100th of an inch.

"The most remarkable circumstance connected with them is the great uniformity of their arrangement in different cysticerci. They cover the whole of the outer surface of the membrane, and on opposite sides of the same entozoon their form, size, and direction are similar, so that the two halves taken longitudinally are in this respect symmetrical. If the direction of these fibres be examined about midway between the two extremities of one of these animalcules, they will be seen to project from the surface at right angles with the axis of its body; but if traced each way from this point, they will be observed gradually to incline to this axis at an angle which keeps diminishing as they approach the two extremities, so that the fibres nearest the two ends almost coincide in their direction with that of the axis, and thus correspond in their situation to the barbs situated on each side of an extremity of an ordinary feather.

"As the first position of these animals is in the very substance of a primary muscular fasciculus, it is obvious that the mechanical action of this apparatus will be to aid their longitudinal development whilst new cells are in progress in their interior. For it is scarcely possible that the muscular fibrillæ by which they are surrounded can, when in action, fail by their friction to urge the two extremities onwards in opposite directions, whilst at the same time the fibres by which these entozoa are covered, are in consequence of their direction preventing the separated ends from regaining their former position; and thus the two ends beings always carried in opposite directions, without the possibility of a counter movement, a general elongation must ensue. This apparatus also, by splitting up the primary fasciculi, will serve a locomotive purpose, and thus enable these animals to reach the cellular intervals between the muscular fibres, where their further development will be completed. That such is the effect of the fibres in question is evident on a careful inspection of some of the fasciculi in which these animalcules are contained, in which a separation of the fibrillæ can be seen to have been produced by the pointed ends of the entozoon; these fibrillæ having been obviously turned out of their original course, and some directed to one side, and some to the other. This explanation receives confirmation from the fact of these cysticerci, which are developed in the muscular parietes of the heart, being of a different shape from those formed elsewhere, although the structure in all other respects is precisely the same. These cysticerci, in the first or vermicular stage of their development, are very short and thick, and of an oval shape. Their locomotive fibres, though perfectly demonstrable, are very short, and in many instances imperfect.

"After these cysticerci have reached the spaces between the muscular fibres, their subsequent development is the same as in other situations, and the perfect animals formed in the heart cannot be distinguished from those formed in other muscles. I may also add, that while in the vermicular stage, the cysticerci developed in the short muscular fibres of the tongue are of a shape resembling very much those of the heart.

"The investing membrane, which has just been described as covered with cilia, is entirely filled with corpuscles, all of one kind, remarkably characteristic, and differing only according to their states of development. The perfect cells are best seen in the middle of an entozoon, but their mode of formation, and the subsequent changes which they undergo, must be examined in those parts which are increasing most rapidly, as in the growing ends of an animalcule.

"The first appearance indicative of an increase in the length of an animalcule is a thinning of the investing membrane, and a separation or partial detachment of the cilia-like fibres of the growing end. Next, a clear space, of the form of the part which is about to be added, is perceptible a little in advance of the extremity, apparently the result of a very fine membranous protrusion. This contains numerous dark molecules of different forms and sizes, mixed with granules more or less perfectly spherical: the most perfect of these globular bodies are those which are nearest to the perfectly formed part of the animalcule. These corpuscles, when completely formed, have a bright oily-looking aspect, and a diameter of about 1-5000th of an inch.

"These corpuscles have the appearance of being formed by the coalescence of molecules which had existed in the clear space before any corpuscles were apparent, by which they are afterwards replaced. After a growing end has become thus filled with these globular bodies the terminal membrane becomes more and more distinct, and the cilia-like fibres are afterwards added, which are generally neither so regularly disposed, nor so distinct, as on other parts of the entozoon. Next, these corpuscles lose their spherical form and become flattened; and lastly, they assume their characteristic elliptical or reniform figure before mentioned, which they retain as long as the entozoon remains in its primary muscular fasciculus. This shape, however, is not essential to those corpuscles, but merely results from the rounded form of the masses into which they are grouped together, each corpuscle, by its convexity, forming a segment of the circular outline of its respective group. These corpuscles contain very fine dark granules, so variously disposed in different ones as to present a variety of appearances, such as circular or oval spaces which might be taken for nuclei or nucleoli. These collections of corpuscles make up nearly the whole of an animalcule, and they frequently give to it a lobulated, and sometimes an obscurely annulose, appearance.

"The entozoa, as long as they remain in the primary fasciculi, retain all those characteristics which have so far

been described; but these characteristics gradually disappear after they have broken away from the cavity of the sarcolemma, and gained access to the spaces between the muscular fibres. In this situation they gradually lose their former membranous clothing, studded with cilia-like fibres, which can occasionally be seen partially deprived of its corpuscular contents, though sufficiently perfect to admit of demonstration. The reniform corpuscles, before aggregated together in circular groups, now gradually lose their distinctness of outline, and imperfectly coalesce into confused, ill-defined masses, having an oily aspect; so that if, in this state, one of these vermicules be crushed under the microscope, amorphous, oily, and granular matter will be seen to have escaped from it, similar to that contained in the ventral part of the adult animal. Here, too, the restraint to the lateral growth of these entozoa being very much diminished, their breadth increases rapidly, and they present globular projections, extending out very irregularly from their sides, giving them an irregular figure. These projections gradually take on the form of those which were described on the ventral part of the perfect entozoon. The largest of the entozoa which I have seen in this stage is about 1-12th of an inch in length and 1-40th in breadth.

"The next facts requiring special notice are those connected with that stage of development which takes place after the animalcule has become surrounded by an adventitious cyst. The first indication of the formation of such a cyst is, the turgescency of the capillaries, or some of the smaller vessels in the vicinity of one or more entozoa. Granular bodies, exudation-corpuscles, and fibres of different shapes, next make their appearance. These at first only partially obscure the entozoon, but afterwards completely conceal it. When the cyst is first formed the animalcule can, by a good light and careful examination, be obscurely seen within it, and by dissection under the microscope it can be dislodged.

"The interior of the cyst being smaller than the animalcule contained therein, it naturally follows that during its growth one portion must be folded over another. By this means it is adapted to the fine locality in which it is lodged during the period of its development. Hence the ventral portions of all cysticerci are, when first taken from their cysts, very much plicated; but these plicæ disappear after the ventral sac has become distended with the fluid brought into contact with its surface.

"Up to this point of the development of the cysticercus, it is a simple cyst, growing by the assimilation of fluid imbibed equally by every part of its surface, no one part differing sensibly in its structure from another. No portion of this surface presents any indication of incipient hooklets or suckers. There is nothing on its surface, or in its interior, analogous to the structure of an ovum; nor is there any other anatomical character which would raise its organization above that of a simple acephalocyst. However, this so exactly resembles in its structure that of the ventral portion of the cysticercus, that it is impossible to doubt their identity of character. Its size, too, is not much beneath that stage where the suckers and hooklets first begin to present obscure indications of the part they are about to occupy.

"The first indication of the addition of the neck, with the suckers and hooklets, to the ventral part of a cysticercus, is the appearance about its centre of a slightly raised body, depressed in the middle, with longitudinal folds proceeding from each side of it towards the poles of the ventral cyst, appearing as if at this part the parietes of the latter had been drawn inwards. On two sides of this hollow there are dark transverse lines, rather more distinct on one side than the other, indicating the commencement of the transverse rugæ of the neck, mentioned in the description of this part of the perfect animal, in which the laminated earthy bodies are contained. About the central part of the cervical projection there is an ill-defined oval space, having a granular appearance, and containing some minute spherical particles of a dark colour, consisting apparently of a highly refractive material. In this condition of the entozoon there is nothing in this space which has the slightest resemblance to the parts which are there about to be developed, namely, the hooklets, suckers, and earthy concretions; and it is only by the comparison of these obscure appearances with the other specimens, in which the development of the hooklets is a little more advanced, that their true signification can be learned.

"From the facts that have just been mentioned, the hooklets of the animalcule in question do not appear to be formed by cell development; for by the most careful examination of these organs, both recent and after the application of acids, I have not been able to distinguish anything that can be looked upon as a cell or cell-nucleus, calculated to give the idea of their being developed from previously existing cells, or in dependence on cells; but, on the contrary, all the various forms which they present, during the process of their formation, simply indicate the coalescence of very minute spherules of a homogeneous material, exceeding the number of a complete set of hooklets, into small globular masses, and these again into larger pieces, and so on successively until recognizable portions of hooklets come into view, which, coalescing, build up, as it were, an entire organ.

"It is worthy of remark that, if these structures had been produced directly from the metamorphosis of previously existing cells, the circumstances connected with their formation would have been the most favourable for observing both the original cells and the changes which they pass through; indeed, so much so that it is almost impossible that they could have escaped notice. First, because these parts are of such a size and degree of transparency as to admit of examination with the highest powers of the microscope, without the necessity of disarranging them or disturbing their position by manipulation. Secondly, because the material of which they are composed is so dissimilar in appearance to that forming the adjacent tissue, and so characteristic, that it cannot be confounded with the structures in their immediate vicinity. Thirdly, because at one view, in a favourable

specimen, hooklets can be seen in every stage of their formation, from the first grouping together of the masses of formative particles, to the blending of them into perfect organs. And lastly, because it is not as if a mere thread of tissue were formed amongst other threads, slightly differing in appearance, as fibres of elastic tissue, for instance, in a mass of connective tissue, but the objects referred to are perfect organs, which possess an arrangement of parts connected together with order and remarkable regularity; so that, under such circumstances, if these organs had been preceded by nucleated cells, and the cells had been transformed into hooklets, neither these cells in their primitive state, nor in their several stages of transformation, could have escaped detection.

"The parts next to be noticed are the suckers. Indications of these are visible as soon as the hooklets. They appear as four circular spaces, presenting a granular aspect about the size of perfectly-formed suckers. The two sets of fibres next make their appearance, the radiating and circular, which have not at first the sharp outline which they afterwards acquire, but still appear obscurely granular. As the tissue of these organs possesses nothing characteristic, like that of the parts just described, the progressive changes which they undergo, during the different periods of their formation, can be but imperfectly distinguished, and hence no further description of them will be necessary.

"It has been observed, in the two sets of organs above described, that their size does not increase materially after being once formed. Exactly the reverse is the case in reference to the part called the neck, and the quantity, though not the size of the laminated bodies, which increase in number as the cavity of the latter increases in size. These bodies appear as soon as the hooklets and suckers, and they are as large when first formed as afterwards; but there are indications of the transverse wrinkles of the neck before either hooklets or suckers can be distinguished. The neck afterwards continues to grow, so that its relative length, in respect to the ventral portion, is some indication of the age of a cysticercus.

"It is probable that this part does not arrive at its full size until after it has been protruded, which I have never seen to be the case in any animalcules occurring in or between the muscular fibres, and which perhaps is not effected until the entozoa quit their confined locality between the muscular fibres, and gain access to the free surface of a mucous membrane, there, as physiologists generally believe, to be further developed into a higher form of entozoon."

The ancients were in the habit of adopting a varied nomenclature for diseases whose origin was somewhat obscure, and particularly those where a suspicion existed that they were of a parasitic nature: for instance, measles in pigs sometimes received the name of "leprosy," and when it assumed an epizootic type it was designated "murrain," as appears from the fact that the symptoms detailed as characteristic of the one and the other are identical; and the treatment recommended for "measles," leprosy, and murrain, is not very dissimilar. Youatt, in describing the symptoms and treatment of leprosy, writes—"In the onset, all that is remarkable is a certain marked stupidity or obstinacy in the animal, a state of languor and apparent general debility, an evident thickening of the skin, a slight adhesion of bristles, a tendency in the hair to fall off. In its successive progress this disease attacks the animal economy more or less profoundly, without the functions appearing otherwise troubled. There is ulceration of the cellular tissue, and the animal does not appear to be generally and seriously ill. Far from losing his appetite, he is occasionally voracious. He does not appear to suffer in his lungs, his breath is not embarrassed, nor is his voice hoarser than usual. Such, at least, may be observed when the vesicles are not numerous. It is when they increase in quantity that they begin to affect the health of the patient. He then becomes indifferent to everything, moves about slowly, totters as he walks, his eyes are dull, the buccal membrane is pale, and sometimes strewed with violet spots. Strength begins to abandon the patient, he can no longer sustain himself on his legs, the posterior part of the trunk becomes paralysed, and the body exhales an unpleasant smell. This is a very obstinate disease, probably from its having usually taken hold of the system before it is suspected, and numerous have been the medicaments recommended for it. Antimony, sulphur, small and repeated doses of Epsom salts, and general bleeding, seem to be attended with success, and these are aided by a strict attention to diet and cleanliness." Numerous have been the opinions advanced relative to the predisposing causes of measles. Some authors attribute it to the inclemency of the weather, insufficient food, and damp localities; and support their views by asserting that the disease is always more prevalent among swine when turned into woods and forests, than when lodged in piggeries where a judicious system of dietary is adopted. Others attribute the disease to bad water—containing compounds injurious to health—and to improper food. These opinions, as will be apparent from the remarks made regarding the cysticercus, did not tend to throw much light upon the origin of measles. But the assertion that animals feeding in forests, &c., are more prone than others to the disease, and that bad water and improper food are causes of it, demands some consideration; for no doubt, indirectly, the food obtained in these locations furnished the media wherein the tape-worm (the breeder of the cysticercus) existed. For instance, the Tænia solium existing in the excrement of man, or the Tænia serrata in that of the dog, might become deposited in the forest land, and be devoured by the greedy pig, which might thus impregnate itself with the cysticercus. Again, trough food, consisting of blood and the entrails of other animals, might contain segments of the tape-worm, which, eaten by swine, would be sure to produce the disease.

The only rational treatment for this affection, where existing, consists in the destruction and removal of the cysticercus from the muscular tissue of the pig; but to effect this, no medicine has been as yet discovered. Our endeavour,

therefore, should be to prevent its occurrence by feeding our pigs upon aliment which cannot, by any possibility, contain the segments of tape-worms. If no tænia existed, no cysticerci could be bred; therefore, by reducing the supply of the former, we should be diminishing the means for the diffusion of the latter. It is a fact worthy of notice, that nations which are prohibited from eating pork are seldom affected with tape-worm; and Tacitus states he considered that the Jews were forbidden to eat pork because the flesh of the hog was liable to become leprous. Doubtless the communities which obey this law are to a great extent exempt from the attack of tape-worm. The flesh of the hog affected with measles is soft, flabby, and almost tasteless; and whatever authors may say to the contrary, is totally unfit for human food. As before stated, thorough cooking destroys the life of the parasite; but some portion or portions of the flesh may escape the action of the fire to the extent necessary to destroy the cysticercus. Under any circumstances measly flesh should be burnt, and not given to any animal. In man, soup made from it has produced vomiting and diarrhœa, and other evil consequences which it is needless here to detail. Suffice it to say, measly pork, containing living cysticerci, if eaten, will produce tape-worms. If not thoroughly cooked, it will, in like manner, cause the development of tæniæ; and the flesh infested with cysticerci, even if thoroughly cooked, is otherwise unwholesome, and totally unfit for the food of man or of any other animal.

QUINSY OR STRANGLES, MALIGNANT SORE THROAT OF THE PIG.

According to ancient authorities, disease of the glands in the region of the throat was in their time very prevalent among swine. H. D'Arboval gives a long account of this affection, which he designates by the names *Poil piqué*, *maladie piquante* or *soie*, and regards as the result of cutaneous irritation, which, sympathizing with some internal ailment induced by too stimulating food, hot or ill-ventilated sties, and damp litter, determines this local disease of the glands. Others believe that miasmatic influences produce it, and that it rages as an epizootic. The disease consists of a swelling, extending around the throat and down the line of the trachea; great thirst, dullness, loss of appetite, accompanied with pain, and general symptoms of fever prevail. As the malady increases in intensity, laborious breathing, swelling of the tongue, and difficulty in swallowing supervene, and often the patient dies of suffocation. Sometimes the skin is raised in hard swellings along the sides of the neck and trachea, and at times between the fore legs. The treatment consists in giving an emetic, as—

Potassio-tartrate of antimony,	4 grains.
Ipecacuanha,	6 "
White hellebore,	6 "

If the animal will drink or eat a little, Gamgee recommends that a purgative powder, consisting of two or three drachms of castor oil seeds, should be given. A blister or hot rugs applied to the throat also assists the treatment.

In carbuncular quinsy the tonsil on one side of the neck is affected; the bristles in the skin of that part stand out erect, and if pulled cause great pain. The post mortem appearances give evidence of acute inflammation of the larynx and pharynx, and of the tonsil on the affected side. As the disease is of a contagious nature, it is necessary to separate the healthy swine from those affected, and to keep the latter scrupulously clean, as the spreading of the malady is said to be favoured by dirty sties and neglect of hygienic measures. Cold water with nitre in it should be placed before the patients, in order that they may drink it at their pleasure, and if constipation prevails, drachm doses of aloes can be administered.

The diseased tissues, moreover, must be removed with the knife or actual cautery, and afterwards the system must be supported by stimulants and food easy of digestion, as oat-meal gruel, &c.

CALCULOUS CONCRETIONS OCCURRING IN THE OX, SHEEP, AND PIG.

The word calculus (derived from the Latin *calx*, "lime") is a term used to designate certain concretions occurring in the abdominal viscera of nearly every living animal; they may be divided, first, into calculi found in the alimentary canal: secondly, into urinary calculi, or those met with in the urinary organs; and thirdly, into casual calculi, which include those found in various glands of the body, &c. Alimentary calculi are of two kinds: those which occur in the stomach, and called stomachical; and those which exist in the intestines, denominated intestinal.

STOMACHICAL CALCULI.

Globular masses of hair, called hair-balls, are commonly met met with in the stomach of the ox. They are of different forms, and vary in weight from a few ounces to seven or eight pounds. Their composition also varies; sometimes they consist solely of hair matted together with mucus. This is the case when they are found in the abomasum; the animal whilst licking itself takes the hair from its skin into its stomach, through the medium of its mouth. Sometimes these hair-balls contain a nucleus or centre, consisting of a small piece of wood, stone, or iron, such as a nail, around which the hair aggregates. Other concretions are met with in the rumen and reticulum, which are generally composed of a mixture of food and earthy matter and hair.

"When simple food," says Youatt, "mingles with the hair, the ball seems to be formed by a succession of concentric layers, and in the centre a bit of nail or stone, or if the beasts have access to running water, a piece of shell often constitutes the nucleus." The existence of these concretions in the stomachs of cattle seldom affects their health. Some authors assert that lean cattle are more subject to them than those that are well nurtured; but my experience tells me,

that they are as constantly met with among fat stock as others: in fact, their presence in cattle which during the process of fattening have "done well," has never been detected until after death, and it is therefore evident that in the stomachs of ruminants they seldom produce injurious results.

INTESTINAL CALCULI.

These are of rare occurrence among cattle. Youatt informs us that they are very seldom, but sometimes, found in the large intestines. "They are not of great size, for the food passes too rapidly over the smooth surface of these portions of the digestive canal. There are no symptoms by which their presence can be recognized, nor is there any evidence of their being a cause of disease; although it is not improbable that the presence of these bodies, and the irritation produced by them, may in some instances be the cause of colic, strangulation. and other serious affections."

URINARY CALCULI.

Urinary calculi are of three kinds, viz., those found in the kidneys, called renal; those met with in the bladder, or vesical; and those of the urethra, denominated urethral calculi.

The kidneys, as the reader knows, secrete the urine, which by means of two ducts called ureters is conveyed into the bladder, and thence finds its way into the urethra. In these positions, as stated, calculi occur, arising, it may be, from an altered or vitiated secretion of urine, or from deranged functional vigour. Renal and vesical concretions are of common occurrence among herbivorous animals; they usually consist of carbonate of lime, mixed with a small quantity of carbonate of magnesia and a considerable portion of animal matter. "Traces of phosphate, oxalate, and sulphate of lime, with various saline ingredients of the urine, may often be detected." Carbonate of lime concretions from the ox are seldom of large size. Those from the kidney rarely exceed an inch in length, while those in the bladder are usually about the size of peas. The latter generally occur in great number, often amounting to several hundreds. They are small rounded globules, usually smooth and polished on their surface, but occasionally tuberculated, resembling mulberry concretions. Whether occurring in the bladder or in the kidney, they are generally remarkable as presenting a pearly, metallic exterior. When broken they readily separate into thin concentric layers. The tuberculated calculi, on the contrary, are exceedingly hard, and do not separate into layers when broken.

The calculi met with in the bladder of the hog differ little in their chemical character from those found in the urinary organs of the Herbivora. They vary in size from "a pea to a hen's egg." Their exterior is granular or tuberculated. They are extremely hard, and when sawn through exhibit a compact laminated structure, with the appearance of indistinct lines radiating from the centre. Urethral calculi commonly occur among cattle and sheep, and their existence is usually attended with great discomfort to the animals affected. Several cases are recorded in which ruptured bladder has resulted from their presence. Two oxen who fell away in condition, and were otherwise unwell, were killed some years ago in Norfolk, when at a post mortem examination the cause was discovered. "In the urethra several calculi, varying in size from a bean to a pin's head, were found." This obstruction in the urethra prevented the free escape of urine; the bladder, in consequence, became persistently distended, until its walls grew thin and weakened, which ultimately gave way (by rupture) to the pressure produced by the presence of an inordinate quantity of urine.

CALCULI IN THE URETERS.

Of these Youatt gives the following description:—"There can be no doubt that many calculi descend from the cavity or pelvis of the kidney into the bladder, yet there is but one case on record of it. The case is related by H. d'Arboval. Gattoin sent to the Society of Agriculture a history of the sickness and examination of a cow, in the left ureter of which many calculi were found, that had produced considerable dilatation of the canal. They were of a brilliant metallic brown colour; they were polished and heavy." In cases of this nature Chorbert recommends cutting through the rectum and ureter, and extracting the stone.

CASUAL CALCULI.

Biliary calculi are found in the gall-bladder of oxen, and are chiefly composed of the colouring matter of the bile. In the catalogue of calculi at the museum of the Royal College of Surgeons we find the following description of biliary calculi:—"These concretions have been known for a very considerable time, probably long before biliary calculi had been discovered in the human subject. They are of a rich, reddish brown colour. They are exceedingly light and friable, and readily separate into concentric layers. They vary in size from that of a pea to that of a hen's egg, and are usually of an ovoid figure; but when two or more calculi are contained in the gall-bladder they often present a very regular cubic or tetrahedric figure. These calculi always possess a musky odour, which appears to be peculiar to the concretions of the ox." The chemical composition of biliary calculi, according to Andral, consists of five concretions—yellow colouring matter, resin, cholesterine, picromel, and phosphate of lime.