

**A complete system of farriery, and veterinary medicine : containi[n]g a compendium of the veterinary art, or an accurate description of the diseases of horses, and their mode of treatment; the anatomy and physiology of the foot, and the principles and practice of shoeing. With observations on stable management, feeding, exercise, and condition / by James White ... newly arranged by the publishers, in which are introduced the late and important treatises upon the glanders, farcy, staggers, inflammation of the lungs and bowels, the prevention and treatment of lameness, and precautions to be observed in purchasing horses. By the same author. Illustrated by eighteen elegant plates.**

### **Contributors**

White, James, -1825.  
National Library of Medicine (U.S.)

### **Publication/Creation**

Pittsburgh : Published by Henry Holdship & Son ..., 1832 (J.B. Butler)

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A front view of the Internal or Sensible Foot.—aa the  
sesamoid Bones, b the laminated substance, c the Coronary Ring.

*For Whites Farriery Published by R. Patterson & Lambdien Pittsburgh.*



A  
COMPLETE SYSTEM OF  
**F A R R I E R Y,**  
AND  
**VETERINARY MEDICINE.**  
CONTAINING A COMPENDIUM OF THE  
**VETERINARY ART,**  
OR, AN ACCURATE DESCRIPTION OF THE  
**DISEASES OF HORSES,**  
AND THEIR MODE OF TREATMENT; THE ANATOMY  
AND PHYSIOLOGY OF THE FOOT,  
AND THE PRINCIPLES AND  
**Practice of Shoeing.**

With observations on stable management, feeding, exercise, and condition. By JAMES WHITE, late Veterinary Surgeon to the First or Royal Dragoons. Newly arranged by the publishers, in which are introduced the late and important Treatises upon the Glanders, Farcy, Staggers, Inflammation of the Lungs and Bowels, the prevention and treatment of Lameness, and precautions to be observed in purchasing Horses.—By the same author. Illustrated by eighteen elegant plates.

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**JAMES WHITE,**

BATH VETERINARY SURGEON TO THE FIRST, OR ROYAL DRAGOONS.

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SECOND AMERICAN EDITION. NEWLY ARRANGED FROM THE  
TENTH LONDON EDITION.

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PITTSBURGH:

*Published by Henry Holdship & Son,*

Corner of Third and Wood streets.

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J. B. BUTLER—print.

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1832.



**WESTERN DISTRICT OF PENNSYLVANIA, to wit:**

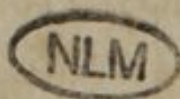
**BE IT REMEMBERED,** That on the sixteenth day of January, in the fifty sixth year of the Independence of the United States of America, A. D. 1832, **HENRY HOLDSHIP & SON** of the said District, have deposited in this office the title of Book, the right whereof they claim as proprietors, in the words following, to wit:

**"A complete system of Farriery, and Veterinary Medicine. Containing a compendium of the Veterinary Art, or an accurate description of the diseases of Horses, and their Mode of Treatment; the Anatomy and Physiology of the foot, and the principles and practice of shoeing. With observations on stable management, feeding, exercise and condition. By JAMES WHITE, late Veterinary Surgeon to the First, or Royal Dragoons. Newly arranged by the publishers, in which are introduced the late and important Treatises upon the Glanders, Farcy, Staggers, Inflammation of the Lungs and Bowels, the prevention and treatment of Lameness, and precautions to be observed in purchasing horses.—By the same author. Illustrated by 18 Elegant Plates."**

In conformity to the act of the Congress of the United States, entitled, "An Act for the encouragement of Learning, by securing the copies of Maps, Charts, and Books, to the authors and proprietors of such copies, During the times therein mentioned."—And also to the act, entitled, "An Act supplementary to An act, entitled, "An Act for the encouragement of Learning, by securing the copies of Maps, Charts, and Books, to the authors and proprietors of such copies during the times therein mentioned" and extending the benefits thereof to the the arts of designing, engraving, and etching historical and other prints."

**E. J. ROBERTS, Cpk.**  
*Of the Western District of Pennsylvania.*

PITTSBURGH, JANUARY 16, 1832.



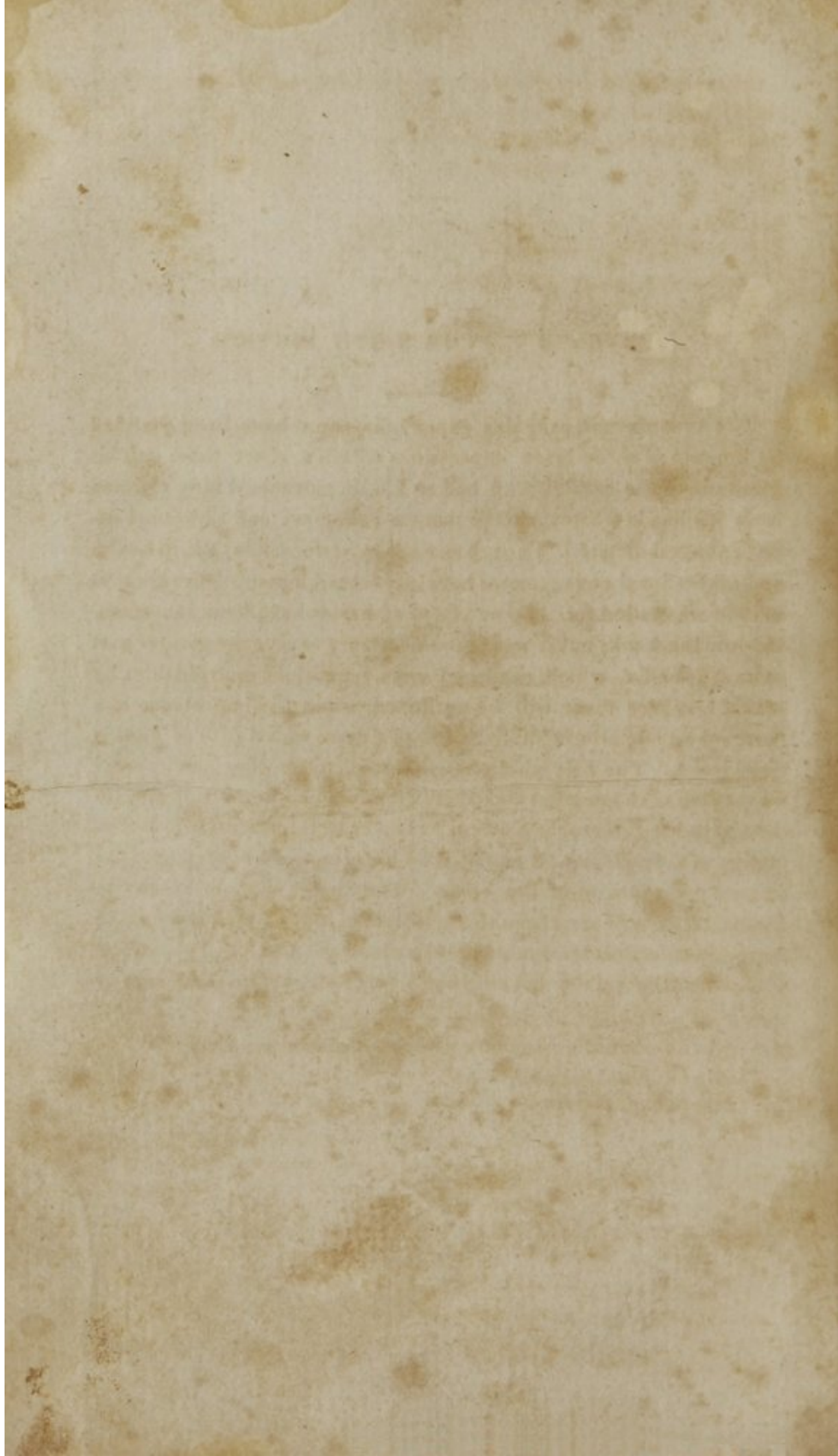


## PREFACE TO THE EIGHTH EDITION.

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The author's most sanguine expectations must have been gratified by the sale of seven large impressions within a short time; and his gratitude to the public, who had so kindly patronised him, claimed from his hands whatever more mature reflection and additional experience had dictated. Though anxious to perform this task, ill health and professional engagements have prevented him until the present edition was called for. Some of the additions have been incorporated into the work; but it was found necessary to give the greater part as an Appendix, which rendered some repetitions unavoidable; he trusts, however these will be pardoned, when the importance of a more minute detail of symptoms and of a more varied plan of cure is considered. The only addition to the article of shoeing is an improved method of shoeing flat and convex feet. For this the author is indebted to the Honorable Newton Fellowes of Eggsford, whose reputation as a sportsman is equalled by his accurate knowledge of the general management of the horse. The liberal support which the author has experienced from this gentleman, during his residence in Devonshire, claims his warmest acknowledgements. The patronage with which the public have honored him will ever be remembered with gratitude, and stimulate him to continue his exertions in contributing to improve the condition of the most useful of animals.

*Veterinary Establishment,* }  
*Exc Island, Exeter.* }





A  
COMPENDIUM OF THE  
**VETERINARY ART, &C.**

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CHAPTER 1.

*Introduction.*

THERE is scarcely a disease to which the Horse is liable, that will not appear, upon a strict examination, either to consist in, or to be a consequence of inflammation, which, when it attacks any of the internal organs, gives rise to his most dangerous diseases: thus an inflammation of the lungs, bowels, or any of the internal parts, will produce that kind of derangement in the system which is termed a fever, the violence of which will be proportioned to the degree and extent of the inflammation, and the importance of the inflamed organ in the animal economy. It appears necessary therefore, as an introduction to this work, to give a sketch of the anatomy of those internal organs, and to point out the various functions they perform; after which it will be proper to give a general description of inflammation, with its different modes of termination.

We sometimes, however, meet with diseases which seem to originate in debility: but many of these will be found, if carefully attended to at the commencement, to begin with some degree of increased action of the system; and though bleeding may be improper a mild purgative will generally prove very beneficial.

In the former editions of this work, scarcely any notice was taken of these diseases: we shall in the present, therefore, describe particularly, under the head *Fever*, their symptoms, causes and most effectual mode of treatment.

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*Structure and Functions of the Internal Organs.*

The hollow part of the body is divided into two cavities by a strong muscular partition termed the *diaphragm*, or *midriff*.



the anterior part is named the *thorax* or chest; and the posterior the *abdomen* or belly. The thorax contains the *lungs* and *heart*; the abdomen the *stomach*, *intestines*, *liver*, *spleen* or milt, *pancreas* or sweetbread, *kidneys* and *bladder*.

### Of the Lungs.

In describing the lungs, it is necessary to begin with the *trachea* or windpipe, which is a cylindrical cartilaginous tube, extending from the throat to the chest. The trachea is not made up of one entire cartilage, but of several cartilaginous, rings, which are united by strong membranes; and such is the elasticity of these cartilages, that the tube is enabled to preserve its cylindrical form, even when it receives considerable pressure, and thereby affords free ingress and egress to the air in respiration. The membranes also are elastic, so that the windpipe may be either elongated, shortened, or bent, in some degree. The upper part of the trachea is composed of stronger cartilages than the other parts of the tube, and is termed *larynx*: to this is connected a curious kind of valve, called *epiglottis*, which is always open, except in the act of swallowing: it is then forced down upon the larynx, so as to prevent food, or any thing which may be passing over the throat, from falling into the windpipe. Where the trachea joins the chest, it divides into numerous branches, which gradually becoming smaller, at length terminate in minute cells: the lungs, indeed, are made up of the ramifications of the trachea and blood vessels; the interstices being filled with a cellular membrane, which serves not only to unite them, but likewise to give a uniform and homogeneous appearance to the whole mass. The lungs are covered with a fine delicate membrane called the *pleura*, which also covers the internal surface of the ribs and diaphragm, and, by stretching across the chest from the spine to the breast-bone, divides the thorax into two cavities; this part of the pleura is therefore named *mediastinum*. On every part of the pleura, fluid is secreted for the purpose of preventing a cohesion of the parts; and when this is produced too abundantly, it constitutes the disease termed hydrothorax, or dropsy of the chest. The pleura, though so fine a membrane, is impervious to air; which may be proved on the dead animal, by rupturing one or more of the small branches of the windpipe, and then blowing into the lungs. The air which is forced will then escape through the ruptured parts, and be diffused in the cellular membrane,\* so

\* The cellular membrane is that which connects the various parts of the



as to make the lungs appear much larger than they were before. --When the air is at length forced to the surface of the lungs, it will be prevented from escaping by the pleura, which will be blown up, and appear like an inflated bladder on the surface of the lungs. If this be punctured, the air will soon escape, and the lungs will return to their original size. This circumstance is noticed, as it is supposed to happen sometimes in the living animal, and to be the cause of broken wind. --(See *Broken Wind* and *Chronic Cough*.) The lungs are divided into two parts, or lobes, one of which is situate in each cavity of the thorax: this division seems to have been provided in case of accidents, it having been proved, that when one lobe is incapable of performing its function in consequence of injury or disease, the other has been found adequate to the support of life.

The lungs are the organs of respiration or breathing; but they do not appear to be *actively* concerned in the performance of this office: when the diaphragm and the muscles of the belly and ribs contract, the cavity of the thorax is considerably diminished, and the lungs so compressed, that all the air contained in them is forced out through the windpipe: when this has been effected, the muscles relax, and the thorax returns to its original size. There would now be a vacuum between the internal surface of the ribs, and the external surface of the lungs, did not the air rush in through the windpipe, and so distend its branches and cells as to make the lungs completely fill the cavity. Thus are the lungs constantly employed in inspiration and expiration; and this process, which we call breathing, is carried on by the combined action of the diaphragm, and the muscles of the ribs and abdomen. It is supposed that the *elasticity* of the lungs, or rather of the branches of the windpipe, materially contributes to this important action, in the same manner as a

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body with each other; it not only unites the skin to the flesh, and the large muscles to each other, but is employed also to connect the minute fibres which compose the skin, muscles, &c. and therefore it is inferred, that the cellular membrane exists in every part of the body, however minute; and is in some parts so fine, as to be invisible; while in others, as between the shoulderblade and the ribs, it is very conspicuous. The cellular membrane is composed of cells of various sizes, which communicate freely with each other, so that if a blowpipe be put into one of the cells, and air forced through it, all the neighboring parts will be blown up to a considerable size. A familiar example of this is the practice among butchers of blowing up the cellular membrane of a shoulder of veal. It sometimes happens in the case of a fractured rib, that one end of the bone is forced into the lungs, so as to wound the branches of the windpipe and the pleura; the air which is inspired will then escape; and, as the wound communicates with the cellular membrane between the muscles of the ribs, the air gradually diffuses itself through all the contiguous parts; and we have sometimes seen the whole body, and even the cellular membrane about the eye, inflated from this cause.



bottle of elastic gum, or Indian-rubber, fills itself either with air or water, from its great elasticity.

If a small pipe or quill be tied to the mouth of one of these bottles, and the air pressed out by the hand; as soon as the pressure is removed, the bottle will resume its original form, and consequently be filled with air again. If the mouth of the bottle or the pipe be put into water after the air has been pressed out, on removing the pressure, the bottle will be filled with water.\*

### *Of the Heart.*

The heart is placed nearly in the middle of the thorax: it is rather conical in its form, the apex inclining towards the left side; its base attached to the bones of the back and ribs: it is loosely invested with a membrane or sac, termed *pericardium*, vulgarly *heart-bag*. This sac always contains a small quantity of fluid, which serves to lubricate its internal surface, as well as the surface of the heart, to prevent their cohesion, and suffer them to move freely upon each other. Sometimes this fluid accumulates, from a diseased action of the vessels which form it, to a considerable degree.—This kind of dropsy generally accompanies that of the chest. The heart is divided into two cavities, termed *ventricles*, each of them having a small hollow appendage, which from a slight resemblance it bears to a dog's ear, is named *auricle*. The blood-vessels proceed from these cavities, the arteries from the ventricles, the veins from the auricles; the former serving to carry the blood from the heart to every part of the body, for the purposes of nourishment, secretion of the various juices, and stimulating the system to action, as well as for furnishing the various parts with the vital principle; the latter conveying back the blood, thus deprived of its essential parts, to the heart, that it may be renovated by circulating through the lungs, as we shall now describe more particularly. When the left ventricle is full of blood, it contracts so powerfully as to force its contents into the *aorta* or grand artery, by which the blood is distributed all over the body; it is then taken up by the *veins*, and conveyed by them into the *right*

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\*It has been supposed, that if an opening were made in the side so as to admit the air into the chest, the lungs would collapse: I was induced therefore to make the following experiment.

I made an opening on both sides of a horse, so that I could introduce my finger into the chest. A tube was then put into the openings, so as to give free admission to the air. The horse was kept in this state nearly half an hour without appearing to suffer any inconvenience from it.



*auricle*, whence it flows into the *right ventricle*; this also, when it is sufficiently distended, contracts upon its contents, and propels the blood into the *pulmonary artery*, by which it is conveyed to every part of the lungs. The *pulmonary veins* then receive it, and convey it to the *left auricle*, whence it is propelled into the *left ventricle*, that it may again be distributed by the *aorta*, to every part of the body.

The blood is thus continually circulating through the body; and this process may be considered as one of the most important actions that is performed in the animal machine. If it be stopped for a few seconds, all motion is suspended; and if it be prevented a longer time from going on, vitality is destroyed. The function of the lungs is of equal importance in the animal economy, and cannot be stopped even for a short time, without suspending, or totally destroying animation. Ancient phisiologists had a very imperfect idea of the manner in which these organs so essentially contributed to the support of life: the moderns, however, have been more successful in their researches; they have discovered that the blood derives from the air, which is taken into the lungs, the most important properties, without which it would be a useless vapid mass totally inadequate to the purposes for which it was designed. If we examine the blood in the *left ventricle* of the heart, and in the arteries it will be found of a bright scarlet color, and replete with those properties which render it capable of nourishing the body, and stimulating the whole system to action: in the *veins* it becomes of a much darker color; and when it arrives at the *right ventricle* is nearly black, and destitute of those enlivening qualities which it possessed in the *left ventricle*. Had not the Deity then provided some means for its renovation, it would have been quite unfit for a second circulation, and the duration of life must have been short indeed; but from the *right ventricle* it is conveyed by the pulmonary artery of the lungs, at the moment they are distended with air: here the blood undergoes a wonderful alteration, it resumes its bright scarlet color, and is returned by the pulmonary veins to the *left* side of the heart, with all its original and essential qualities restored to it. It is proper to observe, that there are valves placed in such situations, as effectually prevent the blood from taking a retrograde course. Were it not for this contrivance, the blood would as readily be forced into the *left auricle* as into the great *artery*, when the *left ventricle*, which lies between them, contracts, or shrinks up; and so of the other parts.

Hence we may learn how important are the functions of respiration and the circulation of blood, how essential to the life of animals, and how independent they are on each other.



*Viscera of the Abdomen.*

Having finished our description of the thoracic viscera, we proceed to those of the *abdomen*, or belly; the first and most important of which is the *stomach*. Whatever this organ receives is conveyed to it by a long muscular tube, named *œsophagus*, or gullet. The *œsophagus* originates in the throat, where it's size is considerable, but it suddenly diminishes into a small tube, and is continued of the same size to the stomach: the upper part has been thought to resemble a funnel in its form, and is distinguished by the term *pharynx*.

The *pharynx* is situate immediately behind the *larynx*, or beginning of the windpipe; but is not, like it composed of strong cartilage or gristle: it is formed of membrane with a muscular covering, which by contracting forces the masticated food down the gullet, or *œsophagus*. As it is absolutely necessary to breathing that the *larynx* should be always open, it is therefore composed of strong cartilage, which cannot easily, or by moderate pressure, be squeezed together and shut up: but this structure is not requisite in the *pharynx*, as it only requires to be opened occasionally; and then the muscles of the tongue are able to force food or water into it, while its own muscles continue to force the food or water downward, through the gullet into the stomach. We have before observed, that, while the food or water is passing over the tongue in the *pharynx*, it cannot fall into the windpipe, on account of its being covered by the valve *epiglottis*, which is forced down upon the windpipe by the food, as it passes into the *pharynx*, so as to shut it completely. If at this instant the animal happen to cough, that is, throw out air with considerable force from the lungs, the valve is for a moment opened by it, and a little of the food or water is liable to get into the windpipe, whence it is soon expelled by violent coughing.

The *œsophagus*, having passed along the throat and back part of the chest, penetrates through the diaphragm, and terminates in the stomach.

The *œsophagus* of a horse has on its internal surface, an insensible membrane, which stretches into the stomach, and lines nearly one-half of its surface: this peculiarity enables us to account in some measure for the inactivity of many violent poisons when given to the horse. In the human *œsophagus*, this membrane does not exist, the whole of its internal surface, as well as that of the stomach, being exquisitely sensible.

If two grains of emetic tartar be swallowed by a man, they soon occasion violent vomiting; whereas two hundred times that quantity would produce no sensible effect upon the horse.



At the cardiac orifice, or that part where the *œsophagus* enters the stomach, its internal coat is so loose as to be thrown into folds, appearing as if it were designed as a valve to prevent the regurgitation of the contents of the stomach. From this cause, as well as from the insensibility of the membrane, with which great part of the stomach is lined, a horse very rarely vomits; but the opinion that he is totally incapable of that action, is certainly not true, as I have once seen a horse vomit considerably. This vomiting came on spontaneously and soon ceased. There is no medicine we are acquainted with, capable of producing this action in the horse's stomach; and its occurrence is very rare, this being the only case I ever saw: but I have been informed of two similar cases.

When we examine the throat, another valvular structure may be observed, (which is peculiarly large in the horse) formed by the *epiglottis* or valve of the windpipe, and a membranous substance that hangs from the back part of the roof of the mouth: this is termed *velum pendulum palati*. These bodies form a very complete valve, which opens downward only, thereby preventing the return of any thing through the *mouth*, either from the lungs or stomach: thus we find that a horse breathes only through his *nose*, except in coughing, by which the valve is so deranged as to allow the air, so thrown out from the lungs, to pass through the mouth.

In the case of vomiting, I have just mentioned, the contents of the stomach, were at first observed to pass through the nose; at length, by a violent cough, the valve was deranged, and a considerable quantity of fluid, mixed with masticated hay and oats, was evacuated by the mouth.

That part of the stomach where the *œsophagus* terminates, is called the cardiac orifice; and that where the intestines begin, is termed pylorus,

The intestines or bowels, consist of one very long tube, which terminates at the *anus*.

In the horse the intestines measure nearly thirty yards; but being convoluted in order to adapt them to the cavity in which they are placed, they have the appearance of several distinct parts.

The internal surface of a horse's intestines are not lined with that insensible membrane which is found in the *œsophagus* and upper part of the stomach; on the contrary, it is endued with a high degree of sensibility, and appears to be more susceptible of irritation than that of most other animals. From this irritability of the intestines, it is, that many horses have been destroyed by the administration of strong purgatives, and hence arises the necessity of using these medicines with skill and caution.



The intestinal tube is not, throughout its whole extent, of a uniform size: that part next the stomach is rather small, and continues for about twenty yards nearly of the same diameter: it then becomes very large, but again diminishes before its termination at the anus.

Anatomists, in describing the intestinal canal, divide it into two parts, viz: the small and the large intestines: these are subdivided, the former into *duodenum*, *jejunum*, and *ileum*; the latter into *cæcum*, *colon* and *rectum*.

All the internal surface of the intestinal tube is covered with a mucous substance, for the purpose of defending it from the action of acrimonious bodies. The various convolutions of the intestines are held together by a membrane called *mesentery*, which not only serves this purpose, but affords also a bed for the *lacteals*, or those small vessels by which the nutritious parts of the food are conveyed to the heart, to be converted into blood. Before we proceed to a particular description of these vessels, it will be necessary to explain the process of nutrition.

When food is taken into the mouth, it is broken down by the teeth, and so mixed with saliva, as to be in a proper state for entering the stomach: it is then, by the united action of the tongue and muscles of the throat, forced into the œsophagus, whence it passes into the stomach. In this organ it undergoes a considerable alteration; for here Nature has provided a curious liquid called *gastric juice*, which has the property of dissolving every thing that is taken into the stomach, and of converting it into a soft pulpy mass, of a uniform and homogeneous appearance. When the food has been thus altered, the mass is forced by a contraction of the stomach into the *duodenum*, or first part of the intestinal canal. This mass, however, does not consist wholly of nutritive parts, or such as are fit for the formation of blood; and another operation is necessary, in order to separate them from such as are useless: this seems to be effected by the bile and pancreatic juice.\*

There is a peculiarity, however, in the stomach and intestines of the horse, which it is proper here to describe. The stomach of the horse is small in proportion to his general bulk, and has nearly half of its inner surface covered with a strong insensible membrane of a white color. This is the part to which *botts* are generally attached, which explains why these worms so often exist in the stomach without doing any mischief. This insensible membrane, is supposed also to enable the stomach to press upon the solid food it may contain, and assist the gastric juice

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\* This opinion has been proved by the experiments of Mr. Astley Cooper, lecturer on anatomy and surgery, and assistant surgeon of St. Thoma's hospital.



in reducing it to a soft mass: but digestion is far from being perfect in the stomach of the horse, and appears to be completed in the large intestines, *cæcum* and *colon*. This contrivance seems absolutely necessary in the horse, when we consider the wonderful speed and exertion of which he is capable, and for which nature appears to have designed him. The ox, the sheep, and other ruminant animals, have four large stomachs, the smallest of which, even in the sheep, is as large as that of the horse. These animals take in a large quantity of food at once, and digest it at their leisure, from which they feel no inconvenience: but the horse, even in a state of nature, is differently employed. Rapidity of motion and strength are necessary to his preservation; and in his domesticated state it is more particularly required. Hence, he is formed with a small stomach, which requires frequent supplies, and is no impediment to his exertions. From this will appear the absurdity of keeping a horse a considerable time without food or water, and then suffering him to take in a large quantity: incurable and even fatal diseases have arisen from this management. In the ox and sheep, digestion is completed in the fourth stomach.

The three first stomachs are connected with each other, and with a groove-like continuation of the *œsophagus*. The groove is then continued to, and terminates in the fourth stomach: the thick prominent lips which form the edges of this groove admit of being drawn together so as to form a complete canal.

The two first stomachs are connected with each other, and with a groove-like continuation of the *œsophagus*. This groove terminates in the third stomach: the thick prominent lips which form the margin of this groove, admit of being drawn together, so as to form a complete canal, which then constitutes a direct continuation of the *œsophagus* into the third stomach.—The grass or food after a slight mastication, is taken into the first stomach, or paunch, from whence it passes in small portions into the second stomach, to undergo a further maceration: it is then returned through the *œsophagus* into the mouth to be ruminated. When the ruminated food is swallowed, the groove is shut, so that it passes directly into the third stomach, where it is further prepared for digestion, and then passes into the fourth stomach, in which the process of digestion is completed.

The horse, in a state of nature, is almost constantly feeding; and the food which he takes in, is retained but a short time in the stomach; digestion seems to be going on nearly through the whole of the intestines, and appears to be chiefly effected in the *cæcum*, or blind gut, which in the horse, is remarkably large and capacious. From these curious contrivances, the horse's stomach is never so loaded with food as to hinder the action of



the lungs, and impede his velocity. It must be confessed, however that this does sometimes happen; not from the natural inclination of the animal, but from the folly, negligence, or cruelty, of his keeper. I have been the more particular in describing the stomach, as the subject is connected with, and will tend to elucidate, some important diseases.

The bile is formed by the liver, a large glandular body, divided into several lobes, and situate immediately behind the diaphragm, to which it is firmly attached. The form of the liver is too well known to require a particular description; we have only to observe, therefore, that the bile, which it secretes, is conveyed by the hepatic duct into the duodenum, within three or four inches of its origin. In man, and the greater part of quadrupeds, all the bile does not flow immediately into the intestine, there being a small vessel connected with the hepatic duct, which conveys a certain portion into a sac that is attached to the liver, and called the *gall-bladder*, whence it is occasionally expelled: but this does not exist in the horse.

From what we have just said of the peculiarity in the digestive organs of the horse, the reason of his having no gall-bladder will readily appear. In man, and many animals, the food is retained a considerable time in the stomach; during which the billious fluid, or gall is not wanted; therefore nature has provided a reservoir, the gall-bladder; for as the bile is constantly forming by the liver, so would it be as constantly flowing into the first intestine, were it not for the gall-bladder, which would have occasioned a great waste of this useful fluid. During the time of digestion, the food is shut up in the stomach, the *pylorus* being closed, and the first intestine empty. The orifice of the duct which conveys the bile into the intestine being without its usual stimulus, the digested food becomes torpid; and as the action of the whole duct depends upon its orifice being stimulated, the bile, instead of passing through it, flows into the gall-bladder, where it remains until the digestive process is so far completed, that the food begins to flow from the stomach into the intestine. The biliary duct is then stimulated to action; the gall bladder partakes of the irritation; and then assisted by the pressure of the distended intestine, contracts upon its contents, and forces the bile through the duct, into the intestine, where it mingles with the digested food, and causes a separation of the chyle, or nutritious parts.

It must be obvious, that, as the horse is almost constantly feeding, and as digestion is continually going on in his stomach and intestines, that a constant flow of bile is necessary, and therefore that a gall-bladder would be useless, perhaps injurious.

The *pancreas* is also a glandular body, and secretes a fluid



somewhat resembling saliva which is conveyed by the pancreatic duct into the duodenum, at the same place where the hepatic duct enters. When these fluids (the bile and pancreatic juice) are poured into the intestine, they mingle with the mass of digested food which has been expelled from the stomach, and separate from it all those essential parts which are fit to be converted into blood: this process is termed chyli<sup>fi</sup>cation. We have before observed, when describing the mesentery, or that membrane by which the intestines are held together, that an immense number of small delicate vessels are spread over its surface, named *lacteals*, from their containing a fluid which in its appearance resembles milk. This fluid consists in fact of the essential parts of the food proceeding to the heart, in order to be converted into blood. All the lacteals open into the intestines, and cover the whole of their internal surface, where they are always disposed to absorb the nutritious parts of the food in its passage through the intestinal canal. Some physiologists suppose, that the mouths of the lacteals have the power of *selecting* such parts of the food as are fit to be converted into blood, that no previous separation takes place, and that the bile serves only as a natural purgative, constantly stimulating the intestines, thereby keeping up a small degree of motion in them, and promoting the expulsion of the feculent parts of the food.

It will probably be asked, how it is that the mass of food passes through the intestines, since they are so convoluted that it cannot possibly be effected by the power of gravity? but if we examine their structure, this phenomenon may be readily explained. The intestines are composed, in great measure, of muscular fibres; some of which run in a *circular*, and others in a *longitudinal* direction: when the *circular* fibres contract, the *diameter* of the canal is diminished; and when the *longitudinal* fibres are in action, it becomes *shorter*; and by the combined action of these fibres, the food is gradually propelled through the whole length of the intestinal canal. The motion thus excited may be distinctly seen in an animal recently killed and in some it continues a considerable time after death. The intestine, however, is not entirely composed of muscular fibres; its internal surface is lined with a fine nervous and vascular membrane, which is endued with exquisite sensibility, and has the power of forming on its surface a mucous substance, which serves to protect it from the action of acrimonious bodies. Beside the muscular and nervous coat, there is another which enters into the composition of the intestine: this is a thin membrane called *peritonæum*. The peritonæum not only forms the third and external coat, it likewise envelops all the organs contained in the abdo-



men, forming their external coat, and is closely connected with them, and is then so reflected as to form a kind of sac, in which they are all enclosed.—Thus are the intestines composed of three coats, which are closely in contact with each other; the peritonæal, the muscular, and the nervous coat.

We have yet to describe the course of the *lacteals*, or those vessels which take up the chyle or nutritious parts of the food. We have before observed that they are spread upon the mesentery, whence they pass on toward the spine, becoming larger and less numerous in their progress; at length they terminate in a large tube, which runs along the spine, and is named the *thoracic duct*: this pours its contents into a large vein near the heart, to which part it is immediately after conveyed, and converted into blood.

The *kidneys* are two glandular bodies, situate within the loins; their office is to separate urine from the blood. The urine, thus separated, is conveyed by two tubes of considerable length, termed *ureters*, into the *bladder*, which is composed of three coats, like those of the intestine; and when it has received a sufficient quantity of urine to stimulate its muscular fibres into action, it contracts upon the urine, and forces it out through the urethra, or urinary canal. We have now finished our sketch of the abdominal and thoracic viscera; which has been given with a view to render the description we are about to give of internal diseases more intelligible to those readers who are unacquainted with anatomy, than it would otherwise have been.

## CHAPTER II.

### *Inflammation.*

It was supposed by the celebrated Boerhaave, and other physiologists of his time, that inflammation depended on a visciditv of the blood, which rendered it unfit for circulating in the finer vessels; and that hence arose obstructions, and those appearances by which the disease is characterised. This opinion, however, has obtained very little credit with modern physiologists, and is now universally rejected; it having been proved, that blood drawn from an animal laboring under inflammation is *more fluid*, and *remains fluid longer*, than that which is taken from the same animal when in health.

The most prevailing opinion at present respecting inflammation is, I believe, that it consists in an increased action of the heart and arteries, when *general*; whereby the blood circulates with unusual velocity, throwing the whole system into derangement; and when *local*, or existing in a particular part,\* the in-

\* In local inflammation, though the larger arteries of the part have their



creased action is in like manner confined to the vessels of that part.

When a part is inflamed, there arises in it an unusual degree of heat, generally attended with considerable tension and swelling; the sensibility and irritability are always increased, and produced by it in parts where it did not before exist. In bones and tendons, for example, scarcely any *sensibility* can be perceived when they are in a state of health; but when *inflamed*, it is roused to an alarming degree, and the most dangerous consequences may ensue from it.

Inflammation has four modes of termination: the first is termed *resolution*; that is, when the disease, after going a certain length, gradually disappears again: the second, *suppuration*; that is, when matter is formed, or an abscess produced: the third is named *effusion*, which implies an extravasation either of blood, coagulable lymph, or serum: and the fourth, *gangrene* or mortification, by which is meant the death of the inflamed part.

Inflammation of the external parts is generally occasioned by some mechanical injury, such as wounds, bruises, &c. sometimes, however, it arises from internal inflammation, or symptomatic fever, and is then to be considered as an effort of nature to cure the internal disease. Thus we sometimes find in fevers abscesses taking place on the surface of the body, whereby the fever is considerably diminished, and, in general, terminates favorably.

Inflammation is often produced by plethora, or redundancy of blood in the body; in which case it is sometimes *general*, the whole arterial system having its action increased: this also may be considered as an effort of nature to get rid of the superfluous blood, and in such cases she must be assisted by copious bleeding. It more commonly happens, however, that the re-

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action increased, it is probable that their small branches, which from their minute size are termed capillary arteries, are in a state of debility, and distended with blood, which they are incapable of getting rid of; the larger arteries, acting with unusual strength and quickness, will of course force a greater quantity of blood than usual into these delicate vessels, so as to stretch them beyond their tone, and render them incapable of contraiting upon their contents. This accounts for swelling, heat, and redness of an inflamed part, and shows the utility of bleeding by leeches on such occasions; as these worms attack only the capillary arteries, drawing off the superfluous blood, and enabling them to recover their strength, and contract as before. This doctrine points out also the efficacy of general bleeding, and purging, in local inflammation, which tend to moderate the action of the larger arteries, and cause them to pour no more blood into their minute branches than they are capable of forcing into their terminations—the veins. We thought it proper to say thus much of the theory of inflammation, as it may lead to a better practice than is commonly adopted in treating the inflammatory complaints of horses.



dundant blood is determined to some particular part, occasioning *local* inflammation; very frequently falling upon some of the internal organs, and the lungs are peculiarly liable to suffer: from this source, indeed, their most dangerous fevers arise. The eyes also are very apt to suffer when a horse becomes plethoric, to which cause, I believe, almost all the diseases of that delicate organ may be attributed.

In the treatment of external inflammation, we should endeavor to bring it to the most favorable termination, that is *resolution*; unless when it arises from an effort of nature to cure some *internal* disease;—it is then desirable to bring it speedily to suppuration.—The remedies to be employed for resolving inflammation are, local or general bleeding, (see Index, *Bleeding*) purgatives, fomentations, poultices, or the saturnine lotion; other cold applications have been used with success, such as sal ammoniac dissolved in vinegar, goulard, &c.

When inflammation takes place in tendinous parts or joints, the saturnine poultice has been found an useful remedy, and in the latter case I have often found blisters extremely efficacious. As in these cases the inflammation generally proves more troublesome, and as the pain which it occasions is often so considerable as to produce symptomatic fever, it becomes necessary to employ, without loss of time, the most prompt and efficacious means for its reduction.\* With this view we excite *artificial* inflammation in the contiguous skin and cellular membrane, which are parts of far less importance in the animal economy than joints of tendons, and capable of bearing a considerable degree of inflammation without much inconvenience to the animal; this is done by means of rowels, and blisters, and the inflammation thus excited, will tend in a considerable degree to diminish that which is going on in the more important part. Should we fail in our endeavors to *resolve* inflammation, it will probably terminate in *suppuration*; and when it appears that the disease does not abate by the use of the remedies we have recommended, an assiduous application of fomentations and poultices will expedite the suppurative process, and afford great relief to the animal.—When the inflammation or rather the swelling which it occasions, arrives at this state, it is termed an *abscess*, in which when the suppuration is complete, and it contains *matter*, a fluctuation may be felt, upon its being pressed by two fingers alternately. This point being ascertained, an opening is to be made with a lancet or knife, in such a way that the matter may be completely evacuated, and a future accumulation prevented: it is then to be dressed with digestive

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\* See *Wounds of Joints*, Appendix.



liniment or ointment. Should the wound appear indisposed to heal when this treatment has been pursued for a short time, discharging a thin offensive matter, and wanting that red appearance by which the healing process is indicated, the detergent lotion will soon remove these unfavorable appearances; the *discharge* will become whiter and thicker, and red granulations of new flesh will sprout up. Should these granulations, however, become luxuriant, constituting what is commonly termed *proud flesh*, they are to be kept down by means of the caustic powder. It sometimes happens, that when a part is inflamed and swollen, instead of going on to suppuration, it degenerates into a hard and almost insensible tumour: this depends on the inflammation having terminated in *effusion* of coagulable lymph, and is to be removed by stimulating embrocations or blisters.

When inflammation runs very high, as is sometimes the case in violent bruises, or deep and extensive wounds of the lacerated kind, it may terminate in *gangrene* or mortification, which is generally attended with danger: in this case, the matter discharged, instead of being white and thick, consists of a dark colored fluid, of a peculiar offensive smell; the constitution is generally affected, the pulse becoming quick, weak, and sometimes irregular; the appetite goes off; and there is a great degree of debility.\*

When any of the *internal parts* are inflamed, a *fever* is generally produced, the violence of which will depend upon the importance of the inflamed organ, as well as upon the extent and degree of the inflammation; some of the internal parts being more essential to life than others, and, when inflamed, occasioning of course greater derangement in the system. The only *favorable* termination, to which internal inflammation can be brought, is resolution; and the most vigorous measures should be adopted in order to effect it. The most important remedy in these cases is copious bleeding, and the earlier it is employed the more effectual will it prove; the next remedy is *external inflammation*, artificially excited by means of rowels and blisters. The fever powder, and occasional clysters, are of considerable service.

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### CHAPTER III.

#### *Fever.*

THE fevers of horses bear very little analogy to those of the

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\* See *Lacerated and Contused Wounds*, Appendix.



human body, and require a different treatment. Writers on farriery have described a great variety of fevers, but their observations appear to have been drawn from the works of medical authors, and their reasoning seems entirely analogical. I can distinguish only two kinds of fever, the one, an idiopathic or original disease, and therefore properly termed *simple*; the other dependent on internal inflammation, and very justly denominated *symptomatic* fever. For example, if the lungs, bowels or stomach were inflamed, the whole system would be thrown into disorder, and a symptomatic fever produced; but if a collapse of the perspiring vessels happen to take place, the blood will accumulate in the interior parts of the body; and though inflammation is not produced by it, the unequal distribution of the blood alone will occasion that derangement in the system which constitutes the simple fever.\* The simple fever does not occur so frequently as the symptomatic, nor is it by any means so formidable in its appearance; yet it is necessary to give it the earliest attention, for unless nature receives timely assistance, she will be sometimes unable to get rid of the load which oppresses her; and the blood will accumulate in the interior part of the body, until inflammation in some of the visera is produced and a dangerous disease established. The following are symptoms of simple fever:—shivering, succeeded by loss of appetite, dejected appearance, quick pulse, hot mouth, and some degree of debility; the horse is generally costive, and voids his urine with difficulty. The disease is often accompanied with quickness of breathing, and in a few cases with pain in the bowels, or symptoms of cholic.

As soon as a horse is attacked by this disease, let him be bled freely; and if costiveness be one of the symptoms, give a pint of castor oil, or the oil of olives; and let a clyster of warm water-gruel be injected.† After the operation of the laxative, the fever powder is to be given once in twelve hours, and continued until its diuretic effect becomes considerable. Warm water and mashes are to be frequently offered in small quanti-

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\* Fever is often preceded, or rather commences with shivering, from which circumstance it seems reasonable to infer, that an interruption of the functions of the skin is either a cause of fever, or materially connected with it.

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† I have lately found the following drink a very useful laxative on these occasions:—

Take of Barbadoes aloes powdered, - - - - -	3 drams.
Prepared kali, - - - - -	1 dram and $\frac{1}{2}$
Castor oil, - - - - -	4 oz. to 6 oz.
Simple mint water and pure water, of each, - - - - -	4 oz.

MIX FOR ONE DOSE.



ties; warm clothing, frequent hand-rubbing, and a liberal allowance of litter are also necessary; and when the fever runs high, it is advisable to insert rowels about the chest and belly, in order to prevent internal inflammation from taking place. When the disease appears to be going off, the horse looking more lively, and the appetite returning, let him be led out for a short time in some warm situation, and give now and then a malt mash for the purpose of recovering his strength.

### FEVER-POWDER.

#### No. 1.

Powdered nitre, - - - - - 1 oz.  
Camphor and tartised antimony, of each - - - - - 2 dr.

MIX FOR ONE DOSE.

#### No. 2.

Powdered nitre, - - - - - 1 oz.  
Unwashed calx of antimony, - - - - - 2 dr.

MIX FOR ONE DOSE.

#### No. 3.

Antimonial powder, - - - - - 3 dr.  
Camphor, - - - - - 1 dr.

MIX FOR ONE DOSE.

The additions made by the author to this subject may be found in the Appendix.

### *Symptomatic Fever.*

The symptomatic fever is generally occasioned by high feeding, close stables, and a want of proper exercise: sometimes, however, a sudden transition from a cold to a hot temperature is evidently the cause of it. In this respect it is different from the simple fever, which, as before observed, sometimes arises from exposing a horse suddenly to cold air, when he has been accustomed to a warm stable. Horses that are taken from camp or grass, and put suddenly into warm stables, are extremely liable to those internal inflammations on which symptomatic fever depends, and many thousands have fallen victims to this kind of treatment.

When a fever is symptomatic, it is not perceived by shivering, nor is it so sudden in its attack as the simple fever:\* but when it is not subdued by an early application of remedies, the

\* Fever that commences with shivering, has often terminated in a fatal inflammation on the lungs, when neglected or improperly treated.



symptoms gradually increase in violence, until they present a very formidable appearance. When the disease however, is occasioned by great and long continued exertion, it generally comes on suddenly; and the complaint has a very dangerous appearance in its earliest stage.

The symptomatic fever has many symptoms in common with the simple fever, which are loss of appetite, quick pulse, dejected appearance, hot mouth, and debility; and if to these be joined difficulty of breathing, and quick working of the flanks, with coldness of the legs and ears, we may conclude that an inflammation of the lungs is the cause of the fever. If the horse hang down his head in the manger, or lean back upon his collar with a strong appearance of being drowsy, the eyes appearing watery and inflamed, it is probable that the fever depends upon an accumulation of blood in the vessels of the brain, and that the staggers are approaching: in this case, however, the pulse is not always quickened; sometimes, indeed, I have found it unusually slow.\*

When the symptoms of fever are joined with a yellowness of the eyes and mouth, an inflammation of the liver is indicated. Should an inflammation of the bowels be the cause; the horse is violently griped.—An inflammation of the kidneys will also produce fever, and is distinguished by a suppression of urine and an inability to bear pressure upon the loins.—When inflammation of the bladder is the cause, the horse is frequently staling, voiding only very small quantities of urine, and that with considerable pain. Extensive wounds, and particularly those of joints, will also produce symptomatic fever. Sometimes several of the internal parts are inflamed at the same instant; and indeed when inflammation has existed for a considerable length of time, it is seldom confined to the organ in which it originated; the disease spreads to other visera; and when more than one organ is inflamed the symptom will generally be complicated: still, however the essential remedies are the same, that is to say, copious and early bleeding, with rowels, &c.

Having now given a general description of symptomatic fever, I shall proceed to treat of those cases separately to which above I have briefly alluded.

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\* Nearly the same symptoms are produced, when the stomach is oppressed or loaded, and incapable of digesting its contents. See *Staggers and Diseases of the Stomach*, Appendix.



*On Inflammation of the Lungs*

THIS is a disease, which requires the most prompt and efficacious treatment; for, so rapid is its progress in the horse, that, unless checked at an early period, it generally proves fatal. Inflammation of the lungs is sometimes preceded by shivering; soon after, the horse appears dull, and refuses his food. He breathes quickly, which is seen by the motion of the flanks. The pulse is unusually quick, beating from sixty to eighty in a minute; whereas, in health, it is only about forty. On lifting up the eyelid, the membrane underneath will generally be found very red. If proper remedies be not employed, the disease rapidly increases; the breathing becomes quicker and more laborious, the pulse increases in frequency, and is more difficult to be felt in the arteries; but, by applying the hand to the left side, near the elbow, the pulsation of the heart will be distinctly felt; the legs and ears become cold; and in two or three days, the animal dies. The treatment commonly pursued by farriers often protracts the disorder, so that the horse lives several days, or a week. They generally take off a moderate quantity of blood, which affords some relief, and give some stimulating or inert medicine, in the form of what they term a comfortable drink. The bleeding is often repeated, in small quantity, the second day, and sometimes the third: this prevents the disease from proceeding so rapidly as it otherwise would; and, when the horse dies, we generally find a large quantity of yellowish fluid in the chest.

The only remedy to be depended upon in this disease is copious bleeding which must be repeated in six hours, if the symptoms do not abate. Blistering the sides, rowelling the chest, and giving the following ball, may be useful auxiliaries; but bleeding is the essential remedy. As to the quantity of blood necessary to be drawn, we are to be guided by the effect it produces; that is, the bleeding, should it be found necessary, is to be governed by the same rule; but it is probable, that faintness will then be produced by a smaller evacuation.

After blistering the sides, give the following ball, which is to be repeated every morning and evening, until the horse's staling is considerably increased.—One ball daily will then be sufficient. Clysters are to be injected morning and evening, consisting of one gallon of warm water, half a pound of salt, and four ounces of olive oil. A cool stable, properly ventilated, is essentially necessary. In summer, horses have been turned out apparently with good effect. When the horse begins to



feed, grass or bran mashes will be most proper for him. He must be brought to his usual diet very gradually.

There is a disease, which is generally considered as inflammation of the lungs, and prevails most commonly in the spring of the year, particularly among young horses. It differs, however, in some respects, from that disease; and, if improperly treated, often terminates fatally. On opening the bodies of such horses, the lungs will be found to have suffered much from inflammation, and there will be a large quantity of yellow fluid in the chest. It may be inferred from these appearances, that the same copious bleeding we have just described, would be necessary in these cases also. Experience, however, has taught me, that, though bleeding is highly necessary at the commencement of the disorder; yet when it is repeated with freedom, after considerable debility has taken place, and this very soon happens, death is commonly the consequence.

I would distinguish this disease by the name of catarrhal inflammation of the lungs; for, though these organs are always found highly diseased in horses, that die of this disorder, it is probable, that the parts principally affected, are the membrane line, the windpipe and throat: this is often relieved by a copious discharge of mucus, resembling matter, which is discharged through the nostrils; but by improper treatment, and, in some cases, under the best management, the inflammation gradually spreads to the lungs and proves fatal.

This catarrhal inflammation of the lungs, differs from that we have before described, in being accompanied with a weak cough, and a tendency to discharge from the nose. The pulse, at the commencement of the disease, is not very quick; sometimes not more frequent than in health; but it is generally weak, and not readily felt. The eyes often appear dull; and in some cases the throat is sore, so as to cause difficulty in swallowing. Bleeding is generally proper at the commencement of this disorder; but if, after the operation, the pulse is found to be quicker and more feeble; and particularly if, when the horse is taken out of the stable, he appears very weak, which is easily perceived by his manner of walking, appearing to ramble in his hind parts, and moving his legs slowly and languidly: under such circumstances, it is probable, that the bleeding was improper, and that, by repeating it, the disease would terminate fatally.

That epidemic disease, which has at times raged among horses, and is commonly called the distemper, very nearly resembles that which we are now describing, and was generally cured by the treatment I am about to recommend for this disorder. The only criterion by which we determine whether bleeding is necessary or not, and to what extent it may be carried



with safety, is the state of pulse, and the appearance of the horse when taken from the stable: when considerable debility is indicated by his manner of walking, a corresponding weakness will generally be found in the pulse: under these circumstances, bleeding would certainly do mischief. But, when the horse is tolerably firm in his walk; the pulse quick, and though small, yet hard, that is, when the finger placed on the artery is struck rather sharply; and the under surface of the eyelid appears red; copious bleeding is undoubtedly proper. When the disease does not abate in consequence of bleeding, the propriety of repeating the operation must be determined by the state of the pulse and the animal's strength. The ball, that is recommended in the former complaint, may be given in this also, twice a day, so as to keep up considerable staling; but if the horse appears weak, and pulse is not very frequent, two drams of powdered cascarilla should be added to each ball. If there should be any difficulty of swallowing, the throat should be blistered; the sides also should be extensively blistered; a discharge from the nose should be encouraged, by steaming the head, that is by putting the bran mashes into the manger. In summer, grass may be given; and in fine weather he may be turned out during the day, particularly when he appears to be recovering. When there is considerable weakness, good gruel should be given several times a day. Under this treatment the horse generally recovers.

#### THE BALL.

Powdered nitre,	- - - - -	6 dr.
Camphor,	- - - - -	1 dr.
Sirup and linseed meal enough to form a ball.		

#### CHAPTER V.

### *Inflammation of the Bowels.*

THE horse's bowels are very susceptible of inflammation; and, when inflamed, unless speedy relief be afforded, the disease generally terminates in death. Inflammation of the bowels may arise from various causes. The following, I believe, are those by which it is generally produced: 1. Drinking freely of cold water, when heated by violent exercise, particularly when such exercise has been continued some time: 2. Exposure to cold or rain, under the same circumstances: 3. Spasm of the bowels, or flatulent cholic: 4. Improper doses of purgative medicine.



To the two first causes post and stage-coach horses are most exposed: they are not only likely to suffer from standing at the door of a public house, in cold stormy weather; for, if they escape from this, they are plunged immediately after their return, into the nearest river or pond. Many horses, it is true, suffer this without injury; but that it sometimes causes inflammation of the bowels, and other diseases, cannot I believe, be disputed. When inflammation of the bowels is thus produced, it is often preceded by shivering; the horse then becomes dull, and refuses his food; the pulse is considerably more frequent than in health; the breathing also is disturbed, the flanks moving more quickly than usual; the under surface of the eyelid is red; and the animal appears very uneasy, often looking round to his flanks, as if he were pointing out the seat of his pain; the urine is high colored, and in small quantity; the dung also is of a dark color, and unusually hard. These symptoms rapidly increase; he lies down, and rolls about the stall; after a short time, he rises suddenly, but soon lies down again, and rolls as before; the breathing becomes more laborious; the pulse quick and small, that it cannot be distinctly felt; violent sweats break out upon the body; but the legs and ears are cold; and sometimes he becomes delirious. These symptoms are soon followed by death. In some cases, the animal appears to be relieved, and is more quiet, a short time before he dies, which probably depends on mortification having taken place in the bowels. This disease is very rapid in its progress, and, unless checked at its first appearance, or soon after, generally proves fatal. Copious bleeding is the grand remedy, and should be carried to the same extent, as in inflammation of the lungs. The sides should be blistered, and the mustard embrocation rubbed upon the surface of the belly. The legs and ears should be kept warm, by rubbing them frequently, and, in the interval, wrapping them in woolen cloth.

The only medicine to be given, internally, is castor oil, the dose a pint, which is to be repeated in six hours, unless the costiveness is previously removed: clysters, composed of warm water and a little olive oil, are to be given, every second or third hour, until the dung becomes soft. Inflammation of the bowels is sometimes a consequence of flatulent cholic, or gripes. The spasm of the bowels, by which this complaint is caused, is sometimes so obstinate, as to resist the most powerful remedies. The confined air, at length, so stretches the bowels, as to bring on inflammation, which soon destroys the animal. Persons unacquainted with veterinary medicine are seldom capable of distinguishing between the flatulent cholic and inflammation of the bowels: it is of importance, however, that those, who are con-



cerned with horses, and who are so situate, that they cannot procure immediate assistance from a veterinary practitioner, should make themselves familiar with the symptoms, by which these diseases may be distinguished; because they require very different treatment. In the flatulent cholic, the pulse is the same as in health; in inflammation of the bowels, the pulse is always very quick: the latter disease is generally gradual in its attack; the former comes on rather suddenly. The pain, in flatulent cholic, appears to be violent, the horse rolls about the stall, groans, and looks round to his flanks; in this respect, it resembles inflammation of the bowels; but the natural state of the pulse is a criterion by which it may always be distinguished. The flatulent cholic is in general easily cured by any warm, stimulating medicine; such as gin, peppermint water, Daffy's elixir, which is nothing more than proof spirit, in which senna, carraway seeds, and other aromatics, have been steeped. Warm beer, with powdered ginger, is also a very common remedy; but I have found the following mixture most efficacious.

#### MIXTURE FOR THE FLATULENT CHOLIC.

Oil of turpentine	- - - - -	3 oz.
Spirit of nutritious ether	- - - - -	2 oz.
Water	- - - - -	$\frac{1}{2}$ pint.

#### MIX FOR ONE DOSE.

As soon as this has been given, it should be washed down with a hornfull of water. Clysters of warm water and salt should be given, and the belly should be well wiped. If no relief be obtained in half or three quarters of an hour, let the above mixture be repeated. If the horse be in good condition, and particularly if the under surface of the eyelid appear red, and the pulse become a little quicker than natural, he should be copiously bled. It sometimes happens, that this disease causes inflammation of the bowels, even under the most proper treatment; but more commonly from improper management or neglect. It is easy to ascertain when inflammation is coming on, by the altered state of the pulse, which becomes considerably quicker and smaller: when the pulse rises to a hundred in a minute, and is not readily distinguished, there is but little chance of recovery: when it amounts to 120, or even to 110, death, I believe, is inevitable.

And here I beg leave to suggest the propriety of providing every waggoner with a bottle of gripe mixture, a drenching horn, and fleams. Waggon horses are often attacked with this complaint in a situation, where no remedies can be procured; and I have reason to believe, that many horses have died of it, through the want of a timely remedy.



Inflammation of the bowels is sometimes caused by giving too strong a dose of purgative medicine, or by improper management during its operation. When a purgative operates with unexpected violence, and it is thought necessary to put a stop to it, the only safe plan that can be adopted is to give frequently some mucilaginous fluid: the best of which, according to my experience, is the preparation called arrow root, which seems to be a pure starch. Eight ounces of the powder may be mixed with a little cold water: this is to be added to a gallon of boiling water; the whole to be well stirred; and, after boiling a minute or two, removed from the fire. About a quart of the mixture is to be given every hour, until the purging appears to be checked. I have seldom known it fail of stopping excessive purging; whereas, in many instances, where astringents or opiates have been given, though the purging has been stopped, inflammation of the bowels has been the consequence.

When a horse is suffered to take cold water after physic or is exposed to cold, instead of operating in the usual time, it often causes sickness and gripes, which, if not relieved, may terminate in inflammation of the bowels. On this occasion, clysters should be injected, and warm water given frequently: if he refuse to drink, it should be given with a horn. This, with walking exercise, soon brings on purging, by which the horse is relieved.

#### A TABLE,

#### *Showing the difference between Flatulent Chollic, or Gripes, and Inflammation of the Bowels.\**

<i>Symptoms of Inflammation of the Bowels.</i>	<i>Symptoms of Flatulent Chollic.</i>
1. Pulse very quick and small.	1. Pulse natural, though sometimes a little quickened.
2. Lies down and suddenly rises again, <i>seldom</i> rolling upon his back.	2. Lies down and rolls upon his back.
3. Legs & ears generally cold.	3. Legs & ears generally warm.
4. In general, attacks gradually, is commonly preceded, and always accompanied by symptoms of fever.	4. Attacks suddenly, is never preceded, and seldom accompanied by any symptoms of fever.
5. No intermissions can be observed.	5. There are frequently short intermissions.

\* The additions to this subject will be found in the Appendix, under the head *Diseases of the Bowels*, which includes both the inflammatory and flatulent chollic, and some other disorders.



## *Inflammation of the Stomach.*

The stomach, like the intestines, may be inflamed either on its *external* or *internal* surface. When the external coat is the seat of the disease, the symptoms are nearly the same as those by which peritonæal inflammation of the intestines is indicated, and the same treatment is required; the only difference observable in the symptoms is, that in this case the pain seems to be more acute and distressing than in the other: the same difference may be observed between the large and small intestines, the latter being possessed of more sensibility than the former.

When inflammation attacks the peritonæal coat of the stomach, it very soon diffuses itself to the small intestines and neighboring visera; or if the small intestines be its original seat, it frequently spreads to the stomach, and sometimes to the large intestines also. In examining horses, therefore, that have died of these diseases, we seldom find the inflammation confined to one particular organ; it more commonly happens, indeed, that the whole of the abdominal viscera will exhibit morbid appearances, but in different degrees; those most contiguous to the part first diseased having suffered considerably, while such as are more remote from it are perhaps scarcely altered; for we can generally distinguish the original seat of the inflammation.

An inflammation of the internal or *villous* coat of the stomach is not a very common disease, and is generally occasioned either by poisons or strong medicines that have been swallowed, or by that species of worms termed *bots*. When poisons, or strong medicines incautiously given, are the cause, it will of course come on suddenly; the pulse will be extremely quick, and so weak that it can scarcely be felt; the extremities will become cold, and there will be a peculiar dejected appearance in the animal's countenance; respiration will be disturbed; sometimes there will be a cough, and always a high degree of debility. The treatment of this disease consists in giving oily or mucilaginous liquids freely, such as decoction or linseed, gum arabic dissolved in water, &c. and at the same time medicines that are capable of decomposing or destroying the poison; for which purpose I believe the sulphurated kali is useful in doses of half an ounce, provided the poison be either mercurial or arsenical. Clysters are to be injected; and if the disease be accompanied with purging, they should be composed of strong linseed decoction or water-gruel. I saw five cases of inflamed stomach at one time, all occasioned by poison. The above treatment was pursued, and four out of the five perfectly recovered.



That inflammation which bots produce in the stomach is indicated by symptoms somewhat different from those just described: indeed, it may more properly be considered as ulceration of the stomach than inflammation, since, upon examining horses that have died of this complaint, I have always found ulcers of considerable size. This disease generally comes on gradually: the horse becomes hide-bound, has a rough unhealthy coat, gradually loses flesh and strength, though he continues to feed well, and has a frequent and troublesome cough. The disease perhaps will continue in this state for some time, and no serious consequences are apprehended; its cause and seat are seldom suspected; medicines are given to remove the cough, with common alteratives for the purpose of improving his condition.

In some instances these insects are spontaneously detached, and expelled through the intestines: in such cases, if the stomach have not been much hurt by them, it will gradually recover, and the horse be restored to his original strength and condition. When this does not occur, these worms produce so much mischief in the stomach, as to throw the whole system into disorder. The lungs are particularly liable to sympathise with the stomach in this case, and frequently become inflamed in consequence. The inflammation thus produced in the lungs is extremely obstinate; and though it may be checked in some degree by bleeding, and the other remedies we have recommended for that disease, yet as the cause cannot often be removed, it generally, I believe, terminates fatally. This symptomatic inflammation of the lungs may be distinguished from the idiopathic or original, by the following criterion:—It is generally preceded by an unhealthy appearance in the coat, and a troublesome cough; the animal seldom bears bleeding well, the loss of any considerable quantity causing a rapid diminution of strength—whereas, in the idiopathic inflation of the lungs, the strength of the pulse, as well as the whole system, is often increased by bleeding. (See *Worms, Bots, and Diseases of the Stomach.*)

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### *Inflammation of the Kidneys.*

This disease does not occur very frequently, and is generally occasioned, I believe, by an immoderate use of strong diuretic medicines. At the first attack of this complaint the horse constantly stands as if he wanted to stale, sometimes voiding a small quantity of high coloured and bloody urine. When the



inflammation becomes more considerable, a suppression of urine and fever generally take place: if the loins be pressed upon, the animal shrinks from the touch, and appears to feel great pain. In the first place bleed freely, then give a pint or twenty ounces of castor oil, throw up clysters of warm water, and cover the loins with sheep-skins, having previously rubbed upon them the mustard embrocation. Should these remedies fail of procuring relief, repeat the bleeding; and should not the oil have operated sufficiently, let another dose be given. All diuretic medicines are to be carefully avoided. (See *Bloody Urine, Suppression of Urine*, Appendix.)

### *Inflammation of the Bladder.*

When the bladder is much inflamed, its irritability is so increased, that it becomes incapable of containing any urine, contracting upon every drop almost that passes into it from the kidneys. In this complaint, then, the horse is attempting almost constantly to stale, but voids only a few drops of urine, and that with considerable pain: it is generally attended with quick pulse, and other symptoms of fever. Nothing is more beneficial in this disease than causing the horse to drink largely of linseed decoction, or any other mucilaginous liquid, and throwing up frequently clysters of the same: bleeding and a dose of castor oil, are likewise highly necessary. After the operation of the oil, let the following ball be given every sixth hour. Should no relief be obtained by these means, the horse continuing to void his urine frequently, in small quantities, and with pain, give one dram of opium twice a day, and omit the ball. Costiveness tends very much to aggravate this complaint; and whenever it occurs, let a clyster be injected, and a dose of oil given.

#### THE BALL.

Powdered nitre	- - - - -	$\frac{1}{2}$ oz.
Camphor	- - - - -	1 dr.
Liquorice powder	- - - - -	3 dr.

Honey sufficient to form a ball for one dose.

(See *Diabetes, Bloody Urine, Stoppage of Urine, Stone*.)

### *Inflammation of the Liver.*

This disease is indicated by a yellowness of the eyes and mouth, red or dark-colored urine, great weakness and fever,



generally accompanied with diarrhoea or purging, and sometimes with costiveness; the horse has a very languid appearance, and is almost constantly lying down. Sometimes the progress of this complaint is very rapid, speedily terminating in death: at others it proceeds more slowly, the animal lingering for a considerable time. In this case it not unfrequently terminates in dropsey, or inflammation of the bowels. A case I recently met with terminated in this way. It is often complicated with other internal diseases, causing some variety in the symptoms.

Bleeding can be employed with safety only at the commencement of this disease: afterward it generally does harm, by inducing a dangerous degree of debility. The sides should be blistered; and if there be no purging, the ball No 1, given, once in twelve hours, until it occasion moderate purging; but if the bowels be already in a lax state, the ball No. 2 or 3, will be better adapted to the complaint, and is to be given in the same way.

### THE BALL.

#### No. 1.

Calomel,	- - - - -	$\frac{1}{2}$ dr.
Barbadoes aloes,	- - - - -	1 dr.
Castile soap,	- - - - -	2 dr.
Rhubarb,	- - - - -	$\frac{1}{2}$ oz.

Sirup enough to form a ball for one dose.

#### No. 2.

Opium,	- - - - -	$\frac{1}{2}$ dr. to 1 dr.
Calomel,	- - - - -	1 dr.
Castile soap,	- - - - -	2 dr.

Sirup enough to form a ball for one dose.

#### No. 3.

Opium and calomel, of each	- - - - -	1 dr.
Emetic tartar,	- - - - -	2
Liquorice powder,	- - - - -	3

Sirup enough to form a ball for one dose.

It is necessary to promote the horse's strength, by a diet that is nutritious and easy of digestion, such as malt, arrow-root, carrots, &c. indulging him in any kind of green food which he shows a particular inclination for; taking care however, not to give him too much at once. Beside the above medicines, those of a tonic kind should be given, such as bark, steel, &c. (See *Tonics* in the Veterinary Materia Medica.)



*Strangles.*

This disease generally attacks young horses between the third and fifth years of their age, and consists in an inflammation of the membrane of the throat and nose, and swelling of the glands under the throat, accompanied with cough, and a discharge of white thick matter from the nostrils; sometimes there are likewise a soreness of the throat, and difficulty in swallowing. The inflamed glands commonly suppurate in a short time, and burst, discharging a large quantity of matter. When this has taken place, the cough and other symptoms generally go off, the sore gradually heals, and the horse speedily recovers. In some cases the strangles assume a more formidable appearance, are attended with a considerable degree of fever, and the throat is sometimes so much inflamed, that the horse is incapable of swallowing either food or water; but however violent the attack may be, I have always found that, by adopting a proper mode of treatment, every unpleasant symptom may be easily removed, and a speedy recovery effected. It is not a very uncommon circumstance for the strangles to attack young horses while at grass; and then they are frequently not perceived until nature has nearly effected a cure.

The approach of strangles may be known by a dullness of countenance, watery eyes, cough, and a slight degree of swelling in the glands under the jaw. As soon as they are discovered, let the hair be carefully clipped off from the inflamed glands and contiguous parts of the throat; let a large poultice be then applied to the throat, in doing which it is necessary to take care that it is so secured as to be constantly in contact with the throat; for unless this is attended to, the poultice will be but of little service. I have generally found, that by rubbing a small quantity of some stimulating ointment on the inflamed glands, previous to the application of each poultice, suppuration has been considerably promoted: for this purpose the following formula will be found useful:

Camphor,	- - - - -	2 dr.
Oil of origanum,	- - - - -	1 dr.
Spermaceti ointment,	- - - - -	2 oz. mix.

When matter is completely formed in the glands, which may be known by the tumor becoming larger, and by the skin feeling tense and somewhat elastic, an opening should be made with a lancet, and its contents evacuated: this plan is certainly preferable to that of waiting until it bursts spontaneously, as the animal is instantly relieved by it, and the cure more speedily effected. To evacuate the matter perfectly, it is necessary to use



moderate pressure with the fingers; and when this has been done, let a piece of lint, dipped in digestive liniment, be inserted for the purpose of keeping the lips of the wound open, and allowing the matter to escape freely: the poultice is to be continued until the swelling is perfectly reduced. When strangles attack the internal parts of the throat, so as to render the horse incapable of swallowing, and particularly if the external swelling be not considerable, it will be advisable to apply a blister and keep the bowels open with clysters. It is very necessary, in every case of strangles, to steam the head well; that is to put hot bran mash into the manger frequently, so that the horse may inhale its vapors.

It is of consequence to distinguish cases of incipient strangles from common colds. In the latter *bleeding* is a useful remedy; but in the former I believe it does much harm, by interrupting a process of nature. I cannot, by any *argument*, show why bleedings should be improper in the strangles; indeed, if our practice were guided by theory only, we should be led to consider it as a case of common inflammation, and consequently adopt that mode of treatment which would tend to remove it most expeditiously, and prevent suppuration; and with this view we should have recourse to bleeding and purgatives: *experience*, however, certainly sanctions a different treatment, and has, I think, fully proved the propriety of using every means for encouraging suppuration. I have seen several hundred cases in which this plan has been pursued, and not one of them terminated unfavorably. Should the inflammation, however, spread to the lungs, occasioning great difficulty of breathing and fever, and particularly if the horse be past the age of five, bleeding must not be omitted; and if a laxative drink can be given, it will be found of great service. A rowel in the chest will also do good.

Should a cough or any unpleasant symptom remain after the strangles are healed, let the following alternative ball be given every morning, until moderate purging is produced; and if it be found necessary, let it be repeated after an interval of four or five days. It is almost superfluous to add, that great attention must be paid by the groom; the head, neck and chest, as well as the body, should be clothed; warm water should be given frequently in small quantities; a large quantity of litter should be allowed; and hand-rubbing to the legs should never be omitted.

#### ALTERNATIVE BALL.

Barbadoes aloes,	- - - - -	1 $\frac{1}{2}$ dr.
Emetic tartar and castile soap, of each,	- - - - -	2 dr.

To be made into a ball for one dose.



*Catarrh or Cold.*

It would be superfluous to give a particular description of this complaint, since it is so well known, and its appearances so generally understood, that scarcely any one can be at a loss to distinguish it from other diseases. It consists in an inflammation in the mucous membrane, which lines the internal part of the nose, throat, &c. sometimes attended with a slight degree of fever: hence arise the cough and discharge from the nostrils, which are the principal symptoms of catarrh. On the first attack of this complaint, bleeding will generally be found an effectual remedy: but if it be neglected until a considerable discharge has taken place from the nostrils, it seldom proves beneficial. The following laxative, however, will be found a very useful remedy, and may be repeated after an interval of a few days, should it appear necessary: it will generally prevent those obstinate and even incurable coughs which so often remain after a cold, and which not unfrequently terminate in broken wind.

## LAXATIVE BALL.

Barbadoes aloes,	- - - - -	3 dr. to $\frac{1}{2}$ oz.
Emetic tartar,	- - - - -	$1\frac{1}{2}$ dr.
Castile soap,	- - - - -	2 dr.

Sirup enough to form a ball for one dose.

A dose of fever powder is to be given every morning and evening, until the symptoms abate; or a considerable diuretic effect is produced, and then every second or third day only.

Sometimes a swelling takes place in the parotid glands, which are situate immediately beneath the ear. Should no unusual heat or tenderness be observed in these swellings, apply the stimulating ointment recommended for strangles; but if they feel hot, be painful, and appear to be in a state of active inflammation, a poultice is the best remedy. If the eyes be inflamed and watery, a rowel should be inserted under the jaw; and if the inflammation in the throat be so considerable as to render swallowing painful and difficult, a blister will afford great relief. Hot bran mashs should be given frequently, which will not only serve to keep the bowels open, but will act as a fomentation to the inflamed membranes, since the horse will be constantly inhaling the vapor which escapes from them. Should he be costive (which is not likely to happen while he is taking bran mashs,) let clysters be injected occasionally. The head and chest as well as the body, should be well clothed, the legs frequently hand-rubbed, and a large quantity of litter allowed;



by these means he will soon be restored to health. Should a cold be attended with a considerable degree of fever, or should the appetite go off, and the flanks work quicker than usual, it is necessary to make some alteration in the treatment. (See *Fever and Inflammation of the Lungs*.) It is necessary to observe, before I conclude this subject, that the strangles on their first attack, are sometimes mistaken for a cold. This may be productive of mischief, since bleeding is generally improper in that complaint: if, therefore, a cold be accompanied with a swelling of the glands under the jaw—if they feel hot and be painful, and particularly if the horse be young—we may conclude that the strangles are approaching, and treat it accordingly.

Should the cough remain after the other symptoms are gone off, give the laxative again; and if necessary, repeat it after a short interval. If the cough continue after this, let the following ball be given every morning for a week.

#### THE BALL.

Powdered squills,	- - - - -	1 dr
Gum ammoniac,	- - - - -	3 dr.
Opium,	- - - - -	$\frac{1}{2}$ dr.
Sirup enough to form a ball.		

#### *Chronic Cough* \*

We have already noticed this complaint as one of the symptoms of a cold, but did not at that time, give any particular direction for its treatment, because it generally ceases as soon as its *cause* (the cold) is removed. It sometimes happens, however, that the cough continues, although every other symptom is gone off. This complaint, which, from its long continuance, is distinguished by the term *chronic*, may be readily accounted for, when it is recollected that what is called a cold, consists in an inflammation of the membrane, which lines the nose and throat; and that this membrane, also, forms the internal surface of the windpipe and its branches. When the cold, therefore, has been violent and improperly treated, the inflammation is liable to extend to the windpipe, or even to its branches, causing an effusion of coagulable lymph from the membrane, which proves a constant source of irritation. It is probable also that the inflammation may sometimes render the membrane so very irritable, or so alter its secretion, as to keep up a constant irritation

\* See *Cough* in the Appendix.



and cough, without any effusion having taken place. When a considerable quantity of coagulable lymph has been effused, it obstructs the passage of the air in respiration in some degree, causing that sonorous kind of breathing which is termed *thickness of wind*, or *roaring*. A blister to the throat has sometimes been found useful in the chronic cough. One of the following alterative balls is to be given every morning until moderate purging is produced; and this, if assisted by proper attention to exercise, diet, and grooming, has often effected a cure.

The chronic cough is frequently occasioned by worms in the bowels or stomach, and is then to be treated accordingly. (See *worms*.)

### BALLS.

#### No. 1.

Succotrine aloes,	- - - - -	1 dr. to 2 dr.
Castile soap,	- - - - -	2 dr.
Tartarised antimony,	- - - - -	2 dr.

Sirup enough to form a ball for one dose.

Should the disease not submit to this remedy, try the following:

#### No. 2.

Gum ammoniacum,	- - - - -	3 dr.
Powdered squill and opium, of each,	- -	1 dr.
Camphor,		1 dr.

Sirup enough to form a ball for one dose.

This is to be given every morning, and continued five or six days. A stable, properly ventilated, should be chosen, and the vapours of foul litter carefully avoided.

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### *Inflammation of the Eye.\**

When the eye is inflamed, it looses in part its beautiful transparency, sometimes appearing as if covered with a film; the lids are partially closed, the haws become more visible, and there is commonly a discharge of tears, or the eye appears watery. Should the inflammation have been brought on by some external injury, and particularly if it be not very considerable, the eye-lotion will be sufficient to remove it; but in more violent cases, it will be necessary also to bleed moderately and give a

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\* See Appendix, *Diseases of the Eyes*.



laxative ball. By these means inflammation arising from external injury, may generally be cured in a short time. The eyes often become inflamed in consequence of cold and fevers, in which cases *the causes* is to be chiefly attended to: when this is removed, the inflammation usually ceases.

The most common cause of this complaint is high feeding, without a due proportion of exercise. These cases require great care and attention, for unless proper remedies are employed on the first attack, the disease, though it appears to go off, will be frequently returning, and in all probability, eventually produce blindness. The first remedy to be employed on this occasion, is bleeding; and the quantity of blood that is drawn, should be proportionate to the violence of the inflammation, and the *condition* of the animal. Should the vessels on the white part of the eye and inner part of the eye-lids appear to be distended with blood, great advantage will be derived from scarifying the latter with a lancet. A laxative ball is to be given, and the bowels afterward kept in a lax state by means of bran mash. I have found a seton, placed immediately under the eye, a very useful remedy; but unless the operation is nicely performed, it frequently leaves an unpleasant mark behind, which would lead a person experienced in horses, to suspect that the eye had been diseased, and might therefore diminish the value of the horse.

A shade, so adapted as to preserve the eye from the irritation of dust and light, will be found useful. This kind of inflammation generally comes on rather suddenly, sometimes attacking only one eye, at others, both are affected. As there is no apparent cause for this sudden attack of inflammation, the groom very commonly attributes it to seeds or dust having fallen from the rack into the eye, and very little attention is paid to it.—Notwithstanding this neglect, the disease frequently goes off, and in some cases, its disappearance is nearly as sudden as its attack: in a short time, however, it again appears as unexpectedly as at first, and again perhaps goes off. In this uncertain way it may continue a considerable time, the eyes sometimes appearing transparent, and free from inflammation; at others, watery, inflamed, and opaque on the surface: at length the internal parts of the eye are affected, and a cataract produced.

It has been supposed, that the diseases of a horse's eye are frequently hereditary, or dependent on some natural defect in the structure. I do not know how far this opinion may be true, but never having seen a case which seemed to corroborate it, I am not inclined to give it much credit. It is not very improbable, however, that the eyes of some horses may be *naturally* weak, and more liable to become inflamed when exposed to the exciting causes of inflammation, than such as are originally en-



duced with a proper degree of strength: but it appears to me that where this weakness or aptitude to disease exists, it is more frequently the effect of some injury which this tender and delicate organ has sustained, than a defect of *nature*. When the eye becomes inflamed, it is necessary to inquire into the *cause* of the inflammation: if it arises from any mechanical injury, and be not very considerable, there is a probability of its being speedily removed, by means of the remedies I have pointed out; but if the inflammation have arisen without any apparent cause, depending perhaps upon the plethora, or redundancy of blood in the system, there will be some chance of a radical cure, provided the proper remedies are employed sufficiently early. If these be neglected at the commencement of the disease, though the inflammation after some time appears to go off, and the eye, to a superficial observer, seems to have recovered, yet the disease frequently returns, and ultimately occasions blindness. Should the disease have occurred before, and particularly if the former attack were violent, there is still less chance of its being removed, and all our remedies will probably prove ineffectual. In this case the alterative No. 3, (see index,) may be tried. It frequently happens, that when both eyes are inflamed, and a complete cataract forms in one of them, the other becomes perfectly sound and strong. It must be observed, that when a horse has suffered more than once from this disease, and is in low condition, evacuations must not be made too freely: there are few cases, however, where moderate bleeding and a laxative are not required. With respect to topical applications, or those remedies which are applied immediately to the eye, I must confess that I have not seen much benefit derived from them, except when the inflammation has abated considerably, and there remains an opacity or film on the surface; and then common salt, finely powdered, has often proved useful. But if the eye have been in this state for some time, and the opacity is very considerable, white glass, finely powdered and mixed with honey, is a more effectual remedy. Whenever the eyes are weak, or in a state of inflammation, the vapours which arise from foul litter, should be carefully guarded against; indeed, it is by no means an improbable conjecture, that when the eyes are weak, these irritating vapours may often prove the exciting cause of inflammation.

There is a cartilaginous body connected with the eyes of horses commonly termed *the haw*. Whenever the eye is drawn into the socket (which the horse has the power of doing by means of a muscle that does not exist in the human subject,) the haw is forced over the eye, so that when dust happens to adhere to the surface of the eye, he is enabled, by means of this



cartilage, to wipe it off; and as light is painful to the animal when the eye is in a state of inflammation, we generally find this organ, on such occasions, drawn more than usual into the socket, and consequently the haw becomes conspicuous on its surface. Farriers in this case consider the haw as an unnatural excrescence, and the cause of the disease: they frequently therefore cut it off.

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### *Locked Jaw.*

This disease, very fortunately, occurs but seldom, as it generally terminates fatally. It begins with a difficulty in mastication; at length the jaws become so completely and immovably closed, that neither medicines nor food can be got into the stomach. The muscles of the neck are generally in a state of rigid contraction, and the animal appears to suffer great pain. It is often brought on by trifling causes, such as wounds of the foot, inflammation of the tail from docking or nicking, &c. and sometimes it attacks without any apparent cause. Various remedies have been tried in this complaint, but I do not think any effectual mode of treatment has yet been discovered. Immersion in cold water, or even snow, is said to produce a temporary relaxation of those muscles by which the jaws are closed. Opium and camphor have been strongly recommended. I have lately been informed of a case in which a combination of these medicines completely succeeded. In America and the West-India islands, where the disease is much more frequent than it is in this climate, strong stimulants have been found effectual; it would be advisable therefore to try the same plan on horses, should opium and camphor fail. The best stimulants for this purpose are spirit of hartshorn, ether, opium, and brandy. I have been informed that a blister, applied to the spine or back, throughout its whole length, from the withers to the basis of the tail, has proved successful in several cases. I have had only one opportunity of trying it, in which it did no good: but the disease had existed for some time, and had become very violent before any remedy was employed. See *Appendix*.

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### *Lampas.*

When the bars or roof of the horse's mouth, near the front teeth, become level with, or higher than the teeth, he is said to have the *lampas*, and this is supposed to prevent his feeding.



Farriers burn down this swoln part with a red-hot iron made for the purpose. I believe this operation is performed much more frequently than is necessary, but I have never seen any bad consequence arise from it.

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### *Roaring.*

This disease takes its name from a peculiar sound in respiration, particularly when the horse is put into a brisk trot or gallop. It seems to arise from lymph that has been effused in the windpipe or its branches, which, becoming solid, obstructs, in a greater or less degree, the passage of air. As a remedy for this complaint, blistering the whole length of the windpipe has been recommended; I believe, however, that it is always incurable, unless proper remedies are employed as soon as it is observed to be coming on. It generally begins like a severe cold, with difficulty in breathing, accompanied with a peculiar kind of wheezing: sometimes there is also considerable fever, and soreness of the throat. In some cases it attacks suddenly, and with great violence; in others it comes on gradually, and is then more dangerous, as it is seldom attended to, and generally allowed to establish itself before proper remedies are employed. It is advisable whenever a horse is attacked with the above symptoms, to have recourse immediately to bleeding, purging and blistering the throat. (See *Cough*, Appendix.)

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### *Broken Wind.*

It seems to be universally allowed that this complaint is incurable, though it will admit of considerable alleviation; and if its approach be perceived sufficiently early, may probably be prevented. Horses that appear to be most subject to it are those with voracious appetites, that eat even their litter, and keep themselves in good condition upon a moderate allowance of corn: also such as are fed highly, and at the same time not properly exercised. It has been observed by a modern author\*, "that the most common appearances of the lungs in broken-winded horses is a general thickening of their substance, by which their elasticity is in a great measure destroyed, and their

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\* "An enquiry into the structure and animal economy of the horse, by Richard Lawrence, Veterinary Surgeon, Birmingham, 4to." a work of much general merit.



weight specifically increased, at the same time that their capacity for air is diminished. During life the lungs entirely fill the cavity of the chest, so as to leave no space between their outward surface and the inward surface of the ribs. (See *structure of the lungs*.) Thus they dilate and contract, following by their own elasticity the action of the ribs and diaphragm. If the chest be punctured in the dead subject, the air rushes in, and the lungs collapse: but if the horse were broken winded, the lungs do not collapse. This state of the lungs sufficiently accounts for the difficulty of respiration; for as their *faculty of dilation is destroyed, the ribs cannot expand without forming a vacuum in the chest*, which the pressure of the external air prevents, which may be readily perceived in the case of broken wind; for then the intercostal muscles are so strongly retracted, as to form a deep furrow between every rib, as well as a depression in the flanks. On this account the air is *received into the lungs with great difficulty; but its expulsion is not so difficult*, as the return of the ribs and diaphragm naturally force it out by their pressure. Thus in broken-winded horses *inspiration is very slow, but expiration is sudden and rapid*, as may be seen by the flanks returning with a jerk."

It appears to me that the observations of Mr. Lawrence on this subject are not correct. The lungs of broken winded horses that I have examined have generally been unusually large, with numerous air bladders on the surface. This must have arisen from a rupture of some of the air cells; for in this case some part of the air which is inspired will necessarily get into the *cellular membrane* of the lungs, and diffuse itself until it arrives at the surface, when it will raise the pleura so as to form the air-bladders we observe. This is the reason that the lungs of broken-winded horses do not collapse when the chest is punctured; and this will serve to explain the peculiar motion of the flanks in broken-winded horses, which does not consist, as Mr. Lawrence asserts; in a quick expiration and a very slow inspiration, but quite the reverse; air is received into the lungs *very readily*, which is manifested by a sudden falling of the flanks, but it is expelled *slowly*, and *with great difficulty*, as may be perceived by the long continued exertion of the abdominal muscles\*

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\* A short time since, a horse completely broken-winded, was given to me for the purpose of making experiments relative to the glanders, a disease which was for many years occupied my attention. On destroying the animal, and examining the lungs with great care, very little disease could be observed. So far from their being thickened, and in the state Mr. Lawrence describes, they were specifically lighter than natural; and though no air-bladders were perceived on the surface, there was evidently a great deal of air diffused in the cellular membrane of the lungs, which must have been occa-



When the membrane which lines the windpipe and all its branches has been affected with inflammation, it becomes thickened in consequence, and the capacity of the lungs will of course be diminished: this will cause a *quickness* in respiration, but not that irregular or unequal kind of breathing by which broken wind is characterised. The complaint which is thus produced, is commonly termed *thick wind*; and the horse so affected, if made to move rapidly, wheezes like an asthmatic person, and is unfit for any violent exercise. It not unfrequently happens, I believe, that this complaint proves a cause of broken wind; for when the membrane is much thickened, many of the finer branches of the windpipe are probably obstructed in a greater or less degree: the violent coughing which usually accompanies this disease, will, under such circumstances, be very liable to rupture some of the air-cells. The same effect may be produced by violent exercise when the stomach is distended with food or water. I believe, however, that a plethora or fullness of habit, is most commonly the remote cause of broken wind. In that case there is generally an undue determination of blood to the lungs, whereby the secretion within the air-vessels is increased, and perhaps rendered somewhat acrimonious and viscid, exciting a violent and troublesome cough.\*

Whenever a horse appears to be imperfect in the wind, if he cough violently, particularly when exercised, with unusual working of the flanks, and if at the same time he appear to be in good health and spirits, feeding heartily, and eager for water,

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sioned by a rupture of one or more of the air-cells, or minute branches of the windpipe; there being no other source from which it could have been produced. Now this was a case of simple broken wind, which may be easily distinguished, not by an unusually quick motion of the flanks, but by an unequal motion. The flanks of a broken-winded horse are a long time in drawing up or contracting, which shows the difficulty he feels in expelling the air from his lungs, or in expiring; but when that is effected, the flanks drop suddenly, which shows that the air enters the lungs, or that the animal *inspires* with much greater ease than he expires. It often happens, however, that *broken wind* is complicated with *thickness* of wind, and, as I have before observed, is sometimes occasioned by it, which probably gave rise to the opinion we have endeavored to refute. (See *Cough, Asthma, and Thickness of Wind*, Appendix.)

\*It is not very improbable that air is sometimes secreted or formed in the cellular membrane of the lungs, in which case a horse would be broken winded without any rupture of the air-cells. I have seen a horse become broken winded rather suddenly, and when a violent cough had not preceded. I have also seen the symptoms of broken wind removed by turning a horse out, but they returned when he was taken into the stable again; and I recollect a horse that would sometimes breathe very well, and at other times appear completely broken winded. From these circumstances, it does not appear improbable that the cause of broken wind, is sometimes a morbid formation of air, in the cellular membrane of the lungs.



let him be bled moderately, and take a laxative ball; by these means, assisted by a bran diet and regular exercise, the lungs will soon be relieved, and the cough, if not completely removed, will be considerably diminished. Afterward give the following ball every morning for a week, and take care that a regular exercise is never omitted: it will be advisable also, to prevent the horse from filling himself too much with hay or water. The latter should be given five or six times a day, in small quantities; for the common method of stinting a horse in water, when his wind is supposed to be bad; is certainly prejudicial. Corn should be given sparingly, as high feeding tends very much to aggravate the complaint. Bran is a useful diet, if mixed with corn; and if carrots or any other succulent vegetable can be procured, they will be found of considerable service. The vapours which arise from foul litter, and the air of a close stable, are extremely pernicious. I have seen very good effects from turning the horse into a paddock during the day, when the weather is favorable. When the cough and other symptoms have been removed, these means must still be persevered in, or the disease will probably return: regular and long continued exercise tends more than any thing to keep it off; but violent exercise is extremely improper. Whenever costiveness occurs, it should be removed by means of a clyster and bran mash; and should the horse be disposed to eat his litter, it is to be prevented by means of a muzzle.

#### THE BALL.

Powdered squills,	- - - - -	1 dr.
Gum ammoniac,	- - - - -	$\frac{1}{2}$ oz.
Powdered aniseeds,	- - - - -	3 dr.

To be made into a ball with sirup, for one dose.

#### *Jaundice, or Yellows.*

This disease is indicated by a yellowness of the eyes and mouth, dullness and lassitude; the appetite is generally diminished, the urine of a reddish or dark color. Sometimes the complaint is attended with costiveness, but more commonly with a purging. This disease does not often arise from an obstruction in the biliary ducts, as in the human subject, but generally from increased action of the liver, whereby an unusual quantity of bile is secreted. Inflammation of the liver is sometimes mistaken for jaundice, but may be distinguished from it by the *fever and debility* with which it is always accompanied.



When costiveness is one of the symptoms of jaundice, give the ball No. 1, every morning, until moderate purging is produced; but if the bowels be already open, or in a state of purging, give the ball No. 2, every morning. The horse's strength should be supported by infusion of malt or water-gruel.

### THE BALL.

#### No. 1.

Calomel,	-	-	-	-	-	-	-	$\frac{1}{2}$ dr.
Barbadoes aloes,	-	-	-	-	-	-	-	$1\frac{1}{2}$ dr.
Castile soap,	-	-	-	-	-	-	-	2 dr.
Rhubarb,	-	-	-	-	-	-	-	3 dr.

To be made into a ball with sirup, for one dose.

#### No. 2.

Calomel and opium, of each,	-	-	-	-	-	1 dr.
Columbo root, powdered,	-	-	-	-	-	3 dr.
Powdered ginger,	-	-	-	-	-	$\frac{1}{2}$ dr.

Sirup enough to form a ball for one dose.

There is a species of staggers, of which I have seen a great number of cases since I left the army, where yellowness of the eyes and mouth is invariably one of the symptoms; which has often led farriers to consider it as a jaundice, or *yellowness*, as they term it; and their remedies have generally consisted of saffron, turmeric, or other inert medicines of a *yellow color*, which they seem to consider as an indispensable quality in all medicines employed for the *yellows*. On the same principle they give dragon's blood, a *red* resinous substance, and other *red* medicines, in all cases of internal hemorrhage or bleeding, such as bloody water, &c. (See *Staggers and Diseases of the Stomach*.)

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### *Flatulent Cholic, Gripes or Fret.*

This disease generally attacks rather suddenly, and is brought on by various causes: sometimes it is occasioned by drinking a large quantity of cold water, when the body has been heated, and the motion of the blood accelerated by violent exercise. In horses of delicate constitutions, that have been accustomed to hot stables and warm clothing, it may be brought on merely by drinking water that is very cold, though they have not been previously exercised. Bad hay appears to be another cause of the complaint; but it frequently occurs without apparent cause,



and then probably depends upon a spasmodic action of the stomach or bowels, occasioning a constriction of the intestine, and a confinement of air. It has not been ascertained, whether this air be produced by a fermentation of the contents of the bowels, or formed by the arteries of the internal coat: which ever of these is the source of the air, there is no doubt that the immediate cause of its formation and confinement is weakness, or a loss of vital energy. On this account, medicines of a stimulating quality, are the most effectual remedies; therefore the common flatulent cholic, is easily cured by grooms and farriers, who seldom give any other kind of medicines. The greatest caution, however, is necessary on this occasion; and I have known many valuable horses destroyed by adopting hastily this mode of treatment. There is a species of flatulent cholic, which, if treated in the common way, is sure to terminate fatally, though it is not at first of an inflammatory nature. This disease will be described in the Appendix, under the head *Diseases of the Bowels*; and its remote cause will be more particularly shown under the head *Humors*, Appendix.\*

The pain and uneasiness which this complaint occasions are so considerable as to alarm those who are not accustomed to see it, and lead them to be apprehensive of dangerous consequences; but if properly treated, it may be easily and expeditiously removed. It begins with an appearance of uneasiness in the horse, he frequently pawing his litter; he voids a small quantity of excrement, and makes fruitless attempts to stale; the pain soon becomes more violent; he endeavors to kick his belly, and looks around to his flanks, expressing by groans the pain he labors under: at length he lies down, rolls about the stall, and falls into a profuse perspiration. After a short time he generally gets up, and appears for a minute or two to be getting better, but the pain soon returns, and the succeeding paroxysm is generally more violent than the former; the pulse is seldom much accelerated, nor are there any symptoms of fever. The disease will sometimes go off spontaneously: it more commonly happens, however, when proper remedies are not employed, that the air continues to accumulate, and so distends the intestines, as to produce inflammation of its coats: the distention has

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\*The author intended to write a chapter on *humors*, in order to show the pernicious tendency of the humoral pathology, as it is termed, which supposes almost all diseases to depend on some noxious humor in the blood. It is sufficient, however, to observe, that the strong purgatives which are given with a view to expel such *humors*, sometimes render the bowels so irritable, that very slight causes will bring on the flatulent cholic; and if a strong stimulant be given in such cases, it frequently causes inflammation of the intestine.



sometimes been so considerable as to rupture the intestine,—whereby, the horse is speedily destroyed.

As soon as this disease is observed, let one of the following draughts be given, and a clyster injected, composed of six quarts of water-gruel or warm water, and 8 oz. common salt. If the disease have existed for several hours, and the pain appear to be very considerable, particularly if the pulse have become quick, it will be advisable to bleed to three quarts, with a view to prevent inflammation and remove the spasmodic contraction of the intestine. If the disease, however, be perceived on its first attack, the draught and clyster will generally be sufficient to cure it: but should no relief be obtained by these means in an hour or two, let the draught be repeated, and let the belly be rubbed for a considerable time with the mustard embrocation. Should the disease be so obstinate as to resist even these remedies, which will scarcely ever happen, give a pint of castor oil, with  $1\frac{1}{2}$  oz. of tincture of opium; as soon as the horse gets up, let him be rubbed perfectly dry by two persons, one on each side; and afterwards let him be well clothed. It is necessary in this complaint to provide a large quantity of litter, for the purpose of preventing the horse from injuring himself during the violence of the paroxysm.

### THE DRAUGHT.

#### No. 1.

Balsam of capivi,	- - - - -	1 oz.
Oil of juniper,	- - - - -	2 dr.
Spirit of nutritious ether,	- - - - -	1 oz.
Simple mint water,	- - - - -	1 pint.

MIX FOR ONE DOSE.

#### No. 2.

Venice turpentine,	- - - - -	1 oz.
Mix with the yolk of an egg, and add gradually		
Peppermint water,	- - - - -	1 pint.
Spirit of nitrous ether,	- - - - -	$\frac{1}{2}$ oz.

MIX FOR ONE DOSE.

#### No. 3.

Camphor,	- - - - -	2 dr.
Oil of turpentine,	- - - - -	$\frac{1}{2}$ oz.
Mint water,	- - - - -	1 pint.

MIX FOR ONE DOSE.

As this complaint is liable to occur during a journey, in situations where the above remedies cannot be readily procured, I have annexed a formula for a ball for the convenience of those



who are in the habit of travelling. If this ball be wrapped up closely in a piece of bladder, it may be kept a considerable time without losing its virtues.

#### THE BALL.

Castile soap,	- - - - -	3 dr.
Camphor,	- - - - -	2 dr.
Ginger,	- - - - -	1 $\frac{1}{2}$ dr.
Venice turpentine,	- - - - -	6 dr.
To be made into a ball for one dose, with liquorice powder or flower.		

#### CHAPTER VI.

### *On the Staggers.*

The staggers are usually divided, by writers on farriery, into two kinds, which they denominate the *sleepy* and the *mad staggers*. The former are supposed to depend on too much blood flowing to the brain, and the latter on inflammation of that organ; and it has been observed, that, unless the sleepy staggers be removed, by copious bleeding and purging, inflammation of the brain, or mad staggers, is the consequence: thus have these diseases been generally considered as nearly of the same kind, differing only in degree.

It has been clearly ascertained, however, that they are by no means similar in their nature; and, it has been incontestibly proved, by examining the bodies of horses that have died of these diseases, that they arise from very different causes.

Some writers have imagined, that staggers resemble the epilepsy, or falling sickness, a disease to which the human body is liable. Something of this kind, though not exactly similar, happens, occasionally, to horses, and is termed *megrims*; but in no respect does it resemble either the sleepy or the mad staggers.

The mad staggers generally attack horses that are highly fed, and moderately worked: they do not occur frequently; may be easily distinguished from sleepy staggers; and are less difficult of cure, if attended to at an early period.

The sleepy staggers are a disease of far greater importance, and, next to glanders, perhaps, more destructive than any other. I have thought proper to call it the stomach staggers, because this important organ has been almost invariably found, after death, to have been the seat of the disease.



*On the Mad Staggers.*

This is not a very common disease, and may generally be cured, if attended to at an early period. In the mad staggers, the horse becomes highly delirious, and so violent, that it is often dangerous to come near him. Sometimes he falls down, and appears to be quite exhausted; but, after a short time, he suddenly rises, and becomes as furious as at first. The only remedy for this disease is copious bleeding; but it is generally difficult to keep the horse sufficiently quiet to perform this operation: it is better to wait until a short intermission takes place, when he becomes exhausted by the violence of his exertions; both temporal arteries should then be opened, and suffered to bleed until the horse becomes faint, and is perfectly composed. After this, a strong dose of purgative medicine should be given, a rowel placed under the jaw, and a blister applied to the head: the horse's diet should be low: and, if any symptoms of the disease again make their appearance, the bleeding should be repeated, until they go off.

The bleeding from the temporal artery may be stopped by means of a pin and tow, as in the neck. It is necessary, however, to make use of a longer pin, and to take care that the ligature is tied very firmly.

When no person present is capable of opening the temporal artery, he should be bled in the neck, on both sides; a chord should then be tied round the neck, below the opening in the veins, so as to keep up a constant flow of blood. The only criterion, by which we can judge of the quantity of blood necessary to be drawn, is the cessation of the delirium, which seldom happens until a considerable quantity has been taken off. This will be seen from the cases subjoined to this chapter.

It is proper to observe, that the operation of the purgative may be hastened by injecting clysters, composed of about a gallon of water, in which half a pound of salt has been dissolved; and, if it does not operate in the usual time, that is, from twenty-four to thirty hours, another dose should be given.

## CASE 1.

A troop horse was attacked with mad staggers, and was bled freely from the jugular vein; the horse became more quiet, but not perfectly composed. The next day, he was highly delirious, and plunged about the stable so violently, that no one could come near him: sometimes a short intermission occurred, that is, he would lie quiet a short time, then, rising suddenly, he became as furious as at first. On the evening of the second day, I saw him for the first time, he was lying perfectly quiet, and



was supposed, by the persons present, to be dying: I immediately opened both temporal arteries; and, after losing a considerable quantity of blood, he got up, was perfectly composed, and had no return of his complaint.

### CASE II.

A young, healthy, carriage horse, that had been highly fed, and done but little work, was attacked with mad staggers: the delirium ran so high, that he leaped through a small window, nearly five feet from the ground. This horse was copiously bled, took a strong purgative, and had a rowel under the jaw. He perfectly recovered, and had no return of the complaint.

### CASE III.

A troop horse was attacked with mad staggers, and, though relieved by copious bleeding, and the other remedies above mentioned, after a few days the disease terminated in death. On examining the brain, a bony substance was found in its ventricle, or cavity.

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## CHAPTER VII.

### *On the Stomach, or Sleepy Staggers.*

In the sleepy staggers the horse appears drowsy, hangs his head in the manger, and refuses his food. The tongue and mouth are of a yellowish color; the membrane, which lines the inner surface of the eyelid, is more deeply tinged with yellow, approaching to a deep orange color; there is a slight convulsive motion, or twitching of the muscles of the breast; the fore legs appear suddenly to give way, at times, as if the horse would fall: but this very rarely happens, and he very seldom lies down, unless the disease is going off, or death is approaching. The pulse is never affected in the early stages of this complaint. It is always attended by costiveness; and, when the dung is drawn off, by introducing the hand into the gut, it is found to be hard, and of a dark color, often covered with mucus, or white, slimy matter. Sometimes there is suppression of urine, which appears to arise from a paralytic state of the bladder: this, however, is seldom the case, in the early stages of the complaint. The temperature of the body is generally the same as in health; but, in violent cases, and in the later stages of the complaint, there is often profuse perspiration, and coldness of the legs and ears: in some instances, one half the body has become cold and palsied.



I have often observed, at the commencement of this disease, and some time after, that the horse appears to be roused, and neighs, on opening the stable door. In the latter stages of the disorder, the jaws often become locked, and sometimes the muscles of the eye are convulsed. When a horse is attacked at grass, he is generally found forcing his head against the hedge; and, if removed from this situation, he moves forward, rambling, as if in constant danger of falling, until he meets with some obstacle, against which he forces his head, so as to cause considerable swelling in the prominent parts above the eye and in the nose. When in the stable, the horse will, sometimes, even force his nose between the rack staves, and generally bruises himself considerably about the head, which often causes a discharge of matter from the nostrils. In short, he appears totally insensible; but there is never that furious delirium, by which the mad staggers are characterised, nor is it difficult to bleed, or perform any operation upon him, that may be required. When the disease terminates fatally, it is generally on the second or third day: a short time before death, there is often considerable convulsion, and the animal appears to be in great pain; probably from inflammation having taken place in the stomach or bowels.

A disease, very nearly resembling the stomach staggers we have here described, has, at times, proved highly destructive, particularly in the neighborhood of Swansea, where a great number of horses are employed in the mines: it appears, however, to be a more violent form of the disease, and is probably contagious. The following is the copy of a letter I received from a gentleman, who had many opportunities of seeing this violent form of the disorder; and it will appear, from the letter, that he has taken great pains in investigating the nature of the disease; and that he has observed all the circumstances connected with it with attention and accuracy.

"SIR,

"Permit me, though a stranger, to address some observations to you respecting the disease, which, in the Appendix to the first volume of your Veterinary Medicine, is called *Stomach Staggers*. I have never seen any mention of it in any other treatise, nor have I known any particular name given to the disorder before, though I have seen it rage, with the most destructive violence, in the neighborhood of Swansea, in Glamorganshire, where it is called the distemper. For a long series of years, it has been the object of inquiry; but it has never been investigated, on the spot, by any one having a scientific knowl-



edge of the diseases of horses, except Mr. Rickward, of Brighton, who was sent down, some years ago, when the disease raged most violently, by a gentleman, who owned a very large number of horses; but he was not successful. Permit me now to say, that I do not think you have seen the disorder raging with the violence, or to the extent it has frequently raged near Swansea; its commencement is dreaded like the plague. I will endeavor to give you as succinct an account of it as I can; and, when I return into the country, where all my memorandums on the subject are, I will, with pleasure, if you wish it, send you every particular I have; though I can sufficiently depend on my memory to say, that I can now send you the substance.

"The symptoms you mention are exactly such as occur, and the distinction you point out, between the brain staggers and the stomach staggers, is distinctly correct; for, though the yellowness of the eyes and mouth has generally escaped observation, I have a memorandum, particularly noticing, that a man, in giving a ball to a horse, in this disorder, had his hand tinged quite yellow; and, I have no doubt, it generally occurs. But, besides the symptoms you mention, the animal is subjected to a general convulsive affection; frequently attempts to stale, and discharges a little urine at a time, by shoots, as if convulsed; and, most commonly, the animal's jaw is locked, some time previous to his death. Having now stated the immediate symptoms, I will give a succinct history of the disorder as it has raged near Swansea.

"The earliest account I have of any particulars begins about the year 1782; but, I know, it has, at times, visited the neighborhood, ever since the year 1760. It generally begins to rage between July and the end of September. The cold weather, in winter, has generally stopped it; but, the last visit it made us, it continued two entire years. In one year, a neighbor of ours lost more than a hundred horses by it; and, the next year, we lost about thirty. It attacks both sexes and every age, indiscriminately; but animals at grass, in high condition, and at easy, or no work, appear to be most subject to it, and to have it with most violence. Till the last time it visited us, animals kept in a stable were considered as protected from it; horses kept in the mines, under ground, had never had it. I made a stable in one of our underground works, to remove all our horses; but, before I carried this plan into effect, the disease began to decline. At the height of the disorder, horses seldom or never recover. When an animal does recover, it is considered as a favorable prognostic, and we look for a delivery from this plague. The animals at grass are most liable to it; but



such as are kept in a stable, and under the best management, are also subject to the disorder. In the year 1801, or 1802, when it last raged with us, I lost a valuable horse, that was perfectly well groomed; but I shall have to make some observations on his case, when I mention the dissections, and the apprehensions I have of the disorder being contagious; which I shall now proceed to do.

"The appearance and state of the stomach are generally such as you have described; but, in the valuable horse before mentioned, and a few others, which died of this disorder, it was not the case.

"I beg here to observe, that I had been very strict in my stable regimen, and particularly in the quantity, quality, and time of giving food and water; and I attribute the emptiness of the stomach to this cause: though I did not prevent the disease by this precaution, it made all the symptoms milder. I am not a surgeon, or a scientific man; but, in examining the bodies of horses, after death, I have been assisted by a surgeon; and have generally found, with the exception of the loaded stomach, and a slight inflammation, for a small length below the pylorus, (the lower orifice of the stomach, from which the digested food passes into the intestines,) and sometimes, a little repletion in the vessels of the brain, every part free from disease.

"I could not, for a long time, believe that the disease was contagious: I now fear it is most highly so; but do not think, that this circumstance has been proved. When the disorder last began, a neighbor, who had lost a great many horses by it, sent a parcel of their skins, to a neighboring town, to be sold, the horses, that drew the waggon, in which they were conveyed, were the next, and that in a short space of time, that fell victims to the disorder. Horses, that had been in the stables where the disorder raged, were sent to work under ground; there also, the disorder soon after made its appearance, for the first time. Our neighbors firmly believe it is contagious: they took every precaution to prevent contagion, and the disease left them. I was incredulous, and, at this time, we had not suffered: a horse from their neighborhood came to graze in some fields through which some of our horses passed; he died of this disorder, and was left unburied. From this moment, the distemper began with us; but, not knowing the circumstance of the horse remaining unburied, I took no precaution to prevent contagion. The valuable horse before mentioned was taken ill the next day, and soon died. He had been at a neighboring fair, and was left under the care of a man, to hold, while I did my business: I do not know that he had any communication with other horses, but suppose he must. The common farmers'



horses, in this neighborhood, are all badly managed; yet I have known those, who take proper care of their horses, who do not overwork them, and even those, who keep them at grass, lose all their horses, when their less careful neighbors lost none. I have known a man lose his whole stock twice in one year. When I began to fear contagion, every horse, that died of the distemper, was buried without being skinned. We have had no return these five years.

### *“Causes of the Disorder.”*

“In the mild form, in which, it appears to me, you have seen the disease, I think the causes you assign sufficient; but, (except as to some poisonous quality in the food,) I cannot think them to be the cause with us. I strongly suspect it arises from some poisonous plants, in our pastures, which, perhaps, flourish only, to a poisonous extent, at some particular times, and which have not hitherto been detected. I have mentioned our horses having been attacked the year following our neighbors great loss, and when they were free from it: most of our horses were purposely kept in the stable; and I have some idea, that they were fed upon hay of the same year, that our neighbor’s horses were fed upon the preceding year: could this fact be ascertained, it might lead to a discovery of the real cause of the disorder. I suspect the poison acts by paralyzing the stomach, that its fullness is a consequence, not a cause, of the disease. Mr. Coleman was consulted, by our neighbors, at an early stage, during the last attack we had, and I have a copy of a letter from him upon the subject. I have also a copy of Mr. Bond’s opinion upon a statement made to him; but neither of them ever saw the progress of the disorder with us, and they do not appear to me to have thrown any light upon the subject.

“I shall be much flattered, if my communication affords you any information you may think worth notice. If you wish an explanation of any thing I have stated, I shall be happy in endeavoring to give it. I am,” &c:

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MARCH 7, 1811.

“SIR,

“Since I wrote to you, in London, I have reviewed my papers, and I do not see reason to alter any thing I have said in the letter you refer to my having written about two years ago, and of which I have kept a copy; but as you have made some inquiries respecting the disorder of my own valuable horse, and



his treatment, I send you the fullest account I have of it, and some observations made by Mr. Collins, an intelligent surgeon, at Swansea, to whom I communicated the particulars of the case at the time. They are as follows:

*“March 2, 1802.—*My own riding horse, in high condition, and capitally groomed, lost his appetite: having a cough, it was supposed to be from cold.

*“March 3.—*He was blooded. His blood was considered as in a bad state; (note, I did not see the blood, nor do I know in what respect it was considered as bad.) When led out, he seemed stiff; and, when taken in again, he ran first against the stall, then against the rack, as if he did not see. He then had rather a strong dose of aloes, and a pint of olive oil: he then became violent. At four o'clock I came in: he was extremely ill, but did not seem to me to have any appearance peculiar to the distemper: he had just staled freely. Between nine and ten, he fell, or lay down; between twelve and one, he died. Early in the afternoon, the groom observed, that the near ear was quite cold; the other, temperate. Our farrier said, the whole of the near side was cold two hours before he died. His jaw became locked about the same period. I did not see him after four o'clock.

*“Upon opening the body, the appearances were altogether healthy: no inflammation of any part; no distension of the stomach; the food quite moist; the brain uninjured.*

*“Extract of a letter from Mr. Collins.*

*“I am very sorry to find you have lost your favorite horse, and I am much inclined to think, with the farrier, that it was apoplexy, or palsy. Was the state of the brain examined?—I do not think it was the distemper. Palsy frequently succeeds apoplexy, from the pressure of extravasated blood in one hemisphere of the brain. He certainly died paralytic, as appears from the coldness of one ear, and failure of circulation on that side.*

*“From a letter I wrote to Mr. Rickward, some time afterward, detailing our losses, and of which I have a copy, I find I considered the case as anomalous; but, upon the whole, I am disposed to think it was a peculiar form of the same disease, which we have, in this country, denominated the distemper. I have suspected, that the distension of the stomach with food has arisen from a paralysis of the stomach, so that food conveyed there remained immoveable. If it arise from a poisonous quality in the food, this may be the way it acts.—We have not had any return of the distemper since 1803.*



"To enable you to judge, and form an opinion from facts, I shall send you, by the mail from Swansea, in a parcel, a statement of a variety of cases, by Mr. Collins, whom I have named above: and I also send you some memoranda of cases and observations made by myself at the time they are dated. I shall be very happy if they tend to throw any light on the subject.

"As I have not any copies of these papers, and I have not time to have them copied, I have to request, that you will return them to me in a parcel, directed to this place as soon as you shall have done with them. If they should suggest any thing, which may lead you to make any farther inquiries, I shall be happy in endeavoring to procure you any farther information you may desire.

"I am, sir," &c.

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The following is a copy of some observations made by an intelligent surgeon, who had many opportunities of seeing the disease, and carefully examined the bodies that died of it, in the year 1800, at which time the disorder was prevalent:

"In 1786, the distemper appeared in June, and continued during July, August and September.

"In 1787, it began in July, and continued during August, September, and great part of October.

"In 1786, the summer was wet. In 1787, the spring was wet, but the summer warm, and a very luxuriant crop of latter grass. In 1800, the summer was unusually dry and hot: great crops of hay, but no after grass. Horses of all ages, and of both sexes, were equally liable to the distemper. More horses were attacked at grass than in stable. Idle and working horses were affected; but more of the former, particularly when in high condition: in these the disorder was more violent, and very few recovered.

### *"Causes*

"Not known. In 1787, the disease was attributed to the luxuriance of the after grass; but this year, there is none. The water of the river was supposed to have some bad quality; but, upon being analysed, nothing of the sort was discovered.

### *"Authors.*

"None treat of it accurately; but a disease described in Wood's Farriery, published in 1762, nearly resembles it.



*"Symptoms.*

"Heaviness, stupor, laziness at work, swinging the head from side to side, or pushing it forward, or resting it in the manger, but never turning it round, or drawing it backward; often standing for hours motionless; then slight twitches of the limbs, and other parts of the body. They seem weak, and afraid of falling. Heaving of the flanks. Ears cold. Eyes glassy. Some grow immediately stiff, and the jaw is frequently locked. Some beat their heads about, and kick out at every thing; but are never observed to kick their bellies, as in gripes.

*"Progress.*

"The first symptoms increase; beating the head against the ground or manger; often forcing the nose through the bars of the hay racks. The jaw becomes closely locked. They fall. The twitching increases. Violent perspiration breaks out in some: in others, the skin is dry and tight, the eyes open and staring, yet the horse appears to be blind. He makes water frequently, which is forced out as if by a general spasm.

*"Fatal Symptoms:*

"The coldness and stiffness of the whole body increase. The loins extremely pinched in. The eyes very glassy. The jaw closely locked. Dung very dark and dry.

*"Symptoms of recovery.*

"Very few recovered: in these, coldness of the ears and body lessened; the jaw became relaxed; convulsions abated; the eye appeared more lively; staling less frequent, and without appearance of spasm; they attempted to eat and to drink; the dung became moister, and of a light color. Out of fourscore, only four were supposed to have recovered. One of these, being turned out, ran round the field several times, then fell and died. Another seemed to have been relieved by profuse bleeding.

"The disease is not discovered till the case is become desperate, and usually kills in twenty or thirty hours. Almost every remedy has been tried without effect; viz: bleeding, hot baths, calomel, purging medicine, salts, opium, camphor, James' powder, and asafoetida. None of them appeared to be of service."

Six horses, that died of the distemper, were examined by this gentleman. In four of them, the stomach was loaded with food,



and much distended; in one, the stomach was nearly empty, but the large bowels were loaded; in another, there was not much distension of the stomach, but the large intestines were loaded, and the rectum, or last bowel, full of hard dung. In all of them, the lower part of the stomach was more or less inflamed; and in some, the intestines also, as well as the membrane which covers them, and by which they are connected together. From the observations of those gentlemen, it appears, that the disease, which has, at times, proved so destructive, in the neighborhood of Swansea, bears a striking resemblance to that I have called *Stomach Staggers*, and is probably the same disease in a more violent degree. That the principal seat of the disease is the stomach, has been clearly proved, by examining the bodies of horses that died of it: in every instance that has come under my observation, the stomach was excessively distended; but the brain was perfectly free from disease. The stomach and intestines were, generally, more or less inflamed; but it was evidently in consequence of the excessive distension of the former. With respect to its being caused by some poisonous plant, an opinion suggested in the foregoing letter, and in the Treatise on Veterinary Medicine to which that gentleman alludes; though it has, at first, an appearance of probability, it certainly does not sufficiently explain the disease. I have known a horse at grass violently attacked with the staggers, of which he died: other horses were immediately afterwards put into the same field, without contracting the disease. In several instances, the disorder has occurred to a horse, that has been kept with many others, all feeding from the same hay, without affecting any of the rest. Some years ago, in a large village and its neighborhood, near Bath, the disease was very prevalent, and destroyed a great number of horses. It was usual, in this place, to give a considerable quantity of chaff, or cut straw, to the horses. After some time, it was conjectured, that the disease might have been caused by the horses feeding greedily on chaff. This mode of feeding was discontinued; and, since that time, they have had no return of the complaint.

According to my experience, the staggers more frequently attack old horses, that have been worked hard, than such as are young and fresh. They have more frequently occurred to horses employed by little farmers, where they are coarsely fed, and often worked hard, than to such as are properly managed. In a large waggon concern, where I have for many years attended the horses, I have never seen a single case of stomach staggers: in two other concerns, of the same kind, several cases have occurred. In the former concern, I had an opportu-



nity of observing, that the horses were, in every respect, extremely well managed, and not overlooked; but I had no opportunity of seeing how the others were treated.

I had the honor of serving, as veterinary surgeon, in the royal dragoons, seven years, during which time there did not occur a single case of stomach staggers, nor have I ever heard of a case in any other regiment. In short, it appears that this disease depends on the stomach becoming torpid, or losing its energy, in consequence of a horse's feeding greedily, and particularly when his food is of a bad quality, and difficult of digestion. Such is the connexion between the stomach and the brain, that, when the former is thus loaded with food, and incapable of digesting it, the latter is necessarily affected, and the symptoms produced are such, as would lead a person, unacquainted with the subject, to imagine, that the brain was the original seat of the disease. With respect to that acute form which the staggers assumed in the neighborhood of Swansea, I can readily conceive, that the stomach may become torpid, or have its natural energy so diminished, by various causes, as to produce all the symptoms by which the disease is characterised. I do not think it probable, that it is caused by any poisonous vegetables among the hay or grass, from the circumstances before stated: but this matter should be carefully investigated, when the disease again occurs in that neighborhood; for, if any such plant could be discovered, it would lead, perhaps, to an effectual mode of prevention. As to the cure of staggers, I believe there is little chance of it, unless the disorder is attended to at an early period. The stupor and heaviness of the head naturally lead us to expect relief from copious bleeding. Dissection, however, has proved, that the brain is not inflamed, or overloaded with blood; and, in numerous instances, the most copious bleeding has been found ineffectual. In every case, except one, where purging has been brought on, the horse has recovered. (See case 3.) When the disease had continued three or four days, and the treatment here recommended had been adopted, I have, in three cases, observed, that the stomach had discharged its contents in some measure, and that the large intestines were excessively loaded: it appeared, indeed, that purging would have taken place in another day, had the horses lived so long.

### *On the treatment of Stomach Staggers.*

As soon as this disease is observed, let the purging ball be given, and washed down with a little warm water; let the hand



be introduced into the gut, and all hard dung, that may be found, removed. The following clyster is then to be injected:

### CLYSTER.

Hot water,	-	-	-	-	-	-	-	-	1 gal.
Common salt.	-	-	-	-	-	-	-	-	$\frac{1}{2}$ lb.
Olive oil,	-	-	-	-	-	-	-	-	4 oz.

MIX.

Give the horse, every hour, a pint of warm water, with half an ounce of compound spirit of ammonia, and let the clyster be repeated three or four times. Twice a day, add to the warm water and spirit of ammonia, two drams of finely powdered cascarrilla. These remedies (except the purging ball) must be persevered in till purging comes on. I am not convinced, that bleeding is necessary, except when the horse is violent; yet I have always had recourse to it; but never with any apparent advantage. In two cases, the horses were bled profusely, without causing an abatement of the symptoms. When we are so fortunate as to bring on a purging, it is probable the horse will recover; and, when the purging has become considerable, and the horse appears to be relieved, looking more lively, and showing an inclination for food, he should take frequently a small quantity of good gruel; but no hay or corn should be allowed for two days, or until the stomach and bowels are perfectly unloaded. By a proper perseverance in this treatment, I have, in several instances, succeeded; but it is necessary to attack the disease at its earliest period; for when the stomach is distended to a certain degree, its power is irrecoverably lost.

### CASE I.

A waggon horse was attacked with stomach staggers. When I saw him, he was quite insensible, and had all the usual symptoms; the pulse exactly the same as in health: he took the purging ball, and, immediately after, a pint of warm water, to which were added four ounces of tincture of asafœtida. Clysters were injected several times a day, and the warm water, with the spirit of ammonia, was given frequently: the following day, he was worse; the purging ball and clysters were repeated; but he continued to get worse, and, during the night, died. The purgatives and clysters had not removed the costiveness. The horse had been bled, also, from the temporal arteries, and from the jugular vein, to a considerable extent, without appearing to be, in the least degree, relieved by it.

The stomach was distended to an immense size, and full of



undigested food, consisting chiefly of oats and beans, great part of which had been swallowed unbroken. There was some appearance of inflammation about the stomach and first intestine; but this evidently proceeded from the excessive distension of the stomach. The brain was, in every respect, perfectly healthy.

### CASE II.

A horse, employed in a brewery, and fed upon oats and hay, was attacked with symptoms of stomach staggers: in this case, however, the horse was violent at times, so that it was difficult to give him medicine or clysters. He was bled freely, from the temporal artery, and was treated as in the former case, except that no asafœtida was given. On the second day, he appeared rather better; and, in the afternoon, he began to dung freely; towards evening, a purging took place. The next day, he was quite well, and has had no return of the disease.

### CASE III.

A waggon horse had the stomach staggers: he was bled from the temporal artery, took the purging ball, and was clystered three or four times a day: in short, he was treated in the manner before described. The following day, the horse being still costive, one half of the purging ball was given, and he was again bled freely; in the afternoon, he began to purge, and appeared rather better; but, the next morning, he grew much worse, though he still continued to void soft dung. This circumstance led me to suppose, that inflammation of the brain was coming on, particularly as the horse was unusually restless, and appeared, in some degree, delirious: he was, therefore, bled largely, from the temporal artery, and a rowel placed under the jaw, and the head was blistered: at night he died. On opening the body, I was astonished to find the stomach loaded with hard, undigested food, as the horse, during the last day, had dunged freely. It appeared, from this, that the purgative had passed into the bowels, without causing the stomach to discharge its contents, where it acted in the usual manner: this is the only way in which I can account for the purging.

### CASE IV.

A waggon horse had the stomach staggers, and was treated in the usual manner. On the morning of the second day, the purgative was repeated, and the other remedies persevered in; during the night, he appeared to be griped; but at length he began to dung freely, and appeared much relieved; he continued



to discharge large quantities of dung, which appeared to consist in a great measure, of undigested oats and beans, and had a very offensive smell: he was considerably relieved, and seemed to have an inclination for food; but he was allowed to take gruel only. The horse had so bruised his head and nose, by forcing it against the wall and manger, that there was much swelling above the eyes and about the nose; there was also a discharge of matter from the nostrils. The horse perfectly recovered, and had no return of the disease. It is of importance to remark, that, in this horse, as well as in that of case 2, the disease was noticed at an early period; and I have reason to believe, that they were more strictly attended to by the servants, to whose care they were entrusted, than horses, in this complaint, usually are.

### PURGING BALL.

Barbadoes aloes, powdered,	- - - - -	1 oz.
Calomel,	- - - - -	$\frac{1}{2}$ oz.
Cascarilla, finely powdered,	- - - - -	3 dr.

Sirup enough to form a ball for one dose.

Some years ago, I gave two drams of the carbonat of ammonia, with the above ball, and employed a smaller dose of calomel. The formula I have here given, however, appears to me to be the best. The ball should be given without paper, and washed down with two or three hornfuls of warm water. The mode of treatment I have recommended is, I believe, the most effectual that can be employed: there is but little chance of success, however, unless it is resorted to at the commencement of the disease. It is probable, I think, that the same treatment would be found useful in that acute form which the disorder occasionally assumes, as described in the first letter, and the observations which follow it. It is there stated, that purging medicines and calomel were given without effect, that is, were given separately, and the latter, probably, in a small dose; but it does not appear, that the medicine was assisted by the means I have recommended, that is, by clysters, and by giving frequently, warm water, joined with a powerful stimulant, to soften the undigested food, and excite the stomach to action. With respect to the valuable horse mentioned in the letter, in which, after death, the stomach and bowels were found in a natural state, it appears to me, that he died of some other disease, the symptoms there described being unlike those which occur in staggers. My experience leads me to believe, that the staggers are not contagious; but the circumstances, stated in the foregoing letter, seem to confirm the opinion, that they were highly contagious in the neighborhood of Swansea.



## CHAPTER VII.

*Diarrhæa, or Purging.*

This is not a very common disease in the horse, and seldom difficult of cure. It may be occasioned by a suppression of perspiration, or by an increased secretion of bile. From whatever cause it may proceed, give in the first place the following laxative ball; and if the disease do not cease in two or three days, let the astringent ball be given. Warm clothing is particularly required in this complaint, and exercise should not be neglected; his water should be moderately warm, and given frequently in small quantities. When a purging is accompanied with griping pains and fever, it is to be considered as a case of inflammation in the bowels, and treated accordingly.

## LAXATIVE BALL.

Barbadoes aloes,	-	-	-	-	-	-	2 dr.
Powdered rhubarb,	-	-	-	-	-	-	3 dr.
Cascarilla bark powdered,	-	-	-	-	-	-	2½ dr.
Castile soap,	-	-	-	-	-	-	2 dr.

Sirup enough to form a ball for one dose.

## ASTRINGENT BALL.

Powdered opium,	-	-	-	-	-	-	½ dr.
Prepared chalk,	-	-	-	-	-	-	6 dr.
Powdered cinnamon, or cassia,	-	-	-	-	-	-	1½ dr.
Tartarised antimony,	-	-	-	-	-	-	2 dr.

To be formed into a ball with sirup, or mixed into a drink with mint water for one dose.

*Diabetes, or excessive Staling.*

This disease often proves extremely obstinate, and not unfrequently incurable: I am inclined to believe, however, that if attended to at its commencement, a cure may be effected without much difficulty. The complaint at first consists merely in an increased secretion of urine, the horse staling frequently, and in considerable quantity; the urine is generally transparent and colourless like water; at length he becomes feverish, the mouth feels dry, and he seems to suffer much from thirst;



the appetite is diminished, and the pulse becomes quick; he is generally hidebound, and gradually loses flesh and strength. Lime water has been much recommended as a remedy for this disease; I have seen it given, however, in two cases, without any good effect. Others recommend diaphoretic medicines, from a supposition that it depends in great measure upon a suppression of perspiration. Bark and other tonics have also been considered as useful remedies. I had four cases of diabetes under my care, nearly about the same time, and they were all speedily cured by means of the following ball.

Opium,	-	-	-	-	-	-	-	-	1 dr.
Powdered ginger,	-	-	-	-	-	-	-	-	2 dr.
Yellow Peruvian bark,	-	-	-	-	-	-	-	-	$\frac{1}{2}$ oz.

Sirup enough to form a ball for one dose.

But these were all recent cases, and not attended with fever, nor had the horse lost much strength, or become hidebound in any considerable degree; yet the disease was well marked, and would, I doubt not, have produced all these symptoms, had it not been opposed as soon almost as it made its appearance. In all these cases the quantity of urine discharged was very considerable; the mouth was dry; and there appeared to be a constant thirst. It seems, therefore, highly necessary to attend to this disease at its commencement, since, if neglected, it becomes extremely obstinate, and sometimes incurable. Should the above remedy fail, try one of the following formulæ.

### BALLS FOR DIABETES.

#### No. 1.

Emetic tartar,	-	-	-	-	-	-	-	-	2 dr.
Opium,	-	-	-	-	-	-	-	-	1 dr.

To be made into a ball for one dose.

#### No. 2.

Salt of hartshorn,	-	-	-	-	-	-	-	-	2 dr.
Opium,	-	-	-	-	-	-	-	-	$\frac{1}{2}$ dr.
Powdered ginger,	-	-	-	-	-	-	-	-	1 dr.
Liquorice powder,	-	-	-	-	-	-	-	-	3 dr.

To be made into a ball for one dose.

#### No. 3.

Salt of Steel,	-	-	-	-	-	-	-	-	$\frac{1}{2}$ oz.
Myrrh,	-	-	-	-	-	-	-	-	2 dr.
Ginger,	-	-	-	-	-	-	-	-	1 dr.

To be made into a ball for one dose.



## No. 4.

Powdered columbo root,	-	-	-	-	-	3 dr.
Cascarilla,	-	-	-	-	-	2 dr.
Salt of steel,	-	-	-	-	-	2½ dr.
Prepared Kali,	-	-	-	-	-	1½ dr.
Tincture of opium,	-	-	-	-	-	½ oz.

To be mixed with strong beer, or porter, and given as a drink at once.

*Remark.*—The horse's diet should be nutritious, and easy of digestion; and he should be allowed to drink small quantities of weak lime water; or, if he refuse this, common water frequently.

### *Suppression of Urine.*

Horses are often attacked with a difficulty in staling or making water, sometimes amounting to a total suppression of that excretion. This most commonly arises from spasm in the neck of the bladder, or from hardend excrement in the rectum or latter part of the intestines.

In the first place let the hard excrement be carefully removed by the hand, and a common clyster; and if the horse happen to be costive, give the following laxative:

Barbadoes aloes, in powder,	-	-	-	-	-	2 dr.
Prepared kali,	-	-	-	-	-	1 dr.
Water,	-	-	-	-	-	6 oz.
Castor Oil,	-	-	-	-	-	4 oz.

To be given as a drink.

Should the disease continue, give the following ball; or if the horse be not costive, let it be given at first.

Nitre,	-	-	-	-	-	1 oz.
Camphor,	-	-	-	-	-	2 dr.

Linseed powder and sirup enough to form a ball for one dose.

Should there be any appearance of fever, or should the horse appear to feel pain when the loins are pressed upon, it is probable that the kidneys are inflamed. In such cases the ball would be improper. (*See Inflammation of the Kidneys.*)



*Worms.*

There are three kinds of worms found in horses. The most common and mischievous reside in the stomach, and are named *bots*. They are of a reddish color, and seldom exceed three quarters of an inch in length. At one extremity they have two small hooks, by which they attach themselves, and the belly seems to be covered with very small feet: They are most frequently found adhering to the insensible coat of the stomach, and then they do not appear to cause any considerable uneasiness or inconvenience. Sometimes, however, they attach themselves to the sensible part, and do great injury to this important organ, keeping up a constant irritation, and thereby occasioning emaciation, a rough staring coat, hidebound, and a cough. I have met with several instances of their destroying the horse, by ulcerating the stomach in a considerable degree; and cases are recorded where they have penetrated quite through the stomach. It is astonishing with what force these worms adhere, and how tenacious they are of life: they have been found to resist the strongest poisons, nor have we yet discovered any medicine capable of destroying them, or of detaching them from their situation. It seems probable that this worm, like the caterpillar, undergoes several changes. It is said to be originally a fly, which, depositing its eggs in the horse's coat, causes an itching that induces him to bite the part. In this way he is supposed to swallow some of the eggs, which, by the heat of the stomach, are brought to maturity, and produce bots. When the bots are fit to assume the chrysalis state, they are spontaneously detached, and gradually pass off with the fæces. This is the most rational account we have of their production.

It has been asserted, that the fly from which bots are produced crawls into the anus of horses, and deposits its eggs there; that the worms when hatched soon find their way further up the intestines, and often penetrate into the stomach. This account is literally copied by a late writer on Veterinary Pathology;\* but it appears to me rather strange, that any one who has considered the structure of the horse's intestines should for a moment give credit to it. It seems impossible indeed for these worms to crawl from the anus to the stomach; and, as far as my observation goes, they are never found residing in the intestines. Sometimes we find two or three, but they are evidently proceeding towards the anus to be expelled. I have before observed, that I am not acquainted with any medicine that

\*Ryding's Veterinary Pathology.



is capable of detaching or destroying these worms, though I have often tried the strongest mercurial preparations, and many powerful medicines.

I have used the yellow emetic mercury, or the vitriolated quicksilver, as recommended by the writer just quoted, as well as every other mercurial preparation, but never saw a single bot expelled by them. (See *Bots and Worms*, Appendix.)

The next worm we have to describe is very slender, of a blackish color, and seldom exceeds two inches in length. It is never found in the stomach, and very rarely in the small intestines, the largest part of the canal being generally the place of its residence. Here it proves a constant source of irritation, occasioning loss of condition, a rough, unhealthy looking coat, and frequently a troublesome cough. A variety of alterative medicines have been proposed for the destruction of worms of this kind, and some of them are supposed to be infallible: I believe, however, that none of them are possessed of much efficacy, and we ought not therefore to depend upon them.

The following are the alteratives to which I allude:—savin, rue, box, æthiops mineral, antimony, sulphur, emetic tartar, calomel, and vitriolated quicksilver; the last two, if given with aloes, so as to purge briskly, and particularly the calomel, are excellent remedies; but given merely as alteratives they do no good.

I have generally found the following ball very effectual, giving the preceding night from half a dram to a dram of calomel. I have often mixed the calomel with the ball, and found it equally efficacious: the former method, however, is generally preferred.

#### THE BALL.

Barbadoes aloes,	-	-	-	-	-	-	6 dr.
Powdered ginger,	-	-	-	-	-	-	1½ dr.
Oil of wormwood,	-	-	-	-	-	-	20 drops.
Prepared natron,	-	-	-	-	-	-	2 dr.

Sirup enough to form a ball for one dose.

It is often necessary to repeat this medicine, but there should always be an interval of ten days between each dose.

The third kind of worm is of a whitish color, frequently seven or eight inches in length, and generally found in the lower part of the small intestines. Worms of this kind are not so common as the others, but appear to consume a considerable quantity of chyle, or the nutritious parts of the food. They may be got rid of by the same means that we have recommended for the small blackish worm.



We may always be satisfied of the existence of worms in the intestines, when a whitish or light straw colored powder is observed immediately beneath the anus. I have sometimes succeeded in destroying worms, by giving one dram and a half of aloes every morning until purging was produced.

### *Hidebound.*

This term implies a tightness of the skin, which feels as if it were glued to the ribs, the coat having at the same time a rough unhealthy appearance. This complaint is generally occasioned by worms or want of attention in the groom: it occurs sometimes, however, without any manifest cause. In such cases give the alterative ball No. 1 every morning, until moderate purging is produced; and if this do not succeed, try the alterative No. 2, which is to be given every morning for eight or ten days, taking care to assist its operation by warm clothing, good grooming, and regular exercise. The exercise should not be confined to walking, but may be carried so far as to excite a moderate perspiration. Great care must afterward be taken that the horse does not get cold. Let him be put into the stable while warm, and immediately clothed: when the legs and head have been well cleaned, remove the cloth, and continue to rub the body with large wisps of clean straw, until it is quite dry.

I cannot forbear mentioning here a remedy that is employed in some parts of Staffordshire for this complaint, as it clearly evinces how necessary it is to rescue this valuable animal from the barbarous and absurd treatment of illiterate blacksmiths. An account of this operation was sent me by a gentlemen who saw it practised a few months ago. "The head and legs of the horse being secured, two men, (one on each side) pull the hide from the ribs in about fifty places with pincers." The proprietor of this unfortunate animal must surely have been destitute of common sense or humanity, to allow an ignorant unfeeling farrier to perform so cruel and fruitless an operation.

### ALTERATIVE BALL.

#### No. 1.

Barbadoes aloes,	-	-	-	-	-	-	-	1 oz.
Castile soap,	-	-	-	-	-	-	-	9 dr.
Powdered ginger,	-	-	-	-	-	-	-	6 dr.

Sirup enough to form a mass, to be divided into four doses.



## No. 2.

Tartarised antimony,	-	-	-	-	2 $\frac{1}{2}$ oz.
Powdered ginger,	-	-	-	-	1 $\frac{1}{2}$ oz.
Opium,	-	-	-	-	$\frac{1}{2}$ oz.
Sirup enough to form a mass, to be divided into eight balls.					

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*Surfeit.*

This absurd term is given by farriers to a disease of the skin, consisting in small tumors or knobs which appear suddenly in various parts of the body, sometimes in consequence of drinking largely of cold water, when the body is unusually warm; but it appears frequently without any manifest cause. It may be easily cured by bleeding moderately, or giving a laxative ball: sometimes, indeed, it goes off without any medical assistance. There is another disease of the skin, of the same name, which is generally more obstinate, and attacks horses that are hidebound and out of condition. In this a great number of very small scabs may be left in various parts of the body; the horse is frequently rubbing himself; and sometimes the hair falls off from those parts which he rubs. This complaint approaches to the nature of mange, and requires the same treatment, assisted by a generous diet, good grooming, and regular exercise. (See *Condition and Humors*, Appendix.)

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*Mange.*

This disease is seldom met with except in stables where scarcely any attention is paid to the horses, and where their food is of the worst quality; it is certainly very contagious, and may in this way attack horses that are in good condition. It is known to exist by the horse constantly rubbing or biting himself, so as to remove the hair, and sometimes produce ulceration; the hair of the main and tail frequently falls off, and small scabs are observable about the roots of that which remains. The mange is, I believe, a local disease, and requires only the following ointment or lotion for its removal: in obstinate cases, however, it may be advisable to try the effect of the following alterative.



## MANGE OINTMENT.

No. 1.

Sulphur vivum, finely powdered,	-	-	-	4 oz.
Oil of turpentine,	-	-	-	3 oz.
Hog's Lard,	-	-	-	6 oz.

MIX.

No. 2.

Oil of turpentine,	-	-	-	4 oz.
Strong vitriolic acid,	-	-	-	$\frac{1}{2}$ oz.
Mix cautiously, putting in the acid by a little at a time, and add				
Train oil,	-	-	-	6 oz.
Sulphur vivum,	-	-	-	4 oz.

MIX.

## MANGE LOTION.

White hellebore, powdered,	4 oz.
Boil in 3 pints of water to 1 quart, then add Muriate of quicksilver,	
	2 dr.
That has been previously dissolved in three drams of muriatic acid.	

## ALTERATIVE FOR MANGE.

Muriate of quicksilver,	$\frac{1}{2}$ oz.
Tartarised antimony,	3 oz.
Powdered aniseeds,	6 oz.
Powdered ginger,	2 oz.

Sirup enough to form a mass, to be divided into sixteen balls, one of which is to be given every morning.

Should this appear to diminish or to take off the appetite, or create a purging, they must be discontinued two or three days.

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*Grease.*

This disease consists in an inflammation, swelling, and consequent discharge from the heels, the matter having a peculiar, offensive smell, and the heels being sometimes in a state of ulceration; the swelling frequently extends above the fetlock joint, sometimes as high as the knee or hock. When the inflammation and swelling are considerable, apply a large poul-



tice to the heels, (See *Poultice*,) taking care to keep it constantly moist, by adding to it occasionally, a little warm water: at the same time let a dose of physic be given. After three or four days, the inflammation and swelling will have abated considerably, the poultice may then be discontinued, and the astringent lotion applied five or six times a day. Should the heels be ulcerated, apply the astringent ointment to the ulcers; and if they be deep and do not heal readily, wash them with the detergent lotion previous to each dressing. Regular exercise is of the highest importance, but it is necessary to choose a clean and dry situation for the purpose.

In slight cases of grease, the astringent lotion and a few diuretic balls will generally be found sufficient to effect a cure; but when the disease is of long standing, and particularly if the horse have suffered from it before, there will be more difficulty in its removal. In such cases the following alterative powder may be given in the corn every day, until it produces a considerable diuretic effect: in very obstinate cases, rowels in the thigh have been found useful. *Digitalis*, or fox-glove, has been recommended in those swellings of the legs, which are the consequence, of grease: I have not yet tried its effect in this way, at least not sufficiently to give an opinion on the subject. It is a violent medicine in the horse, very apt to take off the appetite and injure the stomach, and must therefore be given with caution: the dose is from half a dram to one dram.

Though the grease is most commonly occasioned either by high feeding and want of exercise, or by neglect in the groom, there are cases which seem to depend on general debility. I do not believe that this is ever the exciting cause of the disease, but am unconvinced that a horse is rendered more susceptible of it by being in a state of weakness, and that the complaint sometimes owes its continuance to this cause. When a horse has suffered much from this disease, and particularly if he appear to be weak and out of condition, a liberal allowance of corn will tend to recover him, if assisted by the astringent lotion and careful grooming. In cases of this kind, exercise is essentially necessary. It must be obvious that when this disease depends upon debility, a dose of physic would not be an eligible remedy, yet considerable benefit has sometimes been obtained by giving the following alterative every morning until the bowels are moderately opened.

#### ALTERATIVE BALL.

Succotrine aloes,	1 oz.
Castile soap,	1 $\frac{1}{2}$ oz.
Powdewed ginger and myrrh, of each	$\frac{1}{2}$ oz.
Sirup enough to form a mass, to be divided into six balls.	



This medicine, though of an opening quality, will improve the horse's strength, and at the same time promote absorption.

### ALTERATIVE POWDER.

Powdered rosin and nitre, of each . . . 4 oz.

MIX AND DIVIDE INTO EIGHT DOSES.

Nothing tends so much to prevent grease and swelling of the legs, as frequent hand-rubbing, and cleaning the heels carefully, as soon as a horse comes in from exercise. In inveterate cases of grease, where the disease appears to have become habitual in some degree, a run at grass is the only remedy. If a dry paddock can be procured, where a horse can be sheltered in bad weather, and fed with hay and corn, it will be found extremely convenient, as in such circumstances he may perform his usual labor, and at the same time be kept free from the complaint. In a few obstinate cases I have seen mercurial alterative of service, giving one ball every morning until the bowels are opened.

### ASTRINGENT LOTION.

#### No. 1.

Alum powdered, . . . . . 1 oz.  
Vitriolic acid, . . . . . 1 dr.  
Water, . . . . . 1 p't.

MIX.

#### No. 2.

Alum powdered, . . . . . 4 oz.  
Vitriolated copper, . . . . .  $\frac{1}{2}$  oz.  
Water, . . . . .  $1\frac{1}{2}$  p't.

#### No. 3.

Sugar of lead, . . . . . 4 oz.  
Vinegar, . . . . . 6 oz.  
Water, . . . . .  $1\frac{1}{2}$  p't.

MIX.

The strength of these lotions often requires to be altered. Where the inflammation and irritability of the part are considerable, they must be diluted with an equal quantity of water; but if the inflammation be subdued, and a swelling and ulceration remain, the alum solution cannot be made too strong.



## ASTRINGENT OINTMENT.

## No. 1.

Hog's lard, . . . . .	4 oz.
Oil of Turpentine, . . . . .	2 dr.
Water of acetated litharge, . . . . .	$\frac{1}{2}$ oz.

Mix.

## No. 2.

Venice turpentine, . . . . .	1 oz.
Hog's lard, . . . . .	4 oz.
Alum, finely powdered, . . . . .	1 oz.

## MERCURIAL ALTERATIVE.

Calomel, . . . . .	$\frac{1}{2}$ dr.
Aloes, . . . . .	1 dr.
Castile soap, . . . . .	1 dr.
Oil of juniper, . . . . .	30 drops.

To be made into a ball with sirup for one dose.

## ASTRINGENT POWDER.

## No. 1.

Powdered alum, . . . . .	4 oz.
Bole, . . . . .	1 oz.

Mix.

## No. 2.

Vitriolated zinc, powdered bole, of each, . . . . .	2 oz.
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## No. 3.

Acetated ceruse, . . . . .	2 oz.
Bole, . . . . .	1 oz.

Mix.

(See *Grapes, Swelling of the Legs, and Humors*, Appendix.)*Malanders and Salanders.*

When a scurfy eruption appears on the posterior part of the knee joint, it is termed *malanders*; and when the same kind of disease happens on the anterior of the hock joint, it is named *salanders*. Should these complaints occasion lameness, it



will be proper to give in the first place a dose of physic. Let the hair be carefully clipped off from the diseased part; and let all the scurf be washed off with soap and warm water; a cure may then be soon effected by applying the following ointment twice a day:

### THE OINTMENT.

#### No. 1.

Ointment of wax or spermaceti,	2 oz.
Olive oil,	1 oz.
Camphor and oil of rosemary, of each,	1 dr.
Water of acetated litharge,	2 dr.

#### Mix.

#### No. 2.

Ointment of nitrated quicksilver, olive oil, of each,	1 oz.
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#### Mix.

#### No. 3.

Oil of turpentine,	$\frac{1}{2}$ oz.
Vitriolic acid,	1 dr.

Mix cautiously, putting the acid by a little at a time, and add of

Oil of bay,	3 oz.
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#### Mix.

The following lotion has often succeeded.

Blue vitriol,	2 oz.
Alum,	3 oz.
Water,	1 quart.
Nitrus acid,	1 dr.

Mix, and apply to the diseased part daily, after it has been well cleansed.

(See *Humors*, Appendix; and for the mode of prevention, see *Grooming*, Appendix.)



## CHAPTER IX.

*A description of the Glanders.*

The nature and consequences of this malignant disease cannot be too seriously considered by all those who have the management of horses. It is the interest of proprietors, no less than the duty of servants, to acquire a knowledge of its earliest symptoms; and to attend carefully to the instructions, that are offered with a view to prevent the spreading of a complaint, which, in its nature, is highly contagious, and has hitherto proved incurable.

The first symptoms of glanders are, a discharge of matter from one or both nostrils, and a swelling of the glands, or *kernels*, as they are commonly termed, between the branches of the lower jaw-bone. When the discharge of matter is from one nostril only, the swelling is generally confined to that side of the jaw-bone: this is a very common case in the early stage of the complaint.

In the mild kind of glanders, the matter is small in quantity, and of a thin, glutinous appearance, adhering to the exterior part of the nostrils, or upper lip; the general health is seldom affected, the horse appearing perfectly well in every other respect. On examining the interior, or red part of the nostril, in this stage of the complaint, ulcers are rarely observable, and the matter is free from odour; this, indeed, is often the case after the disease has existed several months: yet it has been thought that an offensive smell constituted one distinguishing mark of glanders.

The disease, sometimes, continues in this mild stage several months; and, in a few instances, even for years; when this happens, it is generally found that the horse is of a hardy constitution, is in good condition when attacked by it, and afterwards is treated with proper care. But when the disorder attacks horses, that are worked hard and inadequately fed, or such as are of delicate constitutions; its progress is usually more rapid, and the second stage soon commences.

This is distinguished by a more copious discharge, often attended with ulceration in the interior parts of the nostrils. When the discharge is at all tinged with red, or mixed with streaks of blood, it is a certain proof of the existence of ulceration; though perhaps not low enough to be discovered; and, if the matter smell offensively, it is probable, that not only the red membrane, but also the cartilage and bones are diseased. In this stage, the matter often proceeds from both nostrils, and the glands under the jaw are considerably enlarged. When the



glanders arrive at the second stage, the strength of the horse undergoes a more or less rapid decline: the accumulation of matter, together with the thickened and ulcerated state of the parts within the nostril, in some degree obstructs respiration, and causes a snuffling noise in breathing, which may be often heard at the distance of several yards. On the occurrence of these symptoms, the lungs are always affected with tubercles, or abscesses; and the animal soon falls a victim to the disease.

The glanders, sometimes, attacks with great violence; beginning with a copious discharge of matter from the nostrils, and ulceration of the membrane within them. In such cases, the horse soon becomes weak and emaciated, and in a short time sinks under the complaint.

I have met with many instances, in which glanders were preceded by general indisposition. The horse appeared weak and languid, and fed badly; proceeding at times in this way for two or three weeks, with a gradual loss of strength and flesh. At length, the symptoms which are supposed to constitute glanders made their appearance; that is to say, there was a discharge of matter from the nostrils, and the glands under the jaw became enlarged.

In cases of this nature, it is commonly thought, that the glanders are generated; or that the disease is a consequence of the general debility, under which the animal labors: but I think it far more probable, that it is the effect of contagion.

A swelling of the gland under the jaw is sometimes observed, without any discharge from the nostrils. In such instances, we generally find, that at some former period the horse has had the farcy, or has been kept with glandered horses; and, on a careful inspection, a slight degree of moisture is usually perceived in the nostril, which is on the same side as the swelling; or an appearance, as though the more fluid parts of the discharge had evaporated, leaving a dirty colored coating upon the parts. But if this symptom be not visible, we may learn from the person who has attended or worked the horse, that such an appearance has at times been observed, or that the horse has occasionally thrown out matter in snorting. This circumstance, therefore, is sufficient to excite suspicion, however trifling the swelling and discharge may be; especially when it is known, that the horse has had the farcy at any former period, or has ever been exposed to infection.

It is astonishing in how slight degree the glanders sometimes exist in horses of strong constitutions, that are fed well and moderately worked. Such instances often occur among our cavalry; where, upon the slightest cause for suspicion, the horse is (generally) separated from the rest, and not employed



in any duty; though the allowance of forage issued for him is the same as though he were regularly worked.

It sometimes happens, that the discharge from the nostril ceases for a time; but the swelling of the glands under the jaw generally remains, the discharge sooner or later returns, and the disease ultimately proves fatal.

The following case, sent to me by a gentleman, who keeps a great number of horses, will serve as an example of this: "Upon examining our horses, I found one with a suspicious running: I had him immediately separated: in the course of a few days the running ceased; and, as the horse appeared perfectly well, he was returned to the working stable. In about a fortnight, I found a large swelling, where it usually is in glanders, but no running at the nose; the swelling was frequently bathed with salt water without effect: but the horse continued without any running at the nose for months. A decisive glanderous running then came on suddenly, and the horse was destroyed."

## CHAPTER X.

### *A description of Farcy.*

It has been clearly ascertained, as will be shown hereafter, that the glanders and farcy will mutually produce each other, and are therefore nearly allied; yet there are circumstances, which make it appear necessary to give them a separate consideration.

The farcy, generally, appears in the form of small tumors, called *buds* by farriers; or small ulcers, about the legs; sometimes on the lips, face, neck, or other parts of the body. These tumors are, in some cases, so small, so few in number, and create so little inconvenience to the animal, that, for a time, they escape observation; at other times, they are larger, more numerous, painful to the touch, and spread more rapidly; and, in these instances, a general swelling of the limb often takes place, particularly when the hind legs are attacked, and some degree of lameness ensues.

The tumors, or *buds*, are at first hard, but soon become soft, and burst; degenerating into foul ulcers, of a peculiar appearance.

It is worthy of remark, that this disease always proceeds upwards, if in the limbs; if in the neck, it advances towards the chest; if in the lips or nose, it spreads towards the glands under the jaw; in short, its invariable direction is, towards the heart: often in its course affecting the superficial glands, and causing



them to swell, in like manner as the venereal poison from a chancre, affects the glands of the groin, and causes buboes.

The lines of communication between the *buds*, or ulcers, are generally very observable; particularly when they occur on the inside of the limbs, where the superficial veins are large; as in the thigh: they consist of what the farriers call *corded veins*, but, in reality, are inflamed and enlarged lymphatic, or absorbent vessels: which vessels very closely accompany the superficial veins, and are in bulk proportioned to the size of the vein.

When the farcy *bud* has suppurated and burst, it sometimes spreads under the skin, forming what are termed sinuses, or pipes; and when this happens on the hock joint, or on the flexor tendons of the legs, it generally causes considerable lameness, and is difficult of cure. When no remedies are applied to a farcy ulcer, it commonly spreads more or less rapidly; but, by the free application of caustics, assisted by internal remedies, and by laying open the sinuses when they exist, the sores gradually heal, and the horse is apparently cured. In slight cases, this apparent cure is effected by caustics alone, and occasional blisters. It is, however, generally found, that this disease, though it seems to have been perfectly removed, is followed by the glanders; the interval being sometimes considerable, varying from two or three weeks to several months.

When the farcy attacks extensively, it is usually accompanied or very quickly followed by glanders.

The commencement of farcy is sometimes more violent than has yet been described. The limbs swell to an enormous size; foul ulcers appear in various parts; the nose swells, and discharges fetid matter; and the horse breathes with difficulty, from the swelling and ulceration of the nostrils. This malignant kind of farcy is not very common, and occurs to post and stage-coach horses, more frequently than to such as are worked moderately. When it does happen, however, it speedily destroys the animal.

When a farcy *bud* has burst, and become an ulcer, there is something peculiar and characteristic in its appearance. The edges of the skin that surround the ulcer, terminate abruptly, and the surface of the sore has a pale glossy appearance. If a caustic be freely applied, so as to destroy the diseased parts, the sore loses this peculiar appearance as soon as the slough separates: the skin, instead of terminating abruptly, is gradually lost in the sore; which looks red and healthy, and very soon heals, though no remedies are applied.

The farcy sometimes attacks horses that are in good condition, and without any previous illness; most commonly, however, it is preceded by various symptoms of constitutional de-



rangement. In some cases, the horse gradually loses flesh and strength; the coat becomes dry; the skin tight; and the hind legs swell: in other instances, the horse has been suddenly attacked with lameness, without any visible cause, when, after a few days, the appearance of farcy *buds* has pointed out the nature of the disease.

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## CHAPTER XI.

*A description of those diseases, which may be mistaken for Glanders; and the method of distinguishing them.*

The symptoms of glanders have been frequently confounded with those of some other complaints, nearly resembling them; but which, in fact, are essentially different in their origin and nature. The diseases liable to be mistaken for glanders, are the *strangles*; *catarrh*, or cold; inflammation of the throat, with discharge from the nostrils, commonly termed *quinsy*, or sore throat; chronic inflammation of the membrane within the nostril, causing a slight discharge, and a trifling enlargement of the glands under the jaw; a discharge of stinking matter, in consequence of a fracture of the bones of the nose; and epidemic *catarrh*, commonly called the *distemper*.

The strangles are a disease, which usually occurs to young horses, and in some respects resembles the glanders; that is, there is generally a discharge of matter from the nostrils, and the glands under the jaw are swollen. There is no difficulty, however, in distinguishing this disease, as it is commonly attended by cough, and some degree of fever; the eyes appear dull, or inflamed and watery; the appetite is affected, and there is often difficulty in swallowing; the tumor under the jaw becomes tender, gradually increases, and at length bursts, discharging a considerable quantity of white matter. After this, the horse becomes lively, feeds well, and all the symptoms, under proper management, gradually disappear. With this description of strangles, it is unnecessary to show, in a more particular manner, how it is to be known from glanders. It is proper, however, to observe, that, in few instances, the discharge of matter from the nostrils has been known to continue after the other symptoms had ceased: this, perhaps, has given rise to an opinion, that sometimes, through neglect, or bad management, the strangles have degenerated into glanders. I have never seen an instance of this; and, whenever the discharge from the strangles has continued after the other symptoms have been removed, I have already observed, that it ceases in time, and the



horse perfectly recovers. In treating of the nature and cause of glanders, this subject will be more particularly considered.

A copious discharge of matter, sometimes, takes place from the nose of a horse, in consequence of inflammation of the throat and higher parts of the nostrils. This complaint is termed *quinsy*, or sore throat, and by some, the inward strangles; here there is pain and difficulty in swallowing, which symptom generally precedes the discharge a short time; an unusual quantity of saliva is often formed; and sometimes the disorder is attended by fever; but the glands under the jaw are seldom affected. In this case, there can be no difficulty in distinguishing the disorder from glanders.

The next disease to be described has often puzzled the most experienced practitioners; it consists in slow or chronic inflammation of the membrane within the nostrils, accompanied by a discharge of matter, and a trivial enlargement of the glands under the jaw.

It is necessary here to remark, that, over the whole surface of the delicate membrane, which lines the interior of the nostrils, a mucous fluid is constantly forming by vessels destined for this purpose, in order to lubricate it, and preserve it in a state of moisture. These vessels may be effected by various causes, so as to form more of this fluid than usual, and of a different quality and appearance: it will then be seen flowing from the nostrils. The causes which produce this state of the membrane are various. If, for example, a stimulating fluid of sufficient strength were injected into the nostrils, it would excite inflammation, and produce a discharge. The same effect is brought on by what is termed catching cold; it also happens in strangles, as has been described; in glanders, likewise, the most conspicuous symptom is a discharge from the nostrils, occasioned by a peculiar kind of poison having got into the circulation. But the discharge now under consideration cannot be ascertained; it so nearly resembles that which occurs in the mild kind of glanders, that, by merely examining the parts, it is extremely difficult, if not impossible, to fix the distinction between them. I can point out only one method, by which this appearance may be known with certainty from the mild glanders; and this will be explained in some future chapter.

In describing the glanders, it was observed, that the progress of the disease was more rapid in horses, that were weak and in low condition, than in such as were healthy and strong. In these doubtful cases, it may be worth while to try the effect of copious bleeding and low diet, in order to reduce the strength of the animal: if the disease were really the glanders, this would, perhaps, so increase it, as to remove all doubt respect-



ing its nature; whereas, if it arose from any other cause, by such means it probably would be removed.

When a discharge takes place from the nostrils in consequence of catching cold, there is seldom any swelling of the glands under the jaw; and, when this symptom does occur, the swelling is generally tender, and either suppurates, or gradually subsides. There is also a cough, and the eyes are frequently affected; the discharge proceeds from both nostrils; the matter is commonly thicker than in cases of glanders, and of a whitish color, like that from a common abscess.

In the epidemic catarrh, or distemper, which raged with great violence in the summer of 1798, many instances occurred, which were supposed to degenerate into glanders: in some of these, ulceration took place within the nostrils; and several horses were destroyed under a conviction of their being glandered. I am inclined to believe, that such cases were not glanderous; though, it is probable, that in some of them, the lungs were incurably diseased. Those that came under my observation differed materially from glanders: when the discharge came from the lungs, as well as the nostrils, it was known by a weak rattling cough: There was seldom any swelling under the jaw, and the horse was extremely weak and emaciated. When these symptoms occurred, the horse soon died. If the distemper was followed by a discharge from the nostrils, unattended by cough, the matter was generally very abundant, and flowed equally from both nostrils; the glands under the jaw were seldom enlarged. But the most material difference between this disease and glanders, consisted in its not being infectious; that is, so far as my experience enables me to judge. This subject will be more particularly discussed in some subsequent chapter.

A discharge of foetid matter, sometimes, takes place from the nostrils, in consequence of a blow, by which the bone has been fractured; and is generally accompanied by a swelling of the gland under the jaw. I have seen two instances of this kind, in which the symptoms had existed a considerable time; and so nearly resembled glanders, that many experienced persons were deceived. But the disease was clearly proved to be of a different nature, from the circumstance of the horse's being constantly kept with others, without producing any infection.

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## CHAPTER XII.

*A description of those diseases, which resemble Farcy, and how they may be distinguished from it.*

In regard to the symptoms of farcy, a liability to error in



judgment prevails, as in the case of glanders just described: but the difference between farcy, and the diseases that may sometimes be mistaken for it, is readily distinguished.

Horses are often attacked with diffused swellings of the limbs, belly, or sheath; and particularly of the hind legs. These swellings are sometimes considerable, and occasion lameness. If the finger be strongly pressed on the swollen part, the impression will be found to remain some time. Ulcers, also, will occasionally break out about the limbs; but a greater or less degree of fever and loss of appetite generally accompanies the first attack. In some cases, the swelling is preceded by shivering, and other symptoms of fever. These symptoms are, by farriers, termed farcy.

This disease however, differs from farcy in many respects. When ulcers appear on the swollen parts, which is by no means a frequent occurrence, they do not spread like those of farcy; nor is there between them that line of communication we have described; that is, there are no enlarged lymphatics, or corded veins, as they are termed by farriers. The swelling and lameness are more considerable than in farcy; except in those violent cases, which are accompanied, or soon followed, by glanders. In fact, this spurious kind of farcy is nothing more than common watery swelling, arising from some temporary derangement of the constitution; often following a smart attack of the fever, and causing an abatement of the febrile symptoms. This disease is easily cured by bleeding, with cooling and diuretic medicines.

Another complaint, which appears on the skin, has sometimes been mistaken for farcy: in this case, small tumors arise in various parts of the body; bearing some resemblance to those of farcy, but differing from them in being smaller, not painful, and seldom suppurating or forming matter; nor do we ever observe, in this case, any enlarged lymphatics.

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## CHAPTER XIII.

### *On the Nature and cause of Glanders.*

The glanders appear to be a constitutional disease, caused by a peculiar kind of poison, with which the whole mass of blood is impregnated.

Under such circumstances, that certain parts only should be infected, may appear extraordinary to those that are not of the medical profession; but when it is considered, that, in small-pox, the blood is contaminated with the variolous poison, and



that the skin only is affected; and again, that many parts of the body are never attacked by the venereal virus; I conceive, that there can be no difficulty in assenting to my position.

That the blood is impregnated with the poison of glanders, seems to have been proved by an experiment made by Mr. Coleman. He introduced the blood of a glandered horse into the jugular vein of a healthy ass: in a short time the ass became completely glandered.

The following experiment will serve also to illustrate this; and may also afford a proof of what has been asserted; that is, that the glanders, when they attack the nostrils, are not a local disease, but a symptom of constitutional affection.

#### EXPERIMENT I.

Let the hair be cut from any part of the body, the neck, for example, about an inch square, and a lancet passed under the cuticle, or scarf skin, so that it may be slightly tinged with blood, without causing any to flow from the part: when this happens, the bleeding should be stopped by pressing on the wound previous to proceeding in the experiment: under the cuticle, which has been thus raised, let a small quantity of matter from the nose of a glandered horse be introduced, by means of a small bit of wood or ivory. The following day, the part will appear a little swollen and tender; and, on the second or third day, matter may be seen oozing from it: soon after, the absorbent or lymphatic vessels going from the part will swell, appearing like *corded veins*, as they are termed, as in cases of farcy. On rubbing off the crust on the surface of the sore, there will be found an ulcer, or chancre, of a peculiar appearance; the edges will look smooth and regular, terminating abruptly, and the surface smooth and glossy, free from that red, granulating appearance, observable in a common sore. In the course of the corded lymphatics, other tumors will be seen, soon bursting, and assuming the appearance of the original sore; which continues to spread sometimes rapidly. At length, a discharge takes place from one or both nostrils, and the glands under the jaw become enlarged; in a word, the horse will be completely glandered. It may be proper to add, that the same effect has been produced by matter taken from a farcy bud.

The degree and progress of the glanders, thus artificially produced, appear to be chiefly regulated by the following circumstances:—the state or condition of the animal; the quantity of glanderous matter used in the inoculation; and the extent or depth of the wound or orifice in which it has been placed.

If, for example, the experiment be performed in the way I



have described, and the horse be in good condition, and kept well afterwards, perhaps several weeks may elapse before the nose is affected; but, if the animal be weak and emaciated, and afterwards badly fed, the disease will be more rapid in its progress. If the orifice be large, and a considerable quantity of matter be introduced, the horse would not only have the glanders in a short time, but it is probable, that the hind legs, or other parts of the body, would be affected also with farcy. I have seen two horses speedily destroyed in this way; one of them was extremely thin and feeble, and the quantity of matter not very great; but the orifice in the latter was large, like that made for a rowel, and in it a piece of tow, soaked in glanderous matter, was placed. It does not appear, that the degree of the disease, produced by inoculation, is at all influenced by the state of the matter employed; for that of the mild kind of glanders has been found to have precisely the same effect as matter from the most virulent.

It will be urged, perhaps, in opposition to the opinion here given of the glanders being a constitutional complaint; that, as the disease often attacks only one nostril, and is produced by standing near a glandered horse, it seems rather to be caused by the immediate application of glanderous matter to the nostril, and is, consequently, in the first instance, a local complaint. This opinion is certainly very plausible; but the following experiments, I think, will convince every one that it is erroneous.

#### EXPERIMENT II.

A considerable quantity of matter was taken from a horse decidedly glandered. This was applied, by means of a long probe and a piece of lint, to the nostril of a sound horse, and kept in contact with the membrane a few minutes. Glanderous matter was next injected into the nostril; and, though this was repeated for three successive days, not the slightest effect could be perceived. About a fortnight after this experiment, the horse was inoculated with some of the same matter, with a view to prove, that it was really glanderous, and that the subject of the experiment was susceptible of the disease. It produced a chancre, as in experiment 1, which was soon followed by glanders. This was thought necessary, to render the experiment decisive, because it has been found, in a few instances, that horses have been so hardy as to resist the contagion, having been worked and fed with glandered horses without catching disease.

The experiment was tried on four other horses, and with the same result, except in one case, in which the matter was inju-



ditionally applied by means of rough brown paper, and the membrane accidentally wounded.

In this case, a small reddish pustule arose within the nostril which became a chancre; in short, the sore was exactly like those produced by inoculation in other parts of the body, and the disease did not, in any respect, resemble glanders. Had it been convenient to keep his horse a sufficient time, I have no doubt, the usual symptoms of glanders would have appeared; but at this period he was destroyed.

Since then, it seems, that the disease is not produced by applying glanderous matter to the nostrils, it may be supposed, that it is caused by some vapor, which arises from the matter, and consequently, that even the air of a stable, in which glandered horses are kept, is infectious. It has been proved, however, by experiment, that this opinion is erroneous.

#### EXPERIMENT III.

A slight division was made in a stable: in one part, two glandered horses were kept; the other was used for horses that happened to be lame, or sick, or from any other cause unfit for work. There was a free communication for the air, the partition being constructed with thin planks, and some space left between each: it was carried only so high as to prevent the horses from touching each other. No instance ever occurred here of a horse catching the glanders, though many horses were so exposed, and different glandered horses were kept in the other part of the stable, some of which had the disease in a very high degree.

It appears to me, that glanders are communicated by the matter being taken into the mouth, or stomach, either with the food or water, or by licking it from the rack or manger. This opinion, however, has not been clearly proved by experiment. It has been suggested, that the matter being taken into the mouth, may be partially absorbed, so as to affect the constitution; or that it may affect the back part of the throat, and thence spread to the nostril. In one case, where glanderous matter was given to a horse for three days, a tumor soon after appeared in the hock, resembling farcy, and the nose was slightly affected: but the horse was destroyed as soon as these symptoms appeared, being incurably lame, and having no convenient place for keeping him. Yet I feel convinced that the horse was really glandered.

In another instance, glanderous matter was given to a young ass, in daily doses, of about two or three drams, for more than a week; soon after, the animal died without any appearance of



glanders or farcy. In a third experiment, two doses were given; and, in a fourth, one dose without any effect.

Though glanders have been thus produced in one instance only, and then not in a degree sufficiently decisive to preclude all doubt as to the nature of the disease, yet the indirect proofs in favor of his opinion, are certainly very strong; and it is farther corroborated, by the well known fact, that horses have frequently been infected, by standing in a stable where glandered horses had been previously kept, though the diseased horse had been removed several days; and consequently, the infectious matter he had left, must have become dry, and been adhering to the manger, rack, or to any hay, corn, or straw, that may happen to be in the stable. In this state, it is difficult to conceive how it could be applied to the interior parts of the nostril; but we can readily imagine, that the infectious matter may, under such circumstances, be taken into the stomach. It is well known, also, that horses have been infected by drinking out of a pail, or trough, that had previously been used for glandered horses.

The following circumstance affords an example of this:—A team of glandered horses stopped occasionally on a gentleman's premises, to take up goods: during the time of loading, they were fed with hay, which was thrown upon the ground. More or less of this hay was generally left; and, as the place communicated with a paddock, in which a horse and two colts were kept, the hay that remained was generally eaten by them. The horse, after some time, became so decidedly glanderous, that it was thought necessary to kill him. The two colts, a short time after, appeared to have the disease: but in so light a degree, that it was thought doubtful: they have now been in the same state about two months, from the time I saw them; and though the disease has not increased, and the discharge scarcely perceptible, I have no doubt, that it will ultimately prove to be the glanders. The continuance of the symptoms, for so long a time, is a circumstance that adds considerable strength to this opinion.

A general opinion prevails, I believe, among veterinary surgeons, as well as others concerned with horses, that the glanders are most commonly generated in the system, by other causes than contagion. That the disease is sometimes so produced, cannot, perhaps, be disputed; yet, from the observations I have made, it appears to me probable, that it more frequently arises from contagion.

It should be recollected, that there are circumstances which seem to prove, that the glanderous poison may remain in the system for some time, without producing the characteristic



symptoms of the disease. In what other manner can we account for the farcy being so frequently followed by glanders, as experience proves to be the case, after that disease has been apparently cured for several weeks, or even months? though the horse, in the interval, appears perfectly free from every symptom of glanders. When, therefore, a horse becomes glandered we ought not to conclude that the disease has been generated independently of contagion, because he has not, within a short period, been exposed to infection.

I have had an opportunity of seeing sound horses worked and kept with glandered horses, and have uniformly found, that they have not been immediately infected: it has sometimes been one, two or three months before the glanders have appeared; and, in a few instances, they have escaped it altogether. In an experiment related by Sainbel, sixty days elapsed before a horse was infected, though he was constantly fed and watered with one that was glandered. If, in a regiment of cavalry, a horse becomes glandered, and the disorder is not at first observed, so that he is suffered to remain in the stable a few days with others, the mischief he does is not immediately perceived. It has often happened, that the horses infected by him have not shown the disease, till several weeks after he has been separated from them; and, suppose three horses to have been infected, the disease will generally appear in each at different periods; sometimes with considerable variation in respect of time. Similar instances have come under my observation among waggon horses.

In such cases, where the persons concerned think little of the contagious nature of the disease, supposing it to proceed from other causes, it has often continued among their horses a great length of time; seldom, however, attacking in a violent form, and often remaining in a mild stage for a considerable period. Occasionally, it exists in so slight a degree, that the proprietor does not think it necessary to separate the horse; so that he is kept in the same stable, and fed and watered with the others. It is by such proceeding, that the glanders are frequently kept up among cavalry and waggon horses: the disorder is, sometimes, propagated so slowly, that all sight of contagion is lost, and the complaint is attributed to other causes. What I have said, is not a matter of conjecture, it is the result of careful observation.

In a troop of cavalry, at the Honiton barracks in Devonshire, a horse was found to have the glanders: in the course of about two months, two or three others of the same troop, that had been kept in the same stable, became glandered, but at different times. Though the first horse was separated as soon as the



disorder was perceived, it is probable, that there had been some running from the nose several days or weeks before it was observed; but the horses were afterwards more carefully examined, and the disease, perhaps, discovered at its commencement.

It is of the highest moment, that the proprietors of horses should be aware of this circumstance, that they may be convinced of the necessity of separating a glandered horse from others, in however mild a degree the disease may make its appearance.

When the disease is propagated thus slowly, among cavalry, or waggon horses, it appears to depend upon two circumstances; in the first place, the horses on such occasions are, in general, healthy, and in good condition; consequently less susceptible of the disease; and, when attacked by it, contract only a slight infection: secondly, the quantity of poisonous matter produced is, under such circumstances, usually inconsiderable, because the disease exists in its mildest form; and, when the quantity is at all considerable, the infected horse is immediately removed from the healthy stable. But, when the glanders are introduced among post or stage-coach horses, it spreads rapidly; generally appears in the most virulent form; is often accompanied by farcy, and proves extremely destructive.

Nothing is so favorable to the progress of the disease, as that debility, or state of the constitution, which is brought on by excessive exertion, bad provender, or an insufficient quantity of good food, and hot, close stables; particularly when horses are put into such stables after long exposure to moisture and cold. These are circumstances no less deserving the attention of the proprietors of horses, than those before mentioned; for, if it be true, that the glanders often take place independently of contagion, these are, undoubtedly, the causes, by which it is generated.

It seems to be generally believed, that the strangles or a violent cold, when neglected, will sometimes degenerate into glanders. I have never seen an instance of this, and am persuaded the opinion is erroneous. I have often seen cases, both of catarrh, or cold, and strangles, where the discharge has continued an unusual length of time, and the horse has been thought glandered; but I have uniformly found, that such horses have either perfectly recovered, or died from the disease having extended to the lungs.

A discharge of stinking matter, from one or both nostrils, is sometimes caused by a blow, by which the bone is fractured: this, being generally attended by a swelling of the glands, and often continuing a considerable time, has been supposed to degenerate into glanders. This circumstance, indeed, was noticed by Lafosse, the author of a book on Glanders; who also



observed, that the discharge may be produced by injecting any stimulating fluid into the nostrils. It appears, in short, that every disease, which continued an unusual length of time, has been considered glanderous: hence we may account for the supposed cures that have been effected, as well as some of those, that have been said to take place spontaneously; and, from the same error, a great number of horses have, no doubt, been unnecessarily destroyed.

In the next chapter, the nature and causes of farcy will be considered: after which will be described the only certain criterion, by which glanders may be distinguished from other diseases.

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#### CHAPTER XIV.

#### *On the Nature and Causes of Farcy.*

Having shown, that the matter of glanders will produce both farcy and glanders, and that the matter from a farcy *bud* has the same power; it may appear unnecessary to treat of these diseases separately: there is, however, a difference between them.

The glanders, in whatever degree they may exist, I consider to be a constitutional disease; but the farcy is, in some cases, merely local: the experiment first described may serve as an example of this. The inoculated part was in the first instance, a local complaint, and may be considered as the most simple stage of farcy.

It has been proved, by experiment, that, if a red hot iron be freely applied in such cases, within three or four days after the experiment, its poisonous nature will be completely destroyed; and, after the slough, occasioned by the burning, has separated, nature will gradually complete the cure: but, if the hot iron be not applied until corded lymphatics are seen going from the sore, it is likely the constitution will be ultimately affected with glanders. It is not improbable, I think, that the farcy may, sometimes, be thus accidentally produced; for, if the slightest scratch be made in any part, and glanderous matter conveyed to it by any means, it would certainly amount to inoculation, and the same effects would follow. It may also be conjectured, that a common sore is thus, occasionally, converted into farcy. It is certain, however, that farcy is often, at its first appearance, a constitutional disease; either arising from communication with a glandered horse, or depending upon some other cause, of which we have no precise knowledge.

To illustrate this, let us suppose a sound horse, to be kept in the same stable with one that is glandered, eating out of the



same manger, and drinking out of the same pail; little doubt exists of his soon becoming infected. The disease may not appear at first in the form of glanders, though this is most commonly the case; it may, in the first instance, assume that appearance, which is named farcy. A horse, however, may be attacked with farcy, when he has not been known to have had any communication with a glandered horse; and farcy thus produced, has been followed by glanders.

If it were proved, in such cases, that the horse had not been exposed to any source of contagion, for a considerable time previous to the appearance of the disease; no doubt could be entertained of the farcy being sometimes produced by other causes than contagion. I have seen several instances, where this appeared to be the case: and though this opinion has not, I believe, been absolutely proved, yet it is generally believed, and is certainly probable; but what the causes are, by which farcy is so produced, has not been correctly ascertained. I am of opinion, they are the same as those, by which glanders appear to be sometimes generated; namely, exertion, bad, or insufficient quantity of good provender, and hot, close stables. This spontaneous kind of farcy is often preceded by general indisposition; the horse becomes weak, loses flesh, and feeds badly. These symptoms gradually increase, and at length, farcy buds and sores make their appearance, which are soon followed by glanders.

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## CHAPTER XV.

### *Description of a Test for distinguishing the Glanders with certainty from other Diseases.*

When we consider the contagious nature of glanders, and that they frequently occur in so slight a degree, that the most experienced practitioners are unable to give a decisive opinion upon the nature of the complaint; the test I am about to describe will, I trust, appear of sufficient importance to be made public. Cases of this doubtful kind are very common: I have often known horses kept several months, before the symptoms have become sufficiently conspicuous, to enable the practitioner to decide upon the nature of the disease. The mischief arising from this is more considerable, than the public are aware of; and I am inclined to believe, that it is a principle means of the extensive propagation of the disease. When a horse is attacked with glanders in a violent degree, he is immediately separated or destroyed, and no others are infected; but, when the



symptoms are so inconsiderable as to escape notice, many horses may be infected, before it is thought necessary to separate him from others.

The following case may serve to illustrate this. A valuable horse was attacked with the mild kind of glanders; and, as no suspicion was entertained of his being unsound, he was sold for a large sum. A few months, however, after this the discharge became so considerable as to excite alarm; and on application being made to me, I did not hesitate to pronounce the horse to have been glandered at the time he was purchased. In consequence of this, the money was returned, and the horse destroyed. This opinion was soon after confirmed by the disease appearing in two colts, that had communication with this horse before he was sold.

All these doubtful cases may be distinguished with certainty, by inoculating a sound horse, *i. e.* one free from glanders and farcy, with matter taken from the nose of that which is supposed to be glandered. If it be the glanders, the effect described in experiment 1, will be produced. If it be any other disease, no inflammation or swelling will follow; unless the experiment be clumsily performed, and the part much irritated: in this case, some inflammation and swelling may be produced, which, however, will go off in two or three days. If, in making the incision, the part should bleed, it is necessary to wait until it has ceased; or the blood would so dilute the matter, as to render it inactive.

It is necessary, also, to observe, that, when there is only a very trifling discharge of matter, it may be diluted with fluid that proceeds from the lachrymal duct; which would lessen, if not entirely destroy, the activity of the glanderous poison. The following experiment will illustrate this opinion. Glanderous poison was mixed with twelve times its weight of distilled water, and with this mixture, a sound horse was inoculated; a slight degree of inflammation and swelling was produced, and a small ulcer, which, in a few days, healed spontaneously.

In this case, though the diluted matter did not produce any permanent effect, yet it was different from the matter of strangles, or of any other matter; which as I have before observed; would not have caused any inflammation or swelling. It appears, also, from some experiments, that glanders are not readily produced by applying glanderous matter to a common sore or ulcer; this may depend on the dilution the glanderous poison undergoes, from the matter on the surface of the sore, or from a want of absorbing power in the part.

Many persons object to this mode of distinguishing the glanders, either on account of the expense of procuring a sound



horse for the purpose; or the apparent cruelty of infecting him with an incurable disease. But when the suspected horse is of considerable value, and a horse can be procured that would otherwise be killed for the hounds; I cannot see any reasonable objection to making the experiment. To waggon masters and others, who keep a great number of horses, it must surely be of importance, to ascertain the nature of these doubtful cases, as speedily as possible; and in regiments of cavalry, where we often see suspected horses kept several months, it will be found highly useful.

By means of this test a very important question may be determined; that is, whether other diseases degenerated into glanders or not. We have before observed, that obstinate colds, and strangles, are supposed to be occasionally converted, by improper treatment, into glanders; that any discharge from the nostrils, which continues an unusual length of time, and is accompanied with a swelling of the glands under the jaw, is generally considered as glanders: and a horse, under such circumstances, is frequently destroyed. That such symptoms are generally the effects of glanders, is extremely probable: but I am of opinion; that the only certain proof of a horse being glandered is, his being capable of infecting others. If this be admitted, it will surely be allowed, that the most expeditious and ready way of ascertaining the real nature of such cases is the test here proposed.

It may be proper to observe, that, when the discharge from the nose is so inconsiderable, that it is difficult to collect matter for inoculation, it may generally be increased by exercise: and, in such cases, it is advisable to collect the matter for two or three days as it does not lose its poisonous quality by being kept a short time; for though a small quantity of matter is capable of producing the effect, it is better to use more than is sufficient, as the infection will then take place more speedily, and in a greater degree.

The lachrymal fluid which was before mentioned, proceeds from a small round orifice, that may be perceived at the lower part of the nostril: from this we may often see a few drops of a liquid fluid, like water, flowing, particularly in cold weather. In collecting matter for the purpose of inoculation, it is necessary to take care, that it is not mixed with this fluid. For, in the doubtful cases, where this test is most useful, there is often so little matter discharged, that it is difficult to procure more than is barely sufficient; and if this happen to be diluted, the effect may be such as to render the experiment indecisive.

It has been found by experiment, that matter taken from a farcy bud, before any caustic has been applied, will produce



precisely the same effect as matter taken from the nose of a glandered horse.

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## CHAPTER XVI.

### *On the attempts that have been made to cure the Glanders.*

It would be a useless undertaking, to enter into a minute description of the various means, that have been suggested for the cure of glanders; or to give a detailed account of the numerous experiments that have been made for this purpose. It may be sufficient in this place to recite in a few words, the more material attempts that have been made, for discovering a remedy.

Those who consider the glanders as a local disease, have employed every kind of injection, without effect. The nostrils have been syringed with emollient, astringent and even caustic preparations, without success. It is probable, that the discharge, in some instances, has been suppressed for a time, and even ulcers within the nostrils healed, by such means; but I believe these applications have never been known to cure the disease. All the mercurial preparations have been resorted to, without success. It has appeared, at times, that mercury, when administered to a considerable extent, possesses some power as an antidote to the glanderous poison: yet such is the debility, which this medicine produces, when used in large quantity, that the progress of the disease is generally accelerated by it. I have been frequently induced to give mercury a fair trial. In one of my experiments, it was given so as to excite a violent salivation; and in this case, the disease was apparently cured, that is, an ulcer, within the nostrils was perfectly healed, and the discharge had ceased. It was not convenient, however, to keep this horse a sufficient length of time, to enable me, to ascertain the ultimate effect of my mode of treatment: about a fortnight after his apparent cure, he was destroyed, when on examining the lungs, tubercles, or small hard tumors, were found on them, but no traces of the disease could be perceived within the nostrils. In several other cases, the same medicine not only proved ineffectual, but in many of them, aggravated the disease. It is worthy of remark, that in some cases of farcy, mercury appeared to possess considerable power over the disease.



When tubercles form on the lungs, I believe they generally, if not always, degenerate sooner or later, into abscesses, and ultimately destroy the animal. I have examined a great number of glandered horses, after death, and have almost uniformly found those appearances on the lungs. In some instances, the tubercles have been so minute, as to be discovered only by passing the fingers over the surface of the lungs; when they have been perceived like small gravel, or shot, under the pleura, or fine membrane, by which the lungs are covered. But in the more advanced stages of the complaint, I have almost invariably found them of considerable size and full of matter. The bronchial glands also are very commonly diseased.

From a knowledge of this circumstance, I am inclined to believe, that we shall never discover a remedy for the glanders, unless it be applied in the earliest, or first stage of the disease: for, when tubercles have been generated on the lungs, though their progress may be sometimes retarded, yet, I conceive, there is but little chance of their yielding to medicine.

The nitrous and muriatic acids have been given in glanders, and at times, have appeared to be of some service; but have never succeeded in curing the disease. Arsenic has been also recommended, and in several instances, I have been informed, has apparently cured the complaint; but it should be understood, that the nostrils were, at the same time syringed with a strong solution of potash, which perhaps, caused a temporary cessation of the discharge. I have seen arsenic tried very fairly and extensively; but the result was not satisfactory.

It may here be proper to observe, that though the discharge may have been suppressed by astringent injections, or other means, or if it cease spontaneously, still if the swelling of the glands remain, the discharge will sooner or later return. This cessation of the discharge, indeed sometimes happens; but I have never heard of more than two cases of glanders that were spontaneously and permanently cured.

Verdigris was at one time, strongly recommended, both in glanders and farcy; but when fairly tried, was found ineffectual. Blue vitriol, or sulphat of copper, has likewise been employed: this, like other tonic or strengthening medicines, it appears at times to retard the progress of the disease, I believe has never been known to subdue it. In short, after having, for the last twelve years paid considerable attention to this subject, and made numerous experiments upon it, I have formed an opinion, that the glanders will always be found incurable, unless attended to at an early period; and though in a few cases they may have ceased spontaneously, or during the use of medicine, I think we may justly affirm that they are to be consid-



ered as an incurable disease. Many ignorant farriers, may no doubt be found, who would confidently undertake to cure the glanders, or any other disease, that has hitherto resisted the efforts of the regular practitioner; but, after reading the facts here stated, it is hoped the public will be sufficiently on their guard, and will not become the dupes of any illiterate pretender, who may promise to cure a disease, which, after much labor and perseverance, has been by the most experienced practitioners, pronounced to be incurable. It will be seen by the experiments that have been made on this subject, that the medicines most likely to succeed are mercurials, aided by a judicious system of management, so as to prevent, as much as possible, the debilitating effects of the mercury.

## CHAPTER XVII.

### *On the treatment of Farcy.*

When the farcy exists as a local disease, it may generally be cured, by an early application of proper remedies; but, when it is constitutional, that is, when it arises from the blood being contaminated with the glanderous poison, I believe, it will generally be found incurable. It is true, we may often appear to succeed in our attempts to cure this disease; caustics alone will frequently remove all the symptoms, for a time, and in some instances, the horse has continued apparently free from the disorder for several months; but, according to my experience, it is most commonly succeeded, sooner or later, by glanders.

It is difficult, in many cases, to distinguish between local and constitutional farcy; therefore, it is always advisable to attempt a cure, unless the horse, at the same time be decidedly glandered: even in such cases, the external symptoms may often be removed by caustics. When the small tumours, or *buds*, contain matter, which may be known by their feeling soft and yielding a little to the pressure of the finger, they should be opened, and after pressing out the matter, lunar caustic, or the following solution, should be freely applied, and may be repeated several times, allowing the slough, which these caustics occasion, first to separate.

Muriat of quicksilver,	-	-	-	2 dr.
Muriatic acid,	-	-	-	1 oz.

This solution may be applied, at first, undiluted; but, after the first or second slough has separated, an equal quantity of



water should be added. When the sores look red and healthy, the edges smooth, and are gradually approaching each other, no farther application will be required. If the lymphatics swell, or become *corded*, as it is termed, or if the *buds* continue hard, the whole surface should be blistered.

Thus far we have described the local treatment of the disease; it is however, of the utmost importance to give the following medicine, as soon as the disorder is perceived; for, if it happen to be a local complaint only, the constitution will probably, by its means, be preserved from infection, and the horse radically cured. But it is necessary to continue the use of the medicine, for a short time after the disease has been removed. The horse should be exercised twice a day, and fed with a mixture of bran and oats, with the usual allowance of hay: green food has been recommended; but I have several times during the summer months, turned a farcied horse into a good piece of grass without advantage. In one instance, only, I have known it prove an effectual remedy. A horse appeared to be decidedly farcied, and being of little value, the owner turned him into an orchard; at the end of three or four months, he was taken up, perfectly cured. I have been informed, that the complaint never returned, either in the form of glanders or farcy. This induced me to make a farther trial of it; but, in no one instance did it appear to be of any service.

Exercise, I am convinced, is a useful auxiliary to the remedies here recommended; and every means should be employed to keep up the strength of the horse. It is not unlikely, that green food, such as tares, carrots or young grass, may be given in the stable, with advantage; but I have never seen it tried. A well ventilated stable should be chosen, and the water given at the summer temperature.

### FARCY BALL.

#### No. 1

Take of white arsenic and muriate of quicksilver, each 8 gr.  
 Linseed powder, - - - - -  $\frac{1}{2}$  oz.

Sirup enough to form a ball for one dose.

#### No. 2.

Sulphat of copper, (blue vitrol,) - - - - - 1 dr.  
 Muriat of quicksilver, - - - - - 8 gr.  
 Linseed powder, - - - - -  $\frac{1}{2}$  oz.

Sirup enough to form a ball for one dose.



## No. 3.

Sulphat of Copper,	-	-	-	-	-	1	dr.
White arsenic, and muriate of quicksilver, of each	-	-	-	-	-	8	gr.
Linseed powder,	-	-	-	-	-	$\frac{1}{2}$	oz.

Sirup enough to form a ball for one dose.

The quantity of muriate of quicksilver and arsenic may be gradually increased to fifteen, or even twenty grains; but, when it appears to diminish the appetite, or cause sickness or uneasiness in the bowels, the dose should be lessened, or the medicine discontinued, until these effects cease. It will be seen from the experiments related in a foregoing chapter, that both arsenic and muriate of quicksilver have been often given in doses of two drams, (120 grains) twice a day, without producing any violent effect; and have, in some instances, been given in such doses, every morning and evening, for many days, without destroying the horse. It will be seen, however, that it proved fatal, in one case, in a smaller dose, (see experiment 7;) and, as it does not appear that any advantage is obtained by giving it so largely, I think it should never be attempted.

One of the balls of either prescription, is to be given every morning and evening; I believe they are nearly equal in point of efficacy, but am inclined to think that No. 3 deserves a preference. Should the medicine at any time produce sickness of the bowels, it will be advisable to give the horse some mucilaginous fluid; such as infusion of linseed; with about a dram of carbonat of potash, (salt of tartar,) three times a day. As the powdered arsenic of the shops is frequently adulterated, it is recommended, in order to insure its purity, to purchase it in lump; but then great care must be taken, to powder it very finely.

If during the progress of farcy, the glands under the jaw become enlarged, and particularly if a little moisture appear about the nostril, it may be considered as a constitutional affection, which will soon assume the form of glanders. It has been observed in a former part of the work, that if a farcy sore, that has been artificially produced, by inoculation with glanderous matter, be freely cauterised at its commencement, it would gradually heal as a common sore, and the constitution would probably escape the infection. It is difficult, however, to ascertain whether the disease, when first observed, be local or constitutional. If it be local, the medicine we have recommended will probably secure the constitution: if it be constitutional, I believe, it is more likely than any other medicine to cure the disease.

It will be seen, from some experiments which have been related, that, when mercury was given to a horse, that had farcy



sores on his body, they soon changed their appearance, became of a red, healthy color, and were gradually healed. From this it may be inferred, that it is the best mode of treatment; as, by the early application of caustics absorption of the poison may be promoted. I am, however, of opinion, that the caustics should be applied immediately after the farcy tumors, or *buds*, have been opened: and to farcy ulcers, or sores, as soon as they are observed. But external applications alone ought never to be depended upon: the medicine should always be given at the commencement of the disease.

## CHAPTER XVIII.

### *Miscellaneous Experiments.*

#### EXPERIMENT I.

A young horse was attacked with a discharge of matter from the left nostril only, and a considerable swelling of the glands, under the jaw. On examining the nostrils, a large ulcer was observed. An incision was made in the swollen gland; into which a caustic was introduced, and the following ball given every morning and evening:

Muriate of quicksilver, commonly called corrosive	}	1 dr.
sublimate,		
Flour, - - - - -		$\frac{1}{2}$ oz.

Sirup enough to form a ball.

This produced no sensible effect, except that of making the horse stale more than usual. On the third day, the quantity of sublimate in each ball was increased to two drams, and given twice a day as before; this was continued for three days without producing any other effect, than that of a strong diuretic. On the seventh day, a violent salivation took place, the tongue was much swollen, and the horse was incapable of feeding; but the discharge from the nostrils had ceased, and the ulcers were completely healed: the medicine was discontinued, and the mouth syringed with a solution of alum. On the ninth day, the horse could eat soft food; but there was still a considerable discharge of saliva from the mouth. On the tenth day, there was a very slight appearance of moisture about the left nostril and the salivation had considerably diminished: on the following day, the nose was quite dry. Two days after, the nose became rather moist again, but no ulcers could be seen; the horse was extremely weak, but capable of feeding, the sali-



vation having ceased. He continued in this state about a week and was then destroyed. On examining the nostrils and cavities of the head, there was no appearance of disease, but tubercles of considerable size were found on the lungs. The stomach and bowels did not appear to have sustained any injury from the sublimate.

#### EXPERIMENT II.

A horse decidedly glandered, took half a dram of sublimate, twice a day, without any sensible effect; after two days, the dose was increased to one dram, twice a day: this acted as a strong diuretic, but produced no other effect. Two days after, it was augmented to two drams twice a day, which took off the appetite, and was, therefore, discontinued for three days, when he again took the same dose, with half a dram of opium added to each; it soon had the same effect: he continued to take it, but the discharge became more copious and very foetid. The ulcers within the nostrils, spread rapidly; and after a few days the horse died, apparently from excessive debility. In this case, also, tubercles were observed in the lungs; the absorbments of the liver were considerably enlarged.

#### EXPERIMENT III.

A horse, decidedly glandered, took daily one dram of calomel; after three days, the same dose was given twice a day, and persisted in for twelve days: the only effect it produced, was that of a strong diuretic; and, as the disease had gradually increased, the horse was destroyed. In this case, likewise, there were tubercles on the lungs, but so small, that they could only be perceived by passing the fingers over the surface.

#### EXPERIMENT IV.

A horse, decidedly glandered, took one dram of the red oxide of quicksilver, twice a day; and once a day, the horse was exposed to the fumes of mercury. The preparation employed for the fumigation was calomel, that had been washed in a solution of ammonia; by which it is changed to a dark color. Half an ounce of this was placed on a red hot iron, and the horse was shut up with it, in a small, well closed stable. After a few days, the mouth was considerably affected, and the breath had an offensive smell; the horse became excessively weak, and the disease had gradually increased. The horse, at length, was so debilitated, that it was thought proper to destroy him. In many other cases, mercury was fairly tried, in various forms, and uniformly with the same result.



## EXPERIMENT V.

A horse, decidedly glandered, took one dram of arsenic, formed into a ball, with flour and sirup, twice a day. It was continued three days, without producing any sensible effect; the dose was then increased to two drams, twice a day, and continued for a week, without causing much inconvenience to the animal. As the disease had increased, rather than abated, he was then destroyed. Arsenic was given to a similar extent, in many cases of glanders, without any satisfactory result: most commonly, it produced scarcely any effect; sometimes, it produced a fatal inflammation of the stomach and bowels, particularly when the dose of two drams was persisted in a considerable time.

## EXPERIMENT VI.

A veterinary surgeon, in the army, had been trying the effect of arsenic upon a glandered horse; and after giving it without effect in doses of two drams, he increased the dose to half an ounce: finding this produced no sensible effect, he suspected, that the powdered arsenic he had been using was adulterated, and therefore, had some powdered under his own inspection. Upon giving this to the same horse, the first dose ( $\frac{1}{2}$  oz.) bro't on a fatal inflammation of the stomach and bowels.

## EXPERIMENT VII.

A horse attacked with farcy, took the following ball twice a day:

White arsenic and sublimate, of each - - - 10 grs.

Flour and sirup enough to form a ball.

The tumors, or *buds*, were opened, and the solution of sublimate was freely applied to them. After a few days, the dose of the medicine was increased to fifteen grains. A few days after this, a slight purging took place, and the horse refused his food. There being no medical person present, the groom fancied these symptoms arose from the farcy; and, instead of discontinuing the medicine, he gave it three times a day: this soon brought on an inflammation of the stomach, of which the horse died.

## EXPERIMENT VIII.

Four glandered horses were put under a course of arsenic: the dose ten grains, twice a day, which was gradually increas-



ed to thirty. The nostrils were syringed with a solution of arsenic and potash. In every horse, this treatment was productive of manifest advantage; in one, every symptom was removed, but the discharge returned, though in a much less degree; in another, glanderous ulcers, within the nostrils, were perfectly healed. These good effects were not permanent; and, after continuing the treatment for several weeks, it was thought necessary to shoot each of the horses.

#### EXPERIMENT IX.

April 9, 1801.—A horse was attacked with farcy in the off fore leg. The tumors had burst, and were discharging thin glairy matter. One dram of sublimate was given every day, and the dose gradually increased to two drams, and given twice a day. This treatment was continued three weeks; and, tho' nothing was applied to the sores or *buds* they were all apparently cured. The medicine was discontinued; but a tumor of considerable size appeared, two or three days after, on the outside of the off thigh: the sublimate was again given, in the dose of one dram, and a blister applied to the tumor. A farcy bud then appeared, a little above the tumor, which was succeeded by several more on the inside of the thigh. Two or three days after this, a discharge from the nostrils, and a swelling of the glands under the jaw, took place, ulcers also appeared within the nostrils. Under these circumstances, it was thought proper to destroy the horse. On examining the body, after death, the stomach appeared perfectly healthy, notwithstanding the large quantity of sublimate, that had been given. The kidneys were unusually large, and there were small tubercles on the lungs. It is necessary here to observe, that sublimate, in large doses, uniformly acts as a powerful diuretic on the horse.

#### EXPERIMENT X.

A farcied horse took half a dram of calomel twice a day; and, by continuing to give it for ten days, the disorder was apparently cured, though no topical remedy was employed: it was then discontinued, and about four days after the disease returned. Calomel was again given, and the farcy appeared to be going off; but at this time the horse became decidedly glandered, and was therefore destroyed.

#### EXPERIMENT XI.

A horse had the farcy in the hind leg; he took the prescription No. 1, and caustic was applied to the sores. In three



weeks he was perfectly cured. The medicine was continued a week longer: this horse has never had a return of the complaint; nor has he had any symptoms of glanders, though nearly two years had elapsed since his recovery. In many other instances, the farcy, by the same kind of treatment, has been radically cured, and not succeeded by glanders.

#### EXPERIMENT XII.

A farcied horse took half an ounce of white hellebore, powdered, and formed into a ball, twice a day; after taking a few doses, it produced considerable nausea, and frothing at the mouth. It was discontinued three days, and then given, in the same doses, for about ten days; during which time, the farcy gradually disappeared. The only external application made use of was a strong blister. About five months after, the horse became glandered. In a great many instances, the farcy after having been apparently cured, has been succeeded by glanders, the interval between the two diseases varying considerably. Sometimes, the glanders take place during the continuance of farcy; they occur, more commonly, however, from one week to a month after the farcy has disappeared: this is generally the case when the disease comes on in a slight degree only. The more virulent kind of farcy is almost always accompanied, or immediately succeeded by glanders. The longest interval I have observed is in the case just mentioned.

#### EXPERIMENT XIII.

A horse was inoculated in the neck, with matter taken from the nose of a horse, that had the glanders in a slight degree; the next day, the part was a little swollen and tender; in a few days, it became an ulcer, of that peculiar appearance, by which the farcy sore is characterised: the lymphatics going from it were swollen, or *corded*. About a fortnight after this, a considerable discharge took place from the nostrils, and the glands under the jaw were enlarged: the hind legs began to swell; and, soon after, several farcy buds appeared, about the inside of the hind legs and thighs: large ulcers appeared within the nostrils; and the disease increased so rapidly, that it was tho't proper to destroy the horse. It appears, from a great number of experiments, similar to this, that the glanderous matter invariably produces the effect here described. In some instances, however, the progress of the disease is very slow, and the first appearance of glanders so slight, as to escape the notice of a common observer. This variety seems to depend, in a great measure, on the state of the animal upon which the ex-



periment is performed, and the quantity of matter used in the inoculation.

#### EXPERIMENT XIV.

Some glanderous matter was taken from the nose by means of lint. The lint was put into a small box, which was kept from the 24th of March to the 13th of June. Two horses were then inoculated with a little of this dry matter, that had been mixed with a few drops of water: in both horses, the part was inflamed and swollen the following day; and, in a few days, became an ulcer. These ulcers, however, spread; but, after remaining stationary a few days, they gradually healed.

#### EXPERIMENT XV.

A horse was inoculated with the matter taken from the nose of a horse that had the strangles; no effect was produced by it. The matter from the foot of a cankered horse was applied, in another instance, in the same way, and with a similar result.

#### EXPERIMENT XVI.

Some glanderous matter was applied to a small, healthy looking sore; two other sores were near it, of the same appearance, to which glanderous matter was not applied: the latter soon healed, though nothing was done to them; but the other remained in the same state about a fortnight, and then gradually healed spontaneously. From these experiments it appears that, by diluting the glanderous matter, either with blood, water, or the fluid on the surface of a sore, it is so changed, that, though it produces more or less of local effect, it does not affect the constitution.

#### EXPERIMENT XVII.

Inoculation was performed with glanderous matter, that had been a short time exposed to the vapor, which is produced by pouring oil of vitriol on a mixture of salt and manganese. No effect was produced. Matter, that had been exposed to the fumes of nitrous acid, caused an ulcer, which, after a short time, gradually healed.

#### EXPERIMENT XVIII.

A horse was inoculated with matter taken from a farcy *bud*, that had been recently opened. It produced precisely the same effects as glanderous matter.



## EXPERIMENT XIX.

A horse was inoculated with matter taken from the nose of a horse, that had the glanders in so light a degree, that he was considered, by most of those that examined him, to be free from the disease. It produced, however, the local effect, in a considerable measure; and, at the end of twelve days, the horse was universally farcied; and, in a few days after, decidedly glandered.

After the foregoing observations and experiments, it is unnecessary to say more on the subject of prevention. It may be sufficiently obvious, that the only effectual mode of preventing the destructive ravages of glanders and farcy consists in separating diseased horses and others, as soon as the symptoms are observed, however trifling they may appear; in removing, or carefully cleaning every thing, on which the glanderous matter may have fallen; and covering the rack, manger, and every part to which any of the matter could have adhered, with white-wash or paint.

Waggon masters, and others, who keep a considerable number of horses, should convince their servants, that both glanders and farcy are highly contagious; and should point out to them the manner in which it appears to be communicated. I believe it is the opinion of many veterinary practitioners, and of almost all persons concerned much with horses, that these fatal diseases are frequently generated by other causes than infection. My experience, however, inclines me to a different opinion. But, if glanders or farcy be so produced, they may be probably prevented, by not working or feeding horses improperly, and by keeping them in stables, that are properly ventilated. A very judicious precaution was adopted, some years ago, in the army, by order of his royal highness, the commander in chief, and would, no doubt, be found equally advantageous to all those, who keep many horses. This regulation consists in having every horse examined daily, by a competent judge of the disorder, and immediately separating such as have any symptoms of the complaint.

Having, for many years, witnessed the extensive ravages caused by glanders, I cannot but regret, that the legislature does not so far interfere in this matter, as to prevent persons from working horses that are decidedly glandered; particularly, from keeping teams of glandered horses constantly travelling on the most public roads. This, I believe, is the case in many parts of the kingdom. It is by this misconduct, that the disease is so widely propagated, and so highly destructive.



## CHAPTER XIX.

*Wounds.*

The first necessary operation in wounds is to remove carefully all dirt or other extraneous matter; and if the wound be made with a clean cutting instrument, and not complicated with bruising or laceration, the divided parts are to be neatly sewed together. Where it can be done, a roller kept constantly moist with the saturnine lotion, diluted with an equal quantity of water, is to be applied, in order to assist in retaining the parts in their situation. This roller is not to be removed for several days, that the divided parts may have time to unite, and that the wound may heal by the first intention, as surgeons term it, unless considerable swelling and inflammation come on: it then becomes necessary to remove the roller, and apply fomentations. This kind of union, however, can seldom be accomplished in horses, from the difficulty of keeping the wounded parts sufficiently at rest, and from their wounds being generally accompanied with contusion or laceration; yet it should be always attempted where it appears at all practicable. Fomentations and warm digestives then become necessary, in order to promote the formation of matter in the wound. Should considerable swelling and inflammation arise, moderate bleeding near the affected part, and a laxative medicine, or even a dose of physic, are to be strongly recommended; and a poultice, if the situation of the part be such as to admit of its application, will be found of great use. As soon as the swelling and inflammation shall have been removed, the fomentations and poultice are no longer necessary, and the digestive ointment only is to be applied: should the wound appear not disposed to heal, discharging a thin offensive matter, apply the detergent lotion previous to the digestive ointment. When the granulations become too luxuriant, that is, when what is commonly termed proud flesh makes its appearance, the caustic powder is to be sprinkled on the wound.

Slight wounds generally heal with very little trouble, and sometimes without the interference of art; and it is from this circumstance that many nostrums have acquired unmerited reputation. In wounds of this kind, tincture of myrrh, or compound tincture of benzoin may be used.

Whenever a considerable blood vessel is wounded, and the hemorrhage is likely to prove troublesome, our first object is to stop the bleeding; which if the wound be in a situation that will admit of the application of a roller or bandage, may be easily effected; for pressure properly applied is generally the best remedy on these occasions, and far more effectual than the



most celebrated styptics. In some cases it becomes necessary to tie up the bleeding vessels: this is rather a difficult operation, and not often necessary.

*Punctured Wounds*, or such as are made with sharp-pointed instruments, are generally productive of more inflammation than those that have at first a more formidable appearance; and if such wounds happen to penetrate into a joint, or the cavity of the chest or belly, the worst consequences are to be apprehended, unless they be skilfully treated.

When a joint has been wounded, the synovia or joint oil may be observed to flow from the wound. The first thing to be done in these cases is, to close the opening that has been made into the joint; for as long as it remains open the inflammation will go on increasing, and the pain will be so violent as to produce a symptomatic fever, which often proves fatal. The most effectual method of closing the wound is by applying the actual cautery: this will appear probably a very strange remedy to those who have not seen its effects, yet it is certainly the most efficacious that can be employed, although only applicable where the wound is of the punctured kind, and small; for when a large wound is made into the cavity of a joint, and particularly if it be of the lacerated kind, it is impossible to close it effectually, and death is frequently the consequence. As soon as the opening has been closed, it is of importance to guard against the inflammation that may be expected to arise, or to remove it if already present. For this, bleeding and purging are the most effectual remedies. A rowel in any convenient part near the affected joint will be found useful also. Should the joint be much swollen, the blister no 2 will prove very efficacious, and far superior to fomentations or poultices.

Wounds about the foot, from stubs, over-reaching, &c. often prove troublesome when neglected. As soon as they are perceived, care should be taken that no dirt gets into them: the detergent lotion and digestive ointment are the most useful applications on these occasions. (See *Pharmacopæia*.) When the foot is wounded in shoeing, the nails being driven into the sensible parts, the compound tincture of benzoin is to be applied. When their tendons or membranes are wounded, considerable inflammation is likely to take place, which is to be removed by fomentation and the saturnine poultice: purging is also of great use in these cases; and when the wound is large, and inflammation runs high, bleeding likewise may be necessary.

In extensive lacerated, or contused wounds, the inflammation sometimes terminates in mortification. (See *Inflammation*.) In such cases fomentations are to be applied frequent-



ly, and the horses strength supported by means of malt, and the cordial ball for mortification. (For the method of treating the different kinds of wounds, see the Appendix.)

### *Bruises.*

In recent bruises, fomentations are the most essential remedies. When they are violent, a considerable degree of inflammation may be expected to supervene: it will then be proper to give a laxative ball, and to bleed moderately near the affected part.

If abscesses form in consequence of a bruise, discharging large quantities of matter, particularly if the matter be of a bad color and an offensive smell, the wound also appearing dark colored and rotten, indicating approaching mortification; the horse's strength must be supported by allowing him a large quantity of corn: and if he can be made to eat malt, it will be found still more effectual. If the appetite go off, he must be drenched with good water gruel, and strong infusion of malt: it will be necessary also to give the cordial ball for mortification, once or twice a day. Stimulating applications to the part, such as equal parts of camphorated spirit and oil of turpentine are of great use.

Should a hard callous swelling remain in consequence of a bruise, the following embrocation is to be well rubbed into the part twice a day; and if it do not succeed in removing it, recourse must be had to a blister.

#### EMBROCATION FOR BRUISES.

##### No. 1.

Camphro,	-	-	-	-	-	-	-	$\frac{1}{2}$ oz.
Oil of turpentine,	-	-	-	-	-	-	-	1 oz.
Soap linament,	-	-	-	-	-	-	-	$1\frac{1}{2}$ oz.

Mix.

##### No. 2.

Tincture of cantharides,	-	-	-	-	-	-	-	1 oz.
Oil of origannm,	-	-	-	-	-	-	-	2 dr.
Camphorated spirit,	-	-	-	-	-	-	-	6 dr.

Mix.

##### No. 3.

Muriate of ammonia,	-	-	-	-	-	-	-	1 oz.
Distilled vinegar,	-	-	-	-	-	-	-	8 oz.
Spirit of wine,	-	-	-	-	-	-	-	6 oz.

Mix.



*Broken Knees.*

The method of treating this accident is described generally under the article *Wounds*, being nothing more than a confused and lacerated wound; but as it occurs frequently, and if not skilfully treated, greatly lessens the value of a horse, it may not be amiss to be more particular on the subject. The first thing to be done is to cleanse the wound perfectly; and if it be at all deep or extensive, or much bruised, a goulard poultice is to be applied, by means of the leg of a worsted stocking, taking care to renew it twice a day, that it may be constantly soft and moist. This, in two or three days, will give the wound a healing appearance, and cause a white healthy matter to flow: it then may be discontinued, and the digestive ointment applied. Should the matter assume a bad appearance, losing its white color, becoming thin, and smelling rather offensively, something stronger will be requisite, such as the detergent lotion made hot; and if, after this, the new flesh grow too luxuriant, rising above the skin, apply the caustic powder, and a considerable degree of pressure, by means of a linen roller or bandage, and a bolster of lint. By this treatment the wound will soon heal. But we must not stop here; for unless the swelling is completely removed, and the hair regenerated of its original color and smoothness, the horse would be considered of very little value. As soon, therefore, as the wound is completely healed, if any swelling be discernable, apply the following linament, so as to excite a moderate degree of vesication, or blistering, and repeat it after this effect has perfectly subsided. Should the swelling feel hard and callous, and be of considerable size, the strong blister No. 1 or No. 2, will be preferable. (See Index, *Blisters*.)

## THE LINAMENT.

Powdered cantharides,	-	-	-	-	-	-	2 dr.
Camphor,	-	-	-	-	-	-	$\frac{1}{2}$ oz.
Spirit of wine,	-	-	-	-	-	-	4 oz.

Mix them in a bottle, and let it stand in a warm place about a week or ten days, shaking the bottle frequently; then strain through blotting paper, and it is fit for use.

It often happens, after the wound is perfectly healed, that a small scar or mark will be observable; and though the part may be free from any hardness or swelling, the value of the horse will be greatly lessened by this appearance. A variety of ointments have been recommended for promoting the growth of hair on the part, and thereby removing the blemish; the following I have found more effectual than any of them.



## OINTMENT FOR BROKEN KNEES.

Ointment of wax,	-	-	-	-	-	-	2 oz.
Camphor,	-	-	-	-	-	-	2 dr.
Oil of rosemary,	-	-	-	-	-	-	1 dr.

Mix.

The color of this ointment should be suited to that of the contiguous hair, which will so conceal the blemish, that it will not be observed, unless the part is strictly examined; and at the same time the ointment will cause the hair to grow up gradually, until the mark is completely removed. If the horse be of a bay color, the legs and knees are generally blackish, in this case mix a little ivory black with the ointment; if a chestnut color, Armenian bole may be mixed with it.

*Fistula in the Withers.*

This disease generally originates in a bruise from the saddle, and is at first simply an abscess, which by early attention and proper treatment may be easily cured; but when neglected it degenerates into a fistulous sore, proves extremely difficult of cure, and cannot be removed without very severe treatment.

As soon as the injury is discovered, fomentations should be applied in order to promote suppuration; and when matter is formed, let the tumor be opened, so that its contents may be completely evacuated, and a future accumulation prevented. The sore may then be healed by dressing it daily with digestive liniment or ointment; but should these prove ineffectual, apply the detergent lotion until the sore assumes a red healthy appearance, and the matter becomes whiter and of a thicker consistence. When the disease has been neglected in its first stage, and the matter suffered to penetrate among the muscles affecting the ligaments or bones of the withers, it becomes *necessary* to adopt a more severe treatment.

The sinuses or pipes are to be laid open with a knife; and if it be practicable, a depending opening is to be made, that the matter may run off freely: the sore is then to be dressed with the following ointment, which is to be melted and poured into the cavity while very hot.

The sore is not to be dressed until the sloughs which this ointment occasions, have separated from the living parts; which generally happens two or three days after the operation. If the surface of the sore look red and healthy, and the matter appears to be whiter and of a better consistence, a repetition of this painful operation will not be required, the digestive linament



or ointment being sufficient to complete the cure; but should the sore still retain an unhealthy appearance, and the matter continue thin and of a bad color, the hot dressing must again be applied.

#### THE OINTMENT.

##### No. 1.

Ointment of nitrated quicksilver,	-	-	-	4 oz.
Oil of turpentine,	-	-	-	1 oz.

Mix.

##### No. 2.

Verdigris,	-	-	-	-	-	-	1 1/2 oz.
Oil of turpentine,	-	-	-	-	-	-	1 oz.
Ointment of yellow resin,	-	-	-	-	-	-	4 oz.

Mix.

##### No. 3.

Oil of turpentine,	-	-	-	-	-	2 oz.
Vitriolic acid,	-	-	-	-	-	1 oz.

Mix cautiously in an earthen vessel, placed in a current of air, that the suffocating vapour which arises may be carried off. When they are perfectly incorporated, add

Common turpentine and hog's lard, of each,	-	1 oz.
Bees wax,	-	1 oz.

To be melted over a gentle fire.

This ointment may be made either stronger or weaker, by increasing or diminishing the proportion of vitriol and turpentine.

### *Poll Evil.*

This disease also generally originates in a bruise, and requires the same treatment as the fistula. It consists at first in an abscess in the poll, which by early attention might be easily cured; but if the matter be suffered to penetrate to the ligaments and bones, it frequently proves more difficult of cure than the fistula in the withers, and cannot be subdued without those strong remedies we have recommended in that disease.

Since writing the above, I have discovered that the inflammation which produces poll evil does not begin, as is usually



the case in other parts, on the surface, or in the cellular membrane under the skin, but between the ligament of the neck and the bones. When we consider the weight and position of the horses's head, with the great length of the neck, it will readily appear that the muscles alone are not capable of supporting and moving so great a weight, under such mechanical disadvantages. Nature has therefore provided a strong ligament, which is firmly fixed to the back part of the head, whence it passes down over the bones of the neck. It is not attached to the first bone, but is firmly fastened to the three next: it then passes over the three other bones of the neck in nearly a straight line to the withers, where it is securely fixed, giving off a thin slip of ligament in its passage, which is united to the last three bones. It is continued from the withers to the back. This ligament, being elastic, allows of sufficient motion in the neck, and so effectually assists the muscles in supporting the head, that they never become fatigued.

When a horse receives a violent blow on that part of the poll which covers the first bone of the neck, which, as we have just observed, is not attached to the ligament, the injury will be sustained chiefly by the sensible parts placed between the bone and the under surface of the ligament. The skin may also be hurt, and a slight degree of superficial inflammation may take place. But when inflammation has been thus produced between the bone and the ligament, it is more likely to proceed to suppuration, or to the formation of matter; which being so deeply seated, cannot find vent at the surface, by bursting the skin like a common abscess; therefore it spreads under the ligament, and is so long in arriving at the surface, that both the bones and ligament are highly diseased before any external swelling is observed. This is the cause of the particular obstinacy of the poll evil, and the great length of time generally required to cure it. From this we may learn, also how little is to be expected from such applications as are intended to disperse the swelling, and how necessary it is to adopt a bold and powerful mode of treatment. I am convinced, from what I have seen, that it is almost impossible to disperse the genuine poll evil; that by attempting it we lose time and suffer the matter to continue its ravages upon the ligament and bones; and that the only effectual practice consists in opening the abscess freely, so that the matter may readily escape, and the diseased bones be examined. When this has been done, and bleeding has perfectly ceased, apply the ointment, No. 3, described in the preceding chapter; and let the first dressing remain until the dead parts are ready to separate merely by washing. It is sometimes necessary to repeat this application several times;



and should it appear not sufficiently active, the proportion of vitriol and turpentine may be increased; but in irritable blood horses, it will sometimes prove too strong. A second operation often becomes necessary, particularly if the first have not been boldly performed; and whenever the matter appears to be pent up, or confined in sinuses, the knife and strong dressings are the only remedies. When the wound has been brought to a healthy state, the common digestive is the best dressing.

Mr. Taplin, in his *Stable Directory*, very pompously declaims against this method of treating inveterate cases of fistula and poll evil. It is certainly, however, the only effectual one that is known; and had this verbose author but seen the effect of this remedy, as well as of that which he recommends himself, before his book was written, it is probable he never would have favored the public with the declamation above alluded to. It is surely more consistent with humanity to rescue an animal from a painful and gradual increasing disease, by means of a severe operation, than to suffer him to linger out a life of pain and misery, by adopting a mild but ineffectual mode of treatment.

### *Saddle Galls, or Warbles.*

These consist of inflamed tumors, and are produced by the unequal pressure of the saddle. If neglected, they become troublesome sores, and are often a considerable time in healing. As soon as a swelling of this kind is observed, let several folds of linen be moistened with one of the following embrocations, and kept constantly applied to the tumor until it is reduced; but if matter have been allowed to form, let it be opened with a lancet, and afterward dressed with a digestive liniment or ointment. Should it appear not to heal readily under this treatment, apply the detergent lotion made hot. When swellings of this kind are large and much inflamed, it will be advisable to bring them to suppuration as expeditiously as possible, by means of fomentations or poultices. Should a hard swelling remain after the inflammation is in great measure removed, try the embrocation for strains; and if this do not succeed, recourse must be had to a blister.

#### THE EMBROCATION.

##### No. 1.

Water of acetated litharge,	- - - - -	2 dr.
Distilled vinegar,	- - - - -	3 oz.
Spirit of wine,	- - - - -	4 oz.
Mix.		



## No. 2.

Muriate of ammonia,	-	-	1/2 oz.
Muriatic acid,	-	-	2 dr.
Water,	-	-	from 8 to 12 oz.
Mix.			

## No. 3.

2 oz.

Soap linament, and water of acetated ammonia, of each

Mix.

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## *Sitfasts.*

Are occasioned by repeated bruises from the saddle, which, instead of inflaming the skin, as most commonly happens, cause it to become callous, and give it somewhat the appearance of leather. The following ointment is to be applied until the callous part appears disposed to separate: it is then to be removed, which generally requires some force, and the sore which remains may be healed with digestive linament or ointment. The sore may be washed now and then with weak detergent lotion, if it appear disposed to heal.

### OINTMENT FOR SITFASTS.

Ointment of althea,	-	-	4 oz.
Camphor,	-	-	2 dr.
Oil of origanum,	-	-	1 dr.
Mix.			

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## *Strains.*

This is a subject with which every sportsman ought to be well acquainted, since his horses are particularly liable to such accidents. Strains may effect either muscles, ligaments, or tendons. Muscular strains consist in an inflammation of the muscles or flesh, occasioned by violent and sudden exertion. When ligaments are the seat of this disease, there is generally some part of them ruptured, whereby very obstinate and sometimes permanent lameness is produced; in this case also inflammation is the symptom which requires our attention. But tendons are the parts most frequently affected, particularly the flexors of the fore leg, or back sinews, as they are commonly termed. Tendinous strains are commonly supposed to consist in a relaxation or preternatural extension of the tendon; and



the remedies that have been recommended are supposed to brace them up again. However plausible this opinion may be, it certainly is very erroneous; indeed it has been proved by experiment, that tendons are *neither elastic nor capable of extension*; and from investigating their structure and economy, we learn, that were they possessed of these qualities, they would not answer the purpose for which they were designed. From an idea that a strain in the back sinews depends on a relaxation of the tendons, many practitioners have been apprehensive of danger from the use of emolient or relaxing applications, than which nothing can be more useful at the beginning of the disease.

Tendinous strains consist in an inflammation of the membranes in which tendons are enveloped; and the swelling which takes place in these cases depends on an effusion of coagulable lymph by the vessels of the inflamed part. Inflammation being the essence of a strain, we are to employ such remedies as are best calculated to subdue it; and should any swelling remain, it is to be removed by stimulating the absorbent vessels to increased action.

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### *Strain of the Shoulder.*

This disease is by no means so frequent as it is supposed to be, lameness in the feet being often mistaken for it: the difference, however, is so well marked, that a judicious observer will never be at a loss to distinguish one from the other.

A shoulder strain is an inflammation of some of the muscles of the shoulder, most commonly, I believe, those by which the limb is connected with the body. The lameness which this accident occasions comes on rather suddenly, and it is generally considerable. When the horse attempts to walk, the toe of the affected side is generally drawn along the ground, from the pain which an extension of the limb occasions: in violent cases he appears to be incapable of extending it.

When lameness arises from a disease of the foot, it is generally gradual in its attack, unless occasioned by an accidental wound, and does not at all hinder the extension of the limb: an unusual heat and tenderness may also be perceived in the foot; and as the horse stands in a stable, the affected foot will be put forward, that it may bear as little as possible of the weight of the body.

The first remedy to be employed on these occasions is bleeding in the shoulder or plate vein; then give a laxative ball; and if the injury be considerable, let a rowel be put in the chest. By



means of these remedies and rest, the disease will generally be removed in a short time; a cooling opening diet with perfect rest, will be necessary. When the inflammation and lameness begin to abate, the horse should be turned into a loose stall, and after a week or two he may be suffered to walk out for a short time every day: but should this appear to increase the lameness, it must be discontinued. The intention of moderate exercise, after the inflammation is in great measure subdued, is to effect an *absorption* of any *lymph* that may have been effused, and to bring the injured muscles gradually into action.

After an accident of this kind, particularly when it has been violent, the horse should not be worked in any way for a considerable time, as the lameness is very apt to recur, unless the injured parts have had sufficient rest to recover their strength. If he can be allowed two or three month's run at grass, it will be found extremely conducive to his recovery, provided he is prevented from galloping or exerting himself too much when first turned out. It is necessary also to choose a situation where there are no ditches in which he may get bogged. With respect to embrocations, and other external applications, they are entirely useless, unless the external parts are affected; and then fomentations may be employed with advantage.

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### *Strain of the Stifle*

In this case the stifle joint will be found unusually hot, tender, and sometimes swollen. The remedies are fomentations, a rowel in the thigh, and a dose of physic. When by these means the inflammation of the joint has abated considerably, and at the same time the swelling and lameness continue, the embrocation for strains, or a blister, should be applied. Strains in the hock joint require the same treatment.

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### *Strain of the Hip Joint, (commonly termed Whirl Bone, or Round Bone.)*

When lameness occurs in the hind leg, the cause of which is too obscure for the farrier's comprehension, he generally pronounces it to be a strain in the round or whirl bone, and with all that affectation of infallibility so commonly observed in those gentlemen. I have seen several cases of lameness which were supposed to be occasioned by an injury of this part, but after attentive examination an *incipient* spavin was found to be



the cause. I would advise, therefore, in such cases that the hock joint be carefully examined, and if unusual heat or tenderness be observed on the seat of spavin it is probable that the lameness arises from this cause, and that it may be removed by the application of a blister. I have met with several horses that had been severely burnt and blistered in the hip, when the hock was evidently the seat of the disease.

### *Strain of the Flexor Tendon, or Back Sinew.*

A strain of the back sinew depends, as we have before observed, on an inflammation of the membranes in which it is enveloped,\* and is sometimes complicated with a rupture of the ligaments which are situate immediately under the sinews.† When the lameness and swelling are considerable, bleed in the shoulder vein, and give a dose of physic; then let the saturnine poultice be applied, so as to extend from the hoof to the knee, and let it be frequently moistened with the saturnine lotion. When the inflammation and lameness have abated considerably, and a swelling still remains, apply the embrocation for strains, rubbing it well on the part twice or three times a day. If this do not succeed, recourse must be had to a blister. It will be adviseable also to turn the horse loose into a large stable or barn, and to give him this kind of rest for a considerable time: should he be worked too soon after the accident, the part is very liable to be injured again, particularly when it has been violent. Should the swelling continue, notwithstanding these remedies have been carefully employed, particularly if it feel callous and hard, and be perfectly free from inflammation, it will be necessary to apply to the actual cautery, (See *Firing*;) this operation, however, must never be performed while any inflammation remains. These swellings sometimes prove so obstinate, that even repeated blistering, and the actual cautery are ineffectual; as soon, however, as the inflammation which caused them is completely removed, they seldom occasion lameness, yet they will not admit of any violent exertion in the part, and are therefore always an impediment to speed.

#### SATURNINE LOTION.

Acetated lead,	-	-	-	-	-	-	4 oz.
Vinegar and water, of each	-	-	-	-	-	-	1 pint.
	Mix.						

\*Plate See 9, *aaa* the back sinew, *bb* the membranes.

†See Plate 10.



## SATURNINE POULTICE.

Fine bran, - - - - -  $\frac{1}{4}$  peck.

To be made into a thin paste with hot saturnine lotion: to this add as much linseed meal as will give it a proper consistence.

## EMBROCATION FOR STRAINS.

## No. 1.

Oil of rosemary and camphor, of each	- -	2 dr.
Soft soap,	- - - - -	1 oz.
Spirit of wine,	- - - - -	2 oz.

Mix.

## No. 2.

Soft soap, spirit of wine, oil of turpentine;	- -	} 4 oz.
and ointment of elder, of each,	- -	

Mix.

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### *Ring Bones.*

Are bony excrescences about the small pastern bone, near the coronet, or an ossification of the cartilages of the foot. (See *Anatomy of the Foot*, and Plate 5, Fig. 1, and Plate 7.) If observed in its incipient state, a blister will probably be of service; but when of longer standing, and large, the actual cautery will also be necessary. This remedy, however, is by no means uniformly successful, the complaint being frequently incurable; and if it have proceeded so far as to cause a stiff joint, there is no chance of recovery.

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### *Thorough-Pin.*

By this term is meant a swelling both on the inside and outside of the hock joint. When one of the tumors is pressed with the fingers, the fluid which it contains is forced into on the opposite side. From this communication between the two swellings, the disease has probably obtained its name.

It is generally a consequence of hard work, and therefore difficult to cure; the only remedies are blisters and rest.



## Windgalls,

Consist in an enlargement of the mucous sacs, which are placed behind the flexor tendons for the purpose of facilitating their motion. The swelling appears on each side of the back sinew, immediately above the fetlock joint. If punctured, they discharge a fluid resembling joint oil; indeed they frequently communicate with the cavity of the joint, and therefore cannot be opened without danger of producing incurable lameness. Blisters are the only applications likely to be of service, and these seldom effect a cure unless assisted by rest. This complaint does not often occasion lameness, and is therefore seldom much attended to; but as it is almost always a consequence of hard work, and often renders a horse unfit for much labor, it diminishes his value considerably.

I have sometimes applied rollers or bandages to the legs with good effect, keeping them constantly moist with the following embrocation:—

Muriate of ammonia,	-	-	-	-	-	-	1 oz.
Muriatic acid,	-	-	-	-	-	-	$\frac{1}{2}$ oz.
Water,	-	-	-	-	-	-	1 quart.

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## Splents.

Are bony excrescences about the shank bone, *i. e.* between the knee and fetlock joint; they never occasion lameness, unless situate so near the knee or back sinews as to interfere with their motion.

I have met with several cases of lameness, that were attributed to splents, when the cause evidently existed in the foot.

These excrescences may sometimes be removed by strong blisters; but the old method of bruising and puncturing the part before the blister is applied seems to be most effectual.

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## Spavin.

A spavin is a swelling on the inside of the hock, and is of two kinds: the first is termed a *bone* spavin, consisting of a bony excrescence; the other a *bog* or *blood* spavin. The former often occasions lameness just before it makes its appearance, and then can be discovered only by feeling the part, which will be found unusually hot and tender. If a blister be applied at this period of the disease, it will generally prove suc-



cessful; but when the disease has existed for some time, the cure is much more difficult. — In such cases the actual cautery should be applied, and the following day a strong blister: after this, two or three months rest (at grass) are absolutely necessary.

The *bog* spavin does not so often occasion lameness as the other, except when a horse is worked hard, which generally causes a temporary lameness, removeable by rest: but it does not often admit of a radical cure; for though it is frequently removed by two or three blisters, it generally returns when the horse is made to perform any considerable exertion.

Tying up the vein which passes over the inside of the hock has been considered the most effectual remedy, from a supposition that the lameness was caused by an enlargement of that vessel: this operation, however cannot be necessary, since it has been proved that the enlargement of the vein is always an *effect* and not a cause of the disease.

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### *Curb.*

This term implies a swelling on the back part of the hock, which sometimes occasions lameness. — Blistering and rest are the only remedies: it is frequently necessary, however, to apply two or three blisters before the swelling is perfectly reduced.

## CHAPTER XX.

### *Anatomy and Phisiology of the Foot.*

Of all the diseases to which horses are liable, there are none more difficult of cure, or that occur so frequently as those which attack the foot; and however improbable it may appear to those who have not paid much attention to this subject, it is an incontrovertible fact, that almost all of them are the consequence of bad shoeing, and improper management of the foot.

No one can be aware of the importance of this branch of the veterinary art, but he who has had frequent opportunities of seeing these diseases, and has taken the trouble to inquire into their causes. Such a man will be convinced, that nearly half of the horses that become unserviceable are rendered so by some defect in the feet; and he will find that such defects are most commonly occasioned by a bad method of shoeing: therefore it must surely be of importance to every man who values his horse, to acquire such a knowledge of this subject as may enable him to preserve so useful an animal from a multitude of diseases.



The bad effects which arise from the common practice of shoeing are so gradual, that we can easily account for their having been generally overlooked; the gradations between soundness and absolute lameness are so numerous, that it has been found rather difficult to trace the disease back to its source; and this cannot be done readily without having some knowledge of the structure of the foot, and the particular uses of the various parts which compose it.—It is necessary also to be well acquainted with the natural form of the foot, in order to determine how far it has been altered or destroyed by any plan of shoeing. For example, take a horse that has a sound well-formed foot, let it be improperly pared, and let bad shoes be applied; in all probability lameness will not be the immediate consequence. By a repetition, however, of this practice, it will be found that the original shape of the foot is gradually altered, and eventually it will be so far deformed as to produce perhaps incurable lameness; therefore we ought not to be satisfied with a plan of shoeing, merely because a horse is not immediately made lame by it but should examine also the effect produced by it upon the shape and structure of the foot; and this rule may invariably be depended on, that any mode of shoeing and treating the foot, which has a tendency to alter the form given to it by nature, is highly absurd and destructive; while that practice which tends to preserve its original form is founded upon sound and rational principles.

It has been very justly observed, that if we wish to examine a perfect foot, such as nature made it, it is generally necessary to find one that has never been shod; for the common mode of shoeing is so frequently destructive, that we seldom meet with a horse whose feet have not lost, in some degree, their original form; and this deviation from their natural shape is generally proportioned to the length of time he has worn shoes. From this circumstance writers on farriery have been led to form various opinions respecting the most desirable form for a horse's foot; but had they consulted NATURE, this variety of opinion would not have existed: they would have been convinced that the feet of all horses in a state of nature, or not improperly shod, are nearly of the same shape; and surely no one will dispute that this form, which the Creator has given it, is the most perfect, and far better adapted to all the purposes for which the animal was designed, than any that can be given by the most ingenious farrier.

A person unacquainted with the anatomy of the horse's foot, would naturally suppose, that the internal parts are simply enclosed by the hoof, and that by its hardness it served to protect them from the blows and pressure to which they would other-



wise be constantly exposed; but very little reflection would convince him how incomplete and inadequate such a protection would be. Let him be convinced that those internal parts are replete with blood-vessels and nerves, and possessed of a high degree of sensibility: let him consider also, what an immense weight is thrown upon them at every step, and what painful concussion must be occasioned to the animal, were this the only safeguard against external injury. Nature, ever provident, has so constructed this part, as to obviate these inconveniences. If we examine any part of the animal economy, we are astonished at the infinite wisdom that is displayed in it. It is not however too much to assert, that the structure of the horse's foot is strikingly beautiful and curious; here we find a variety of wonderful contrivances to prevent any painful concussion, from carrying heavy burdens, or from the most violent exertions; but such is the folly and obstinacy of farriers, that they frequently destroy or pervert the whole of this beautiful mechanism, and the poor animal is doomed to painful labor, or perpetual lameness.

It would not be consistent with the objects of this chapter, to give an elaborate description of the anatomical structure of the horse's foot; but it will be essentially useful to give such an explanation of it, as will enable the reader fully to comprehend the principles of shoeing, and the method of preserving the feet from many troublesome and incurable diseases.

The horse's foot is made up of a great variety of parts, some of them possessing blood-vessels and nerves, like other parts of the body, and highly sensible; others are composed of a dead horny substance, perfectly destitute of feeling. All the external parts of the foot, which, when taken together, are termed the *coffin* or *hoof*, are composed of this horny substance; which is not only very hard, but is possessed also of a considerable degree of toughness and elasticity, that renders it extremely durable, and well calculated to protect the sensible parts which it encloses.

The hoof consists of the *wall* or *crust*, the *sole*, the *frog* and the *bars*. The upper part of the crust, where it is connected with the skin, is termed the *coronet*; the lower part in front, the *toe*; the sides of the crust are named the *quarters*; the quarters terminate in the *heels*; and the heels are connected with the *frog*. The crust grows from the coronet, and instead of taking a perpendicular direction, becomes oblique in its descent, whereby it acquires a conical figure, being considerably wider at the basis than at the coronet. This description of the hoof applies only to the healthy foot that has not been improperly treated; for when the bars have been cut away, and the frog ma-



tilated and prevented from receiving pressure, the heels will contract or approach each other, and the shape of the foot will be considerably altered.

When we examine a hoof that has been recently separated from the foot, an immense number of small orifices or pores may be observed in that groove which is found on the inside of the coronet. Into these orifices the extremities of those vessels are inserted which secrete the horny matter, the whole of which appears to be pervaded by a fine fluid, serving to prevent brittleness, and to preserve in the hoof a proper degree of elasticity.

All the internal surface of the crust, except the groove we have just mentioned, is covered by a beautiful membranous or laminated substance, which very much resembles the under surface of a mushroom. This is united, or rather interwoven, with similar laminæ or membranes, which cover all the anterior and lateral surfaces of the sensible foot, forming a very secure union between the crust and the internal parts. Nor are these membranes possessed merely of great strength: they possess likewise a considerable degree of elasticity, constituting one of those curious springs which Nature has provided to prevent concussion when the animal is in motion. That these laminæ form a union between the crust and sensible foot, of sufficient strength to support the animal's weight, has been proved beyond a doubt, by removing from a living horse the bottom of the hoof, that is the sole and frog. In this case, had the laminæ been unable to support the horse's weight, the internal foot must have slipped through the hoof, so as to come down upon the ground: but this did not happen; and the sole, as it was reproduced, assumed its proper concave form.

As these laminæ form so secure a union between the crust and the internal foot, it is evident that the horse is in great measure supported by the crust, which therefore ought to possess considerable strength for if it were too weak and flexible, it would not be adequate to the burden which it has to sustain, and must consequently bend to it. In this case the hoof would lose that oblique form which it had originally, and would approach the horizontal line. (See Fig. 1 and 2, Plate 3.) At the same time, the sole would lose its concave form, from receiving an unusual degree of pressure, becoming flat, and at length convex or projecting. (See Fig. 2, Plate 2.) But when the crust is sufficiently strong, the internal foot, and consequently the whole animal, is suspended by those elastic membranes, as a carriage by its springs; and though the bottom of the internal foot is in contact with the sole, it nevertheless does not press upon it considerably, except when the



horse is in motion, and the back part of the sole descends a little, being somewhat elastic, and suffers the laminæ to elongate in a small degree, so as to prevent any painful concussion.

The bottom of the hoof is formed by the *SOLE*, the *FROG*, and the *BAR*S.

The *sole* is rather concave or hollow on its external surface, and consists of a different kind of horn from that which forms the crust, being of a scaly texture, and sometimes soft and pulverable on its exterior surface: its use is to defend the sensible sole, that lies immediately under it. From its concave form the horse is enabled to tread more firmly on the ground, and the sensible parts are less exposed to blows or pressure, than they would be had it been made either flat or convex; and being somewhat flexible and elastic toward the heels, it assists in the action of those curious springs we have just described.

The *frog* is a very important part, and requires to be particularly considered. It is intimately united with the sole, but is composed of a tougher and more elastic kind of horn. It resembles a wedge in its form; but towards the heel where it becomes wide and expanded, there is a separation in the middle which is continued to the heel. When the frog receives the pressure of the horse's weight, this separation is increased, and consequently the frog becomes wider; and as it is connected with the heels of the crust, the same effect must be produced upon them.

As great part of the frog is placed behind the coffin bone, all the intervening space between it and the back sinew being filled with a fatty elastic substance, it forms another of those curious springs which nature has provided to prevent concussion.

When the frog is in contact with the ground, it is evident, from its connection with the heels of the crust, as we have before observed, and with two cartilages or elastic bodies, which are covered in great measure by the heels and quarters of the crust, and belong to the internal foot, that it must tend to widen or expand the heels; and however they may be disposed to contract, by the foot being kept hot and dry, such contraction cannot possibly take place while the frog bears on the ground, because it is then opposed by a very considerable part of the animal's weight.

It has been supposed by some, that the principal use of the frog is to serve as a cushion and point of support to the back sinew. When we consider, however, the structure and relative situation of these parts, this opinion does not appear to be very probable. From what has been said of the frog, the reader may judge of its importance, and how necessary it is to attend to its preservation: but such is the mutilating practice of



farriers, so determined do they seem on all occasions to act in opposition to nature, that this essential part is generally the first that is destroyed or rendered useless.

The bars form two ridges, one on each side the frog, extending from the heel of the crust toward the toe of the frog: they appear to be a continuation of the crust, being, like it, composed of strong longitudinal fibres. At the part where it joins the crust, a very fine bearing is afforded for the heel of the shoe. (See Fig. 2, Plate 1.) The use of the bars is, to oppose any disposition there may be in the hoof to contract, by acting as props to the heels: but in the common practice of shoeing they are generally destroyed; the farriers have supposed that they bind the heels together, and prevent their expansion: they therefore name them binders, and cut them away in order to open the heels as they term it. This practice, however, is not now so frequent as it used to be. (See Plate 1, Fig. 2, and Plate 6.)

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Having finished our description of the hoof we shall proceed to describe the *internal or sensible foot*, which is represented in plate 5,\* as it appears when recently taken from the hoof, the arteries having been injected with wax red colored.

All the parts of which the internal foot is composed are, as we have before observed, endued with great sensibility; and so nicely is it adapted to the cavity of the hoof, that it completely fills it, without suffering the least inconvenience from pressure: but when the foot has been improperly treated; when the frog has been deprived of its hard surface for the purpose of giving it what farriers conceive a neat and fashionable appearance (as if Nature had been so clumsy in this part of her work, as to require a polish from the hands of these ingenious gentlemen;) when the frog has been thus mutilated, the bars destroyed, and shoes applied that are either turned up or made very thick at the heels; and when this shoe, for the purpose of saving trouble, has been applied to the foot nearly *red hot*—in such circumstances the hoof must necessarily contract, whereby its cavity will be diminished, so that the nerves and blood vessels will be compressed, the circulation of the blood impeded, and inflammation and lameness will most probably be the consequence.

All the interior and lateral surfaces of the sensible foot are covered with that membranous or laminated substance which we have before described; but it differs from those laminæ

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\*Frontispiece.



which are found on the internal surface of the crust, in possessing numerous blood vessels, which can be easily demonstrated by injecting colored wax into the trunk of the arteries; but the laminæ of the crust cannot be made to appear vascular even by the finest injection, and are therefore supposed to be insensible. At the upper part of the sensible foot, where the laminæ terminate, a roundish projecting body may be observed, extending all round the coronet to the back part of the frog: this is termed the *coronary ring*. Its surface is covered with the extremities of vessels, which are very conspicuous when the arteries have been injected with colored wax or sise: it is from this part that the hoof is formed.

The bottom of the internal foot is formed by the sensible frog and sole: the former perfectly resembles in shape the horny frog, to the concavities of which its convexities are nicely adapted. In describing the horny frog, we had occasion to mention its connection with two elastic bodies or cartilages that are in great measure covered by the heels and quarters of the hoof; but this connection is through the medium of the sensible frog, which is more immediately united to those cartilages. When the former comes in contact with the ground, and receives the pressure of the horse's weight, the latter is forced upward and rendered wider, and at the same time the cartilages are forced upward and outward, tending thereby to expand the heels and quarters, and assisting in taking off concussion. From the sensible frog and sole, the horn which composes the external frog and sole is secreted. For this purpose they are supplied with numerous blood vessels, the extremities of which may be seen upon their surface, and become very conspicuous when the arteries have been injected with colored sise. Hence we are enabled to account for thrushes, and that rottenness of the frog which generally accompanies this disease; for when the sensible frog is compressed and inflamed by a contraction of the heels, it becomes incapable of performing its principal function, that is, the secretion of horn; and the blood which should have been applied to this purpose is chiefly expended in forming that offensive matter discharged in thrushes. From this we may learn also the cause of that unnatural thinness in the soles of horses that have pumice or flat feet. When the crust gives way to the pressure of the horse's weight, allowing the internal foot to bear so upon the sole as to render it either flat or convex, the extraordinary pressure which the sensible sole receives inflames it, and impedes in a greater or less degree the secretion of horn.

The sensible sole lies immediately under the horny sole, by which it is defended from blows or pressure. When the horny



sole loses its concave form, and becomes thin, and incapable of performing its function, if flat shoes were applied, or if the sole were suffered to bear upon the ground, lameness would be the consequence; and it is for the purpose of preserving the sole from pressure that the concave or hollow shoe is employed in those cases. When these parts which we have described are removed from the sensible foot, the tendons, ligaments, and bones, come into view.

In Plate 9 is a back view of the bones, ligaments, and tendons. In this the course and insertion of the back sinew, or flexor tendon, may be seen, as well as the lateral cartilages. The flexor tendon is enclosed in a sheath, which is laid open in one part in order to show the tendon: it has been removed also from the bottom of the tendon, that its insertion may be clearly seen.

In Plate 10, are represented the ligaments, for which purpose the tendons were removed. The lateral cartilages may be seen in this view also.

In Plate 11 and 12 are a front and back view of the bones. It will be unnecessary to give a particular description of these as their form and relative situations may be seen by referring to the plate. It may be useful, however, to point out the sesamoid bones, and the navicula, or nut bone: the former are connected posteriorly with the lower extremity of the cannon, or shank bone: they consist of two small bones, firmly united by means of very strong ligaments: they compose part of the fetlock joint, having a moveable articulation with the cannon bone. Their external part affords a smooth polished surface for the back sinews to slide upon, and the same ligament which composes this surface comes round the back sinews, so as to form a sheath for them, and keep them in their situation. In this sheath a fluid similar to synovia, or joint oil, is formed, for the purpose of rendering it smooth and slippery, and enabling the tendon to move easily upon it. As these bones project a little, they serve as a pulley for the tendons to slide upon, and afford a considerable mechanical advantage to the flexor muscles of the limb. The nut bone serves as another pulley for the tendon or back sinew to move upon: it is connected posteriorly with the coffin bone and the small pastern, and affords the same kind of polished surface and sheath for the tendon as we have before described.



## CHAPTER XXI.

*On the practice of Shoeing.*

Having given, in the preceding chapter, a concise description of the horse's foot, and pointed out the uses of the various parts which compose it, I shall now describe the method of shoeing. It will be necessary to premise, that the mode of shoeing most commonly practised has a destructive tendency, and produces such a variety of diseases, that we seldom meet with a foot that has not lost, in a greater or less degree, its original shape: it must be obvious, therefore, that one kind of shoe cannot with propriety be recommended for general application, and that it is necessary on all occasions to adapt it carefully to the state of the foot. This constitutes the most difficult part of the art of shoeing; and from neglecting this precaution, shoes of the best form have often occasioned lameness.

In Fig. 1, Plate 1, is represented a colt's hoof, in a state of nature, of which no part has ever been cut away, or ever been shod: this we have given as a standard of perfection, from which the goodness of feet in general may be judged of; for surely no one will hesitate for a moment in admitting that the natural form is the best it can possibly possess.

In Fig. 2 of the same plate is shown a perfect foot, properly prepared for the shoe. In this foot the superfluous horn has been cut away, and an even surface made for the shoe to bear upon. If we examine the feet of a hundred colts, it will be found that more than ninety of them are of the same form. It is true that some may have grown more luxuriantly than others, whereby the crust will be deeper, and the bottom part may have been partially broken, so as to give the foot a ragged and uneven appearance; still the essential shape is the same; and when this superfluous horn has been removed, it will be found that the bottom of the foot will be nearly circular, the sole concave, the bars distinct, and the frog and heels open and expanded.

In preparing the horse's foot for a shoe, the lower part is to be reduced, when luxuriant, which is generally the case, more particularly at the toe, and this is to be done by means of a buttress or rasp: the loose scaly parts of the sole are to be removed so as to preserve its concavity: and a small cavity is to be made with a drawing knife, between the bar and crust, to prevent the shoe from pressing on that part, and occasioning corns: it is, however, necessary, in doing this, to take particular care that the connexion between the bar and crust is not destroyed or weakened, which would of course render the bar useless.



The junction of the bar and crust affords a firm bearing for the heel of the shoe, and is to be rasped perfectly flat, and so low as to be exactly on a level with the frog, that may bear equally on a plain surface before the shoe is applied; indeed, the whole of the bottom of the crust is to be made perfectly flat and even at the same time with the rasp, that the shoe may bear equally on every part of it. Farriers should never be allowed to do this by means of a hot shoe, which is too frequently the case. If any ragged parts are observed in the frog, they are to be carefully removed with a knife; for, if suffered to remain, they might afford a lodgment for dirt and gravel. Thus do we prepare a foot for the shoe; and to a foot of this description, I mean one that is sound and perfect, or that has not suffered any material alteration in its form from improper shoeing, the shoe (Fig. 3 Plate 4) is to be applied.

The toe of the shoe, for a middle sized horse, is about an inch in width, and half an inch in depth or thickness; the heels about half an inch in width, and three eighths in depth. The wearing part of the toe is to be made of steel; and it may be observed, that the nails are bro't very near to the toe, but not quite round it; when that is done, there must also be a groove made, which considerably weakens that part, and almost all horses wear principally at the toe. Both surfaces of the shoe are perfectly flat; and the heel of the shoe rests upon the junction of the bar and crust, beyond which it should never extend.

It will be supposed, perhaps, that a shoe which is flat on that surface next the foot will be apt to produce lameness by pressing on the sole: but let it be recollected, that this shoe is recommended only for a sound foot, in which the sole is always a little concave; so that it cannot possibly receive any pressure from a flat shoe. It may be said also, that when the nails are placed so far from the heels, the shoe will not be sufficiently secure, and will be frequently loosened; but as the shoe bears equally on every part of the crust, this objection cannot have any weight. It must be granted however, when a foot is pared in the common way, that is, when the heels have been opened, and the shoe so applied, that nearly an inch of the heel has no bearing upon the crust; that, if the nails were placed so far from the heels as I have recommended, the shoe would be very insecure; for, as much of it as had no bearing upon the crust would operate occasionally as a lever in raising the nails; and consequently the shoe would frequently be loosened. Farriers therefore find it necessary, when the foot has been thus pared, and the shoe applied in this way, to place the nails in the quarters, by which the shoe is certainly rendered more secure than it would be had they been placed nearer the toe.



Many disadvantages, however, attend this method. In the first place, by placing the nails in the quarters, they prove a considerable obstacle to the expansion of the heels; and as the crust is generally much thinner at the quarters than at the toe, the sensible parts are more liable to be wounded: but this does not apply to the hind feet, in which the crust of the quarters is generally thicker than that of the toe. When a horse overreaches, if any part of the shoe has no bearing on the crust, it is very liable to be struck by the toe of the hind foot; and shoes are often forced off in this way. To this may be added the insecurity of such a shoe when a horse is rode on a deep or heavy ground.

It will probably be observed of the shoe which I have recommended, that it is inconsistent with the principle which has been laid down respecting the necessity of the frog's receiving pressure. I believe it is an incontrovertible fact, that unless the frog receives a certain degree of pressure, it will become soft, and incapable of affording sufficient protection to the sensible frog, which it covers; and that the heels will gradually contract, and the natural form of the foot will be destroyed; for I have proved, by experiment, that the bars alone are not sufficient to *prevent* contraction, though they certainly oppose it with considerable force; but it does not follow that it is necessary for the pressure to be constant, nor do I believe that a shoe which allows the frog to bear upon the ground, when the horse stands upon a plain hard surface, can be always applied even to sound feet without inconvenience. There can be no doubt that a horse in a state of nature has his frog almost always in contact with the ground, and then of course he feels no inconvenience from it; but when burdens are placed upon his back, and he is driven about upon hard roads, he is certainly in very different circumstances; and if the frog in such cases were constantly exposed to this severe pressure, it would sometimes, I believe occasion lameness.

In the foot prepared for the shoe, (Fig. 2, Plate 1) the frog and heels are on a level; and if placed on a plain hard surface, would bear equally; by applying the shoe, (Fig. 3, Plate 4) the frog would be raised three eighths of an inch from the ground; so that when the horse is going upon a hard surface, where he would be most liable to feel inconvenience from the pressure on the frog, it receives none; but upon soft yielding ground the frog certainly receives pressure, and without giving the animal any pain. To a horse that travels or works regularly, and is occasionally taken upon soft ground, I believe the pressure the frog receives in this way is quite sufficient to preserve the foot in a state of health; but when a horse is kept almost constant-



ly in the stable, standing upon hot litter, particularly in hot and dry weather, his feet will certainly be undergoing an alteration in their form, and will be in a progressive state towards disease.

In these cases, however, contraction of the hoof may be effectually prevented by means of the patent artificial frog, invented by Mr. Coleman.\* By this ingenious contrivance a horse's frog may receive sufficient pressure, in whatever circumstances he may be placed, to prevent contraction, and keep the foot sound and healthy, without the inconvenience of wearing thin heeled shoes; but it must be remembered, that whenever the frog is much exposed to pressure, whether it be applying the patent frog or by the thin heeled shoe, and reducing the crust at the heels, it is necessary the quarters and heels should possess a proper degree of pliancy. If they be rigid and flexible, it is evident that the sensible frog and cartilages would be placed between two fixed points, and they would consequently be bruised and inflamed. I have indeed seen several cases of lameness produced in this way. Whenever the hoof, therefore, appears to be too dry and strong, or to have lost its natural elasticity, it is necessary to rasp the quarters, and keep the whole hoof moist, either by applying several folds of flannel round the coronet, constantly wetted, or by making the horse stand in soft clay four or five hours during the day: by these means the natural flexibility of the horn would be restored, and the heels and quarters yield in a small degree, whenever the horse's weight was thrown upon the frog.

Having said as much as appears to be requisite of the method of shoeing a sound foot, I shall proceed to describe those diseases of the foot which render a different kind of shoe necessary. In the first place it will be proper to observe, that when a horse, even with a sound foot, has worn shoes that are very thick or turned up at the heels, particularly if at the same time the crust at the heels have been suffered to grow so high that the frog is kept at a considerable distance from the ground, it would be very improper to reduce the heels suddenly, so as to allow the frog to receive pressure, since the back sinews would in this case be injured, and lameness might ensue. In feet of this description it is necessary to remove from the toe all that can be done without exposing the part too much, and to lower the heels gradually: the toe of the shoe should be rather thin, and of the best steel.

The shoe for draught horses should be made flat on both surfaces, provided the sole is of a proper form and thickness, but if flat or convex, and consequently too thin, which is often

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\*Professor of the Veterinary College.



the case in horses of this description, the internal surface of the shoe must be concave: still the external surface should be flat; for the convex shoe, which is commonly used for draught horses, prevents them from treading securely, and renders them incapable of exerting the whole of their strength.

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## CHAPTER XXII.

### *Diseases of the Foot.*

The most frequent cause of lameness in the foot is a contraction of the horny matter that composes the hoof, generally accompanied by an increased concavity and thickness of the sole. The cavity of the hoof being thus diminished, the sensible foot suffers a greater or less degree of compression, which occasions in it inflammation and lameness. When we examine the bottom of a contracted foot, instead of being circular, it will be found of an oblong form; the heels and frog will appear as if they had been squeezed together. Sometimes the frog has become rotten, and discharges an offensive matter.

The sensible foot may also be compressed and inflamed by an increased thickness, and a consequent loss of elasticity in the hoof and sole, and in this case there is seldom any considerable alteration observed in the external form of the foot.

We sometimes meet with horses that go perfectly sound though their hoofs are much contracted: on the other hand we often see severe lameness produced by a slight degree of contraction. In attempting to cure this disease, the first step to be taken is to remove carefully with a knife all the rotten parts of the frog, and apply tar to those which are sound. A small quantity should also be poured into the cleft of the frog: this will promote the secretion of horny matter, and if assisted by pressure, will increase the solidity of that which is already formed. The quarters and heels are then to be rasped, particularly at the coronet, and the superfluous parts of the sole removed with a butteris and drawingknife. The toe is to be shortened as much as can be conveniently done; and if the heels be too high, that is, if the crust at the heels be too deep, it will be necessary to reduce it with the butteris and rasp. It frequently happens, however, in feet of this description, that the heels are too low: in such cases they must be carefully preserved; and when a shoe is applied, it should be made thicker at the heel than at the toe, and somewhat longer than that recommended for a sound foot.



When a contracted hoof has been thus treated, the next thing to be done is to keep the foot as moist as possible, and expose the frog constantly to pressure, either by means of the artificial frog, or by reducing the crust at the heels. When these remedies have been persevered in for a short time, the frog will have acquired a certain degree of hardness and solidity; it will then be proper to turn the horse out into some soft meadow ground, without shoes, taking care that the bottom of the foot is occasionally reduced, so that the frog may constantly receive pressure. If the foot be examined after a short time, it will be found that all the new formed hoof at the quarters and heels—that is, all the horn that has been produced at those parts since the remedies were first employed—instead of growing down nearly in a perpendicular direction or obliquely inward, is forced outward in its descent, so that the cavity of the hoof will be considerably enlarged, and the compression of the internal parts removed. When the horse has been at grass a sufficient time for the new hoof to grow completely down, the shape of the foot will be found much altered; the heels, instead of being narrow, will be open and expanded, the frog will be considerably widened, and not squeezed together as before, and the oblong form will be changed to one that is more circular; in short when the frog during this time has been exposed to pressure, and the quarters so rasped as to be rendered sufficiently flexible, the hoof will be found very similar in its form to that of a colt.

In cases where a contraction of the hoof has already produced inflammation and lameness, particularly if the lameness be not recent, it will be advisable to blister the pasterns previous to turning the horse out: and when the inflammation is very considerable, a laxative ball, with a cooling diet, will be serviceable. The cruel operation of drawing or tearing off the sole, has been recommended as a remedy for contracted feet, but very little reflection will convince any one of its inefficacy. Whenever it has been supposed to do good, the benefit has probably arisen from the long run at grass that becomes necessary after it, and then the advantage might have been equal, perhaps greater, had the operation been omitted. It has been observed before, that in contracted hoofs there is generally an increased concavity in the sole, whence we may reasonably conclude that it opposes the contracting causes, though in the end it is not capable of preventing the contraction from taking place. Upon a horse that has been lame from this disease a considerable time, it is difficult, if not impossible, to perform a radical cure: in such cases I have several times succeeded in removing the lameness, but the internal parts had become so



irritable, or their organization had been so altered, that very moderate work would cause the lameness to return. When the lameness is not so considerable as to render the horse totally unfit for work, it will be advisable to apply a shoe that is thicker, wider, and longer at the heels than that recommended for a sound foot; and if the frog be tender and rotten, the bare shoe will be found serviceable. (Plate 4, Fig. 2.) It will be useful also to keep the hoof as moist as possible, by making the horse stand in wet clay four or five hours during the day.

In examining after death the feet of horses that have been thus diseased, we find generally that the laminæ have been destroyed, the form of the coffin bone altered, and its size diminished, or the lateral cartilages ossified. In some cases, however, no appearance of disease can be perceived on the internal parts of the foot. When the disease is gone so far as to injure the laminæ, cartilages or coffin bone, there is not a possibility of removing it, which shows how necessary it is to attend to the feet of horses more than is commonly done: and that whenever any alteration is perceived to be going on the shape of the foot; when the heels appear to be getting narrower, the frog squeezed together, and discharging matter, in consequence of the compression which the sensible frog suffers; it surely must be of importance to adopt such measures as will not only prevent the disease from going any further but will also restore the foot to its natural healthy state: for when it has gone so far as to produce absolute lameness, the cure is by no means certain. How frequently do we meet with horses that are said to be tender in the feet! and how subject are they to fall in consequence of this tenderness, which generally arises from contraction of the crust! In this case the sensible frog is extremely irritable and inflamed; and the horny frog which nature designed for its protection being soft or rotten, and inadequate to its functions, every blow that it receives must of course give the animal very considerable pain; and I have known many valuable horses thrown down in this way; since, however high and wide the heel of the shoe may be, the frog will be subject to occasional blows from sharp projecting stones. Whenever, therefore, any of those symptoms make their appearance, and whenever the foot seems to be undergoing an alteration in form, immediate recourse should be had to the mode of prevention we have pointed out.

The next disease to be noticed is the flat and convex sole, or, as it is more commonly termed, the pumice foot, which is represented in plate 3, Fig. 2. This disease most commonly occurs in heavy draught horses, and seems to arise from a weakness of the crust; for when the sole becomes flat or con-



vex, the crust also loses its proper form, and becomes flatter, appearing as if it had been incapable of supporting the animal's weight, and had therefore given way, allowing the internal foot to press so upon the sole as to give it the appearance we observe. This explanation of the disease will perhaps appear better founded, if we consider, that when a horse is drawing a heavy load, not only his own weight, but great part of that which he is drawing also, is thrown ultimately upon his feet; and as the fore feet support by far the greatest share, it is not at all astonishing that the crust should sometimes give way; for though it possesses sufficient strength for the purpose of the animal in a state of nature, yet that strength is limited, and not always adequate to the heavy burdens which the crust has to sustain. When the sole becomes flat or convex, it is rendered also thinner than it is naturally, and sometimes so much so, as to yield easily to the pressure of the finger. The sole, in this state is of course incapable of affording sufficient protection to the sensible sole, which is then closely in contact with it; and if it be exposed to pressure, lameness must be the consequence. It is almost superfluous to observe, that the flat shoe would be ill adapted to a foot of this description: it becomes necessary in this case to apply one that is concave on its internal surface, that the sole may not receive any pressure from it, and of sufficient width to protect the sole as much as can be done from the pressure of the ground. In Plate 4, Fig. 1, this shoe is represented, in which it may be observed, that although the internal surface is concave, still there is a flat surface for the crust to bear upon. In attempting to cure this disease, it is first necessary to take off the horses's shoes, and to make him stand on a flat hard surface: this kind of pressure will harden the soles, and in the end render them thicker, particularly if tar be frequently applied to them. I cannot say that I have ever seen the disease radically cured by this treatment, but I have known considerable advantage derived from it, especially in one case, where the soles, from being convex and very thin, became flat, and sufficiently firm to bear moderate pressure without inconvenience to the horse.

We sometimes meet with horses, particularly among those that are well bred for the turf, whose pasterns are remarkably long and oblique in their position, while the heels are very low and the toe of considerable length. If thin heeled shoes were applied to feet of this description, or if the toes were not kept short, the horse would be very liable to lameness, from the extraordinary pressure to which the ligaments and back sinews would be exposed: the heels therefore of such horses are to be carefully preserved, and the toes kept as short as possible. The



shoes which are applied should be made sufficiently thick and long at the heel to make up for the deficiency of horn in that part, in order to relieve the ligaments and back sinews; and with the same view the toe should be made rather thin, and of the best steel.

There is another kind of deformity sometimes observable in the foot, that is, the hoof loses that oblique form represented in Plate 3, Fig. 1, and approaches towards the perpendicular, (Fig. 3:) at the same time the heels become very high. In this case it is necessary to reduce the crust at the heels, and apply the thin heeled shoe.

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### *Sand Cracks.*

Are longitudinal fissures in the hoof, generally near the heels, beginning at the coronet. Horses, whose hoofs have become dry and brittle, are most subject to them. They generally occur in the hot and dry months of summer, and seem to be occasioned by a strong disposition in the hoof to contract, at a time when it is dry and inflexible. They do not always cause lameness, and are sometimes very easily cured: but when the fissure is so deep as to reach the sensible parts, it often produces very severe lameness, and requires a considerable time to be completely removed. Having rasped the quarter, let the crack be opened with a drawing knife, so that the actual cautery, or red hot iron may be applied to it. This will cause matter somewhat resembling glue to exude, which will tend to fill up the fissure, and protect the sensible parts that would otherwise be exposed. Our next object is to remove the contractile disposition of the hoof, without doing which every other remedy would avail little. This is to be effected by keeping the hoof constantly moist, either by means of clay, or by turning the horse out to grass in soft moist ground; but previous to this it is necessary to rasp the bottom of that quarter which is cracked, so that no part of it may bear upon the shoe.

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### *Corns.*

Corns are generally the consequence of bad shoeing, or improper management of the foot, and may therefore be avoided by following the directions I have given under that head: but when they do occur, it is necessary to remove the red part, or corn, with a drawing knife, and to apply the shoe so that the tender part may not receive any pressure. When it has been



neglected, we sometimes find matter formed in this part, which often breaks out at the coronet: in this case it is necessary to make an opening for the matter in the angle between the bar and crust. (See Fig. 2, Plate 1, Letter *e*.)

The sore is to be dressed with compound tincture of benzoin, and the cavity to be loosely filled with digestive ointment, which is to be kept in by means of a bar shoe.

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### *Quittor.*

This disease generally arises from a wound or bruise in the coronet, and, if neglected, penetrates under the hoof, forming sinuses in various directions. The most effectual method of treating this complaint is to ascertain in the first place, the direction and extent of the sinuses, and then to force into them with a strong probe, some crystallized verdigris, rolled up in thin blotting or silver paper. This, though apparently a severe remedy, will be found very effectual. Sublimate and arsenic have been strongly recommended as remedies for the quittor; indeed it is probable that any caustic application would effect a cure; but I have succeeded so well with the crystallized verdigris, that I have not been induced to try those medicines. When a corn has been neglected and suffered to break out at the coronet, or when the foot has been wounded, or *pricked*, as it is termed by the farrier, in shoeing, and this is not discovered until matter appears at the coronet; though these may be considered as cases of quittor, a different treatment is required from that we have just described. In these cases the cure greatly depends on making an opening for the matter in the bottom of the foot, where the nail which inflicted the injury entered; or if produced by a corn, the opening must be made in the angle, between the bar and crust, at *e*, Fig. 2, Plate 1. The best dressing on these occasions is the compound tincture of benzoin and digestive ointment; a poultice is sometimes required to soften the horny matter, and subdue any inflammation that may exist in the foot.

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### *Thrush.*

This disease consists in a discharge of foetid matter from the cleft of the frog, which part is generally rotten, and so soft as to be incapable of affording sufficient protection to the sensible



frog, which it covers: hence arises that tenderness of the foot which is so often observed. When this complaint attacks the fore feet, it is seldom, if ever, an *original* disease, but merely a *symptom* or an *effect*. The cause is generally a contraction of the horny matter at the quarters or heels, by which the sensible frog is compressed and inflamed: the discharge which takes place is a consequence of this inflammation, and may be considered as an effectual effort of nature to cure it. The discharge, however, certainly diminishes the inflammation, and prevents it from becoming so considerable as it otherwise would; for it often happens when it has been stopped by the injudicious application of astringents, or when it ceases spontaneously that the inflammation becomes violent; extends to the other parts of the foot, and occasions severe lameness, which generally is relieved or removed by a return of the discharge. But we are not to infer from this that an attempt to cure thrushes is improper; it only shows that it is necessary in the first place to remove the *cause* of the disease. With this view the quarters are to be rasped, and the hoofs kept constantly moist, by making the horse stand in clay some part of the day, taking care to keep the frog dry by means of tar. When by these means we have succeeded in removing in some measure the compression and consequent inflammation of the sensible frog, it will be advisable to apply some astringent to the frog, which, if assisted by pressure and tar, will render that part firm and solid, and the discharge will of course cease, when the inflammation leaves the sensible frog.

The best astringents for this purpose are a solution of white or blue vitriol, allum, &c. There are some cases, however, of thrushes, which, though occasioned by compression of the sensible frog, it is difficult, if not impossible, to eradicate. I have examined feet with this disease after death, and have found the concave part or cleft of the *sensible* frog in a state of ulceration, which of course rendered it incapable of secreting horny matter and proved a constant source of thrushes.

With respect to those thrushes that attack the hind feet, and which sometimes, though rarely, happen also in the fore feet, independently of the above cause, a different treatment is required. When the discharge has existed for a considerable time, by stopping it hastily, we frequently produce inflammation and swelling of the legs: still it is necessary to check the disease, since, if neglected, it sometimes degenerates into that dangerous disease called *canker*. It is advisable, therefore, in such cases, to keep the bowels open by the following laxative ball, given every morning, until the desired effect is produced, and repeated occasionally. The best application for the frog



is tar, and one of the above astringents: other remedies, however, have been strongly recommended, among which are powdered lime, Egptiacum, tincture of myrrh, and other astringents. This treatment will be greatly assisted by two or three hours exercise every day, and frequent hand rubbing to the legs.

## LAXATIVE BALL.

Alces,	- - - - -	2 dr.
Castile soap,	- - - - -	3 dr.

To be made into a ball for one dose.

*Canker.*

This disease frequently originates in a thrush, and most commonly attacks the hind feet: it generally proves difficult to cure and not unfrequently incurable. The frog is the part first attacked, which becomes soft and rotten, discharging matter of a peculiar offensive smell. The horny frog is at length totally destroyed, and the sensible frog, instead of secreting horn, forms a substance somewhat resembling shreds of leather. The disease soon extends to the sole and other parts of the foot, even to the coffin bone, and is then, I believe incurable. The first thing to be done is to cut away freely all the diseased parts; and when the bleeding is stopped, let the following liniment be applied, and repeated every morning; the dressings may be kept on by means of a bar shoe. Pressure on the diseased part will materially assist in effecting a cure. Whenever the foot is dressed, such diseased parts as may again make their appearance are to be carefully removed; and to such as do not appear to be sufficiently affected by the liniment, let a little sulphuric or nitrous acid be applied. When the parts which were diseased begin to look red and healthy, and the discharge loses that peculiar smell before noticed, becoming whiter and of a thicker consistence, there is great probability of a perfect cure being effected; and when these favorable appearances take place, some mild application will be proper, except to such parts as do not appear to have entirely lost their foul appearance.

## STRONG LINIMENT.

## No. 1.

Oil of turpentine,	- - - - -	1 oz.
Sulphuric acid,	- - - - -	$\frac{1}{2}$ oz.
Mix very cautiously,		
Tar,	- - - - -	4 oz.
Mix.		



## No. 2.

Red nitrated quicksilver, - - - - - 1 oz.  
 Nitrous acid, - - - - - 2 oz.

The former being dissolved in the latter, mix them cautiously with four ounces of tar.

## MILD LINIMENT.

Chrystallized verdigris, finely powdered, - - - 1 oz.  
 Honey, - - - - - 2 oz.  
 Powdered bole and allum, of each, - - - - -  $\frac{1}{2}$  oz.

Vinegar enough to give it the consistence of a liniment, to be mixed over a gentle fire.

*Cutting.*

A horse is said to cut when he wounds the inside of the fetlock joint with his foot in travelling. This may arise from various causes, the most common of which seem to be, an improper position of the foot: the toe instead of being in a line with the point of the shoulder, inclining either inward or outward. In the latter case we generally find that the inner quarter of the hoof is lower than the other, and that the faulty position of the foot depends upon this inequality of the quarters; it must be obvious, therefore, that the remedy in this case consists in lowering the outer quarter, and making the inner branch of the shoe thicker than the other. When the toe inclines inward, it renders a horse liable to cut on the inside of the knee, at the lower part of the joint; this is termed the speedy cut, from its happening upon the trot or gallop, and is considered as a dangerous failing in a horse, the violence of the pain which the blow occasions sometimes causing him to fall very suddenly. The remedy for this is to keep the toe as short as possible, that being the part which generally inflicts the wound, and to alter the improper position of the foot. Cutting frequently depends upon weakness or fatigue, and is therefore very liable to happen to young horses when rode hard over deep heavy ground. The only remedy in this case is to avoid the cause until the legs acquire more strength, or to protect the wounded part with leather, or a boot as it is termed. Whenever a horse cuts, it is advisable to ascertain what part it is that inflicts the wound, and this may often be done by applying tar to the wounded part: this will of course adhere to the part of the hoof or shoe which comes into contact with the wound.



Should it be the edge of the shoe, which I believe is seldom the case, the cause may be easily removed by the farrier. Whatever part of the hoof it may be, it should be rasped away as much as can be done with safety, and particular attention paid to the position of the other foot, which, if improper, should be improved as much as it can be by shoeing.

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## CHAPTER XXIII.

# MISCELLANEOUS.

## 1. *Of Bleeding.*

THIS operation is frequently necessary in the diseases of horses, and is performed either with a lancet or phlebotomy, in the neck vein.

The blood should always be preserved, that the *quantity* drawn may be accurately known, and that its quality may be ascertained. If, after it has coagulated, a white, or rather a light or buff-colored jelly, be found on the surface, an inflammatory state of the body is indicated; but in order to render this criterion useful, the blood must not be taken from too small an orifice, nor should it be suffered to run down the sides of the vessel which receives it.

Blood drawn from a healthy horse very soon coagulates, and appears like a uniformly red jelly, with a small quantity of fluid resembling water floating on its surface. This red jelly may, by washing be rendered of a light buff color, and exactly resembles the buff or sise, as it is termed, of inflamed blood.—The most healthy blood, therefore, contains this sise; and the cause of it not being conspicuous in such blood is, that coagulation takes place before the red coloring matter can have time to separate from it; but as blood that is drawn from an animal laboring under general *inflammation* or fever always preserves its fluidity much longer than healthy blood, and as the red coloring particles specifically heavier than the fluid with which they are mixed, they will of course be gradually subsiding as long as the mass continues fluid, leaving a coat of buff-colored jelly on the surface.

It has been observed before, that healthy blood, when suffered to coagulate, appears to consist of two parts, the red jelly termed *crassamentum*, and the water, or *serum*; and that the former may afterward be separated, by washing, into two parts, *viz.* the red colored particles, or *red globules*, as they are termed by anatomists, and buff-colored jelly, or *coagulable lymph*.



The proportion, which these component parts of the blood bear to each other, seems to depend upon the state of the system at the time it is drawn. When the body is healthy and vigorous, we find but little serum; when it is preternaturally excited, or in a state of inflammation, there is still less; and when the animal is weak and debilitated, there is generally an abundance of serum. Another circumstance to be attended to in examining blood is the firmness or tenacity of the coagulum. In health the blood, when drawn and suffered to coagulate, is of a moderately firm consistence, and easily broken; but when the system is highly excited, as in general inflammation, so great is the tenacity of the mass, that the finger can scarcely penetrate it. On the other hand, when the powers of life are weak, as in the latter stage of symptomatic fever, the blood almost loses its power of coagulating. I recollect a glandered horse that was made the subject of experiments, and that died in consequence of large and repeated doses of mercury; the debility this produced was excessive; and the blood appeared as thin, and nearly of the same color, as claret. The necessity, therefore, of examining blood that is drawn from a diseased horse must be obvious, as it assists in forming a judgment of the nature of the disease, and points out the proper remedies. When blood exhibits buff on its surface, particularly if at the same time, the coagulum be firm and solid, we may be certain that the complaint is inflammatory, and that bleeding may be repeated with advantage. If, on the other hand, the mass of blood be wanting in tenacity, and have more serum than usual, we may safely conclude that the system is in a state of debility, and consequently that bleeding is highly improper.

In cases of symptomatic fever it will generally be necessary to take away four or five quarts of blood at the first bleeding; I have seen even six quarts taken with manifest advantage. It is at this period of the disease (its commencement) that copious bleeding is particularly useful; and it is from an absurd prejudice which obtains against this practice, that so many horses are destroyed by such fevers. It is truly laughable to hear a groom or farrier pronouncing with an affectation of unerring sagacity upon the qualities of blood, frequently observing that it is too hot, and that consequently the horse must have a fever; that it is too dark colored, and therefore foul; or that it is too thick and consequently unfit for circulation; and sometimes it is said to be full of humors. With respect to the heat of the blood, it will be sufficient to observe, that it preserves nearly the same temperature while circulating in the body, whether the animal be an inhabitant of the most sultry or of the coldest country, whether in health or in the highest fever.



As to the color of the blood while flowing from the body, it may be either red or of a dark color, as the operator pleases; since by pressing on the vein, for a short time before the orifice is made, it may always be made to appear of a dark color. If an artery be opened, the blood which flows from it will be of a bright scarlet color. The opinion that blood sometimes becomes thick or viscid in the body, was supported by many respectable philosophers, but is now universally abandoned, because it has been proved to be erroneous.

I think it a bad practice to bleed horses frequently when there is no urgent occasion, as they thereby acquire a plethoric habit; and unless the operation be regularly performed and gradually increased in frequency, troublesome diseases might ensue. Horses of a full habit, that are consequently liable to inflammatory complaints, will receive most benefit from moderate and long continued exercise, and good grooming. When bleeding is performed for the cure of important inflammatory diseases, a large orifice should be made in the vein, and the blood drawn in a large stream, as we thereby diminish the action of the heart and arteries much more readily than if it were drawn slowly from a small orifice. In cases of external and circumscribed inflammation, topical bleeding is eminently useful, which is done by opening some veins contiguous to the affected part, or by scarifying the inflamed surface.

Thus in diseases which depend upon an undue proportion of blood in the vessels of the brain, relief will often be obtained by opening the artery of the temple; and when the eye is much inflamed, it will be found useful to scarify the inner surface of the eye-lid

### *Of Physic.*

In purging horses, great care and attention are necessary, their bowels being particularly irritable, and liable to inflammation. The physic commonly given is certainly too strong, and I am convinced that many horses have been destroyed by the immoderate doses that have been recommended by writers on farriery. When this happens, the mischief is generally attributed to the coarseness or impurity of the medicine, and the druggist is undeservedly censured. A modern author has ingeniously availed himself of this prejudice, to explain the violent effects which his cathartic prescriptions have sometimes produced. I must presume, however, to suggest, that these effects were more probably occasioned by the *excessive quantity* than by the impurity of the purgative ingredients.

The only certain and safe purgative for horses is aloes; and



of the different kinds of aloes, the *Barbadoes* is undoubtedly the best. The *succotrine*, which is generally considered the mildest, as well as the most certain in its effect, is too weak, and so very uncertain and variable in its operation, that we cannot use it without frequent disappointment. Practitioners seem now to be convinced of the superiority of the *Barbadoes* aloes, as it has been sold of late nearly at double the price of the *succotrine*.

It is advisable to prepare a horse for physic by giving him bran mashes for a day or two. This will gently relax the bowels, and remove any indurated faeces that may be lodged in them: it will also tend to facilitate the operation of the medicine.

About a peck of bran divided into four feeds will be sufficient for twenty-four hours; and as it is desirable to give the horse but a small quantity of hay, I think it advisable to add to each bran mash about a pint or more of bruised or broken oats, which will tend to preserve his strength and condition. He should be allowed to drink a moderate quantity of water frequently.

When a horse is purged for the first time, it is prudent to give a very moderate dose. Were the common quantity given to one of weak irritable bowels, there would be danger not only of producing great debility, and thereby of counteracting the intention of the medicine, but likewise of destroying the animal, by bringing on an inflammation of the bowels; and this is by no means an unusual occurrence. Should the first ball not operate sufficiently, a stronger may be given after an interval of a few days.\*

The morning is the best time for giving a purgative, the horse having previously fasted two or three hours. If he be disposed to drink after taking the ball, give a moderate quan-

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\*Mr. John Lawrence recommends from one ounce and an half to fourteen drams of *succotrine* aloes, as a moderate dose for a race horse, a dose which I am sure would in many horses prove very injurious; and as a remedy for that kind of colic or gripes which often happen from too strong a dose of physic, or from bad management during its operation, he recommends in slight cases a cordial ball, and in more serious cases camphor dissolved in a small quantity of gin, with oil of amber, and balsam of capivi and Peru, all of them powerful stimulants and very likely in such cases to produce inflammation in the bowels. Whenever a horse appears sick and griped after taking physic, or, as the above author properly describes him, hanging down his head, refusing his food, appearing as if swollen in the carcase, heaving in his flanks, and frequently throwing up his tail, without ability to evacuate, all medicines of a stimulating quality should be avoided, the strait gut should be emptied by the hand, and afterward clysters of water gruel; with olive or linseed oil, should be injected. The horse should be allowed to drink frequently of warm water, or thin water gruel; and if he refuses to drink, it is absolutely necessary to drench him several



uity of warm water, which will promote its solution in the stomach, and consequently expedite the operation. During this day the horse is to be kept in the stable, and fed with bran mashes and a moderate quantity of hay: he may be allowed also to drink plentifully of warm water: and if he refuse it in this state, let it be offered nearly cold. The following morning he is to be exercised: and at this time the medicine will generally begin to operate. Should the purging appear to be sufficient, he need not be taken out a second time; but when the desired effect does not readily take place, trotting exercise will tend to promote it. During this day also he is to be carefully supplied with bran mashes and warm water. Warm clothing more particularly when out of the stable, must not be omitted. The next day the purging will generally have ceased, and then a small quantity of corn may be allowed. When physic does not operate at the usual time, the horse appearing sick and gripped, relief may generally be obtained by giving a clyster of water gruel, and making him drink freely of warm water, assisted by exercise. When the purging continues longer than usual, and the horse appears to be considerably weakened by the evacuation, let the astringent ball be given.

It will be observed, perhaps, that some ingredients commonly thought necessary, in physic, have been omitted in the following formulæ. These medicines have been proved, however, to be perfectly useless. Jallap, though given to the amount of four ounces, will produce very little purgative effect upon a horse; nor will salts or cream of tartar. Rhubarb, however large the dose, will not operate as a purgative, though it may be useful in moderate doses as a stomachic.

## No. 1.

Barbadoes aloes,	-	-	-	-	-	-	5 dr.
Prepared natron,	-	-	-	-	-	-	2 dr.
Aromatic powder,	-	-	-	-	-	-	1 dr.
Oil of caraways,	-	-	-	-	-	-	10 drops.

Sirup enough to form a ball for one dose.

times a day. These means, assisted by walking exercise, will soon bring on an evacuation, and the horse will be relieved. It is often supposed that these unpleasant symptoms are caused by some bad quality in the aloes. But I am convinced from long experience that it is not so; and I will venture to affirm that the above symptoms are always occasioned either by too large a dose of aloes, or by treating the horse improperly after he has taken it. Another circumstance may sometimes assist, and that is, the stomach containing too large a quantity of food at the time physic is given, and particularly if the food be deficient in moisture. But this can never happen if the directions we have given be duly observed. I have for several years employed the Barbadoes aloes very extensively, giving, often,



## No. 2.

Barbadoes aloes,	- - - - -	7 dr.
Castile soap,	- - - - -	$\frac{1}{2}$ oz.
Powdered ginger,	- - - - -	1 dr.
Oil of caraways,	- - - - -	10 drops.
Sirup enough to form a ball for one dose.		

## No. 3.

Barbadoes aloes,	- - - - -	1 oz.
Prepared natron,	- - - - -	2 dr.
Aromatic powder,	- - - - -	1 dr.
Oil of anise-seeds,	- - - - -	10 drops.
Sirup enough to form a ball for one dose.		

The ball No. 2, I have generally found sufficient for strong horses, and have scarcely ever had occasion to go further than No. 3. Should any one, however, be desirous of a stronger medicine, it may readily be procured by adding one or two drams of aloes, or one dram of calomel to the ball No. 3, but I must not omit to observe, that there appears to me to be a considerable danger in making the addition.

Since the former edition of this book was published I have found great difficulty in procuring genuine succotrine aloes, and have often been disappointed by it; I have been induced, therefore, to use the Barbadoes, and can now recommend it with confidence, in preference to every other kind. The Barbadoes aloes is of a dark brown color, approaching to blackness, of a strong disagreeable smell, not very brittle and opaque.

*Diuretics.*

These are medicines which, by stimulating the kidneys, increase the secretion of urine. The following formulæ I have found convenient and efficacious.

## No. 1.

Castile soap,	- - - - -	4 oz.
Powdered resin and nitre, of each	- - - - -	2 oz.
Oil of juniper,	- - - - -	$\frac{1}{2}$ oz.
Linseed powder and sirup enough to give it a proper consistence, to be divided into six balls, for strong, or eight for weak delicate horses.		

From thirty to fifty doses in the course of a week: and have found, that from half an ounce to one ounce, may be considered as the proper dose. For a delicate blood horse half an ounce generally proves sufficient; to a common saddle horse five or six drams; to a waggon horse, one ounce.



## No. 2.

Castile soap,	- - - - -	4 oz.
Venice turpentine,	- - - - -	2 oz.

Powdered anise-seeds enough to give it a proper consistence,  
to be divided into six balls.

*Alteratives.*

These are medicines which produce their effects almost insensibly: the following formulæ will be found efficacious:

## ALTERATIVE POWDERS.

## No. 1.

Levigated antimony,	- - - - -	6 oz.
Flowers of sulphur,	- - - - -	8 oz.

Mix for eight doses.

## No. 2.

Powdered resin,	- - - - -	4 oz.
Nitre,	- - - - -	3 oz.
Tartarised antimony,	- - - - -	1 oz.

Mix for eight doses.

## No. 3.

Unwashed calx of antimony,	- - - - -	2 oz.
Calomel,	- - - - -	2 dr.
Powdered anise-seeds,	- - - - -	4 oz.

Mix for eight doses.

Should a ball be thought more convenient than powder, the change may be easily made by the addition of sirup and linseed powder.

A dose of the alterative powder should be given every evening with the corn until the whole quantity (that is, eight doses) are used.

But the powder No. 3 should not be continued so long, on account of the calomel which it contains, unless the horse be taken great care of, and the effects of the medicine carefully watched. Whenever it is observed to occasion sickness, griping pains, loss of appetite, or purging, it should be immediately discontinued, until these symptoms go off.

*Laxatives.*

This term is applied to opening medicines that operate very mildly, and produce so gentle a stimulus upon the intestines, as merely to hasten the expulsion of their present contents,



without increasing the secretions. Castor oil seems to be the best medicine of this kind, though the oil of olives or of linseed will produce nearly the same effect. The dose of the former is about a pint: but the latter may be given to a pint and a half. When a laxative ball is required, the following will be found useful:

Succotrine alces,	-	-	-	-	-	-	$\frac{1}{2}$ oz.
Castile soap,	-	-	-	-	-	-	3 dr.

Sirup enough to form a ball for one dose.

### 3. *Blisters.*

Previous to the application of a blister, the hair should be cut from the part as closely as possible, the blistering ointment is to be well rubbed on it, and afterwards a small quantity is to be spread over the part with a warm knife. When the blister begins to operate, horses are very apt to bite the part, which if suffered, might produce a permanent blemish. It is necessary therefore, to guard against this accident by putting what is termed a cradle about his neck, or by tying him up to the rack. When the legs are blistered, the litter is to be entirely swept away, as the straw might irritate the blistered parts.

BLISTERING OINTMENT.

## No. 1.

Spanish flies, powdered,	-	-	-	$\frac{1}{2}$ oz.
Oil of turpentine,	-	-	-	1 oz.
Ointment of wax or hog's lard,	-	-	-	4 oz.
Mix.				

## No. 2.

Oil of turpentine,	- - - - -	1 oz.
To which add gradually,		
Vitriolic acid,	- - - - -	2 dr.
Hog's lard,	- - - - -	4 oz.
Spanish flies, powdered,	- - - - -	1 oz.
Mix.		

## No. 3.

Common tar,	-	-	-	-	-	-	-	4 oz.
Vitriolic acid,	-	-	-	-	-	-	-	1 dr.
Oil of origanum,	-	-	-	-	-	-	-	$\frac{1}{2}$ oz.
Hog's lard,	-	-	-	-	-	-	-	2 oz.
Spanish flies, powdered,	-	-	-	-	-	-	-	$1\frac{1}{2}$ or 2 oz.

Add the vitriolic acid gradually to the tar, and then the rest of the ingredients.



*Remark.*—The blister No. 3 is remarkably useful in removing enlargements of the back sinews or windgalls. It is necessary to be very careful in mixing the vitriolic acid with the tar; for unless they are intimately incorporated, the acid will act as a caustic upon the skin and produce ulceration. I have seen horses suffer severely from this, particularly when in blistering the legs, it has been applied also to the back part of the pastern, or to the heel, a part that should always be protected from the action of the blister, by having some hog's lard smeared over it; being so irritable that a blister sometimes causes ulcers, which in this part are difficult of cure. Sublimate is often recommended as an ingredient in blisters, but it is very apt to *ulcerate* the skin, and leave a permanent mark or blemish. I have therefore omitted it in the above formulæ; but in cases of bone or spavin, in which severe blistering is necessary, it may be employed with advantage. I have for some time employed the following blister for common purposes, and find it more convenient than the others.

## No. 4.

Hog's lard,	-	-	-	-	-	6 oz.
Venice turpentine,	-	-	-	-	-	4 oz.
Bee's wax,	-	-	-	-	-	2 oz.
Yellow resin,	-	-	-	-	-	1 oz.
Oil of organum,	-	-	-	-	-	$\frac{1}{2}$ oz.
Powdered cantharides,	-	-	-	-	-	3 oz.

Melt the first four ingredients; and when removed from the fire, and not too hot, stir in the oil of organum and cantharides: continue stirring until cold. Should this blister become too hard in winter, it may be softened by rubbing it with a little oil of organum or turpentine, in a mortar or on a slab.

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#### 4. *Fomentations.*

Fomentations are commonly made by boiling wormwood, southernwood, camomile flowers and bay leaves in water, so as to make a strong decoction, which being strained off, is to be applied as hot as can be, without giving pain to the animal, by means of large flannel cloths. The efficacy of fomentations depends in great measure on their use being continued for a considerable time together, and being frequently repeated.



5. *Poultice.*

The following mixture will be found useful as a common poultice: Fine bran, one quart; pour on it a sufficient quantity of boiling water, to make a thin paste; to this add of linseed powder enough to give it a proper consistence.

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6. *Rowels.*

When these are used with a view of relieving internal inflammation or fever, it will be found useful to apply blistering ointment instead of turpentine, or the digestive commonly made use of, for this will produce a considerable degree of inflammation in a short time.

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7. *Clysters.*

A variety of compositions have been recommended for clysters by those who have written on the subject, there being scarcely an article in the *Materia Medica* that has not been occasionally employed in this way. I have found, however, from considerable experience, that for a common clyster, water is as efficacious as the most elaborate composition. When this cannot be readily procured, I have been in the habit of using warm water, and without perceiving any difference in the effect. Where a purgative clyster is required, from four to eight ounces of common salt may be added: and if an anodyne be wanted, or an astringent, let half an ounce of opium be dissolved in a quart of water gruel. The best method of administering clysters, is by means of a bladder and pewter pipe. If a clyster be employed for the purpose of emptying the large intestines, or of purging, the quantity of liquid should not be less than a gallon or six quarts; but when it is used as an anodyne or astringent, from a quart to three pints of liquid will be sufficient.

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8. *Pulse.*

In the management of sick horses great advantage may be derived from attending to the state of the pulse as we are thereby enabled to judge of the degree or violence of the disease, and the probability there may be of recovery: we are in some measure assisted also by it, in ascertaining the nature of the complaint, and in the application of remedies.



In a healthy horse, the pulsations about 36 or 40 in a minute, and may be felt very distinctly either on the left side, or in an artery that passes over the lower jaw bone: in short, pulsation may be felt in every *superficial* artery. When the brain is oppressed, the pulse generally becomes unusually slow. In a case of water in the brain, which occurred lately, the pulse fell to 23 in a minute; in the progress of the disease, however, it became unusually quick.

When a horse appears rather dull, and does not feed properly, it is advisable to examine the pulse, and if he be found to exceed the standard of health, immediate recourse should be had to bleeding. By this timely interference many dangerous complaints may be prevented. When the pulse rises to 80 or 90 in a minute, there is reason to be apprehensive of danger; and when it exceeds one hundred, the disease frequently terminates in death.

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## CHAPTER XXIV.

# CONDITION.

By the term *condition* is to be understood not merely a fat, sleek appearance in a horse; it implies also a proper degree of vigor, by which he is enabled to perform extraordinary labor, without being too much fatigued. Every defect with respect to condition must originate either in *disease* or in bad *grooming*. Under the latter head must be comprehended feeding, exercise, and the general management of the stable: the former will include various disorders, which will be concisely described, and the most effectual means pointed out for their removal.

In treating of the anatomy and physiology of the internal organs, an explanation has been given of that curious process by which the body is nourished, and enabled to perform its various functions with regularity. Thence it will appear, that in order to produce that degree of vigor and general healthiness of appearance which constitute good condition, it is necessary that these organs should be in a state of health, and that no impediment should exist to the performance of their functions. This, however, sometimes happens; we shall therefore proceed to show the various imperfections which tend to prevent a horse from acquiring condition.

1st. *Tenderness in the mouth, preventing the horse from masticating freely.*—It sometimes happens that the molar teeth or grinders wear so irregularly, as to have sharp edges, by which



the inside of the cheek is wounded: the pain which the act of chewing occasions in this case, induces the horse to swallow some part of his food unbroken, which, being difficult of digestion, frequently passes through the body unchanged. This defect is particularly inconvenient in horses that are separated from others by *bails*\* only; as in the barracks, their more active neighbors have an opportunity of sharing their allowance. This complaint may be removed by rasping down the sharp edges of the teeth, for which purpose there are files made by vaterinary instrument makers, and by applying to the wounded cheek the following mixture:

Powdered allum,	- . - - -	$\frac{1}{2}$ oz.
Honey,	- - - - -	2 oz.
Vitriolic acid, (strong)	- . - - -	12 drops.
Infusion of roses,	- . - - -	8 oz.

Mix.

It will be necessary until this defect be removed, to give the horse broken corn, which may be more easily digested. It has sometimes been found necessary to remove a projecting tooth before the horse can be relieved, for which purpose a large strong tooth instrument is made.

When young horses are cutting their teeth, the mouth sometimes becomes inflamed and tender. This is another circumstance which may impede mastication, but is easily removed by washing the inflamed parts frequently with the above mixture. Should a slight degree of fever supervene, bleed moderately, and give a dose of the fever powder. The corn which is given should be either softened by steeping in boiling water, or be broken in a mill.

The lampas is said to be another impediment to feeding, (See *Lampas*,) and is therefore removed with a red-hot iron. This operation is certainly performed much oftener than is necessary.

2d. *Weakness of the stomach or bowels.*—Horses that have acquired the vicious habit termed *crib biting*, suffer great inconvenience from the waste of saliva which it occasions; the stomach being in great measure deprived of this liquid, performs its functions imperfectly: hence arise flatulent colic or gripes, general emaciation and debility. The remedy commonly employed is a leathern strap, buckled tight round the neck, immediately beneath the jaw. This, however, is seldom effectual. A better method is to cover the edge of the manger and every other part he can lay hold of, with sheep skins (the

\*See further remarks on bails in the subsequent section, "The Stable."



wool side outward,) until the habit is destroyed.—There are other causes by which the energy of the stomach may be impaired. Among these are excessive fatigue, bad food, defect in respiration or breathing foul air, taking too much food or water at once, or at any improper time, bots, fever; in short the stomach is so important an organ in the animal system, that scarcely any part can be materially injured without affecting it in some degree; and whenever the stomach is hurt, the whole system seems to sympathise and partake of the injury.

Weakness of the stomach is sometimes very easily cured. The powers of nature indeed are often capable of restoring its tone: at others we find the disease extremely obstinate, resisting the most powerful medicines. This difference depends upon the variety in the causes by which the weakness is induced. When it arises from loading the stomach with improper food, that contains scarcely any nutriment, such as straw, and where the horse has been fed in this way for a considerable time, the diet should be gradually changed to one more nutritive. During the time we are making this alteration, it is generally necessary to give one or two doses of laxative medicine, joined with aromatics (See *Laxatives*,) to prevent inflammatory affection of the eyes, lungs, or heels, or, according to the more fashionable language of grooms to prevent *humors* from breaking out. Should the appetite appear deficient, the cordial ball will be found of great service, given occasionally. When excessive fatigue is the cause of the weakness, which we often find after a hard days run with the hounds, nothing is so effectual as the cordial ball, particularly in old horses: it soon gives them an appetite, and renders them fit for work again much sooner than they would otherwise be. Where a speedy effect is required, the ball may be mixed with a pint of good beer or ale.

If a horse, after sweating from exercise or any other cause, is allowed to drink freely of cold water, the stomach is suddenly debilitated, and the whole system is affected in consequence: hence arise flatulent colic, suppression of urine, shivering, quick pulse and other symptoms of fever. (For the remedies consult the Index.)

The stomach sometimes becomes weak gradually and without any apparent cause. This is first indicated by the appetite failing, which is soon followed by a general debility, emaciation, and an unhealthy looking coat. The most effectual remedies in this case are the tonic balls and a nutritious diet; corn should be given more frequently than usual, but in small quantities; and a little malt on these occasions is extremely useful. The stable should be well ventillated, but not cold:



regular exercise will also be very beneficial, and should never be omitted. It should be understood, however, that, although exercise tends to promote *strength*: if carried beyond the animal's power it becomes a cause of debility: it is highly necessary, therefore, when a horse is in a state of weakness, to take care that his exercise is but moderate.

Worms in the stomach or bowels are a frequent cause of leanness and debility in horses; and while they exist, every exertion to promote condition will be ineffectual. (See *Worms*.) a defect in the organs of respiration will also produce weakness and emaciation.

If the blood be not duly supplied with that vivifying principle, which is derived from the air by breathing, a greater or less degree of debility must be the consequence; hence a want of tone is always observable in the stomach and bowels of broken winded horses, as well as a deficiency in the muscular power in general. The same evils will result from keeping a horse in too close a stable, where the air does not contain the usual proportion of this principle.

3d. *Imperfection in the liver or pancreas, or obstruction in the tubes or ducts, by which their respective juices are conveyed to the bowels.* (See *Anatomy of Internal Organs*.) The liver is not often diseased in the horse, unless it be from internal inflammation. When the exterior surface of the bowels or stomach is attacked by inflammation, it will spread, if not speedily checked by bleeding, &c. to the surface of the liver, and other internal parts; and when horses die from this disease, which they often do from improper treatment, the liver is generally found inflamed or mortified throughout its whole substance; but this is an acute disease, and therefore not connected with the present subject. (See *Inflammation of the Liver*.) It sometimes happens, however, that a horse becomes weak and lean, either from a deficiency or redundancy of bile. In the former case, digestion will be imperfect, and the horse frequently costive; the appetite will be bad, the animal languid and sluggish, and generally hidebound, the coat looking rough and unhealthy. The best remedy in this case is to give small doses of calomel, scap, and aloes, are recommended in jaundice, so as to keep the bowels in a more open state; or if the disease have existed some time, give in the first place a mercurial purgative, and afterward the following alterative.

Calomel,	-	-	-	-	-	1 scruple.
Aloes,	-	-	-	-	-	1 dr.
Cascarilla powdered, and rhubarb, of each	-	-	-	-	-	2 dr.
Ginger,	-	-	-	-	-	1 dr.
Castile soap,	-	-	-	-	℥	3 dr.



Sirup enough to form a ball, to be given every morning for five or six days, unless it occasions purging, in which case it is to be discontinued for two or three days.

The horse's diet should be light and nutritious, consisting of ground oats, carrots, malt, &c.: regular exercise is of great use. In the spring or summer, a run at grass is the best remedy. When there is too much bile formed, it occasions a loose state of the bowels, which causes the horse to become weak and thin. This complaint depends upon increased action of the liver, which generally ceases in a short time without the aid of medicine. Should the purging continue so as to reduce the animal's strength, the following medicine may be given, and assisted by a light nourishing diet, and very moderate exercise.

Powdered columbo root,	-	-	-	-	2 dr.
Cascarilla, powdered,	-	-	-	-	1 dr.
Prepared natron,	-	-	-	-	2 dr.
Opium,	-	-	-	-	$\frac{1}{2}$ dr.

To be given every morning.

There are no external appearances by which a diseased state of the pancreas can be ascertained, though it is probable sometimes a cause of ill condition. There is reason to believe that want of condition depend in some cases upon an imperfect action of the lacteals, or those delicate vessels which convey the chyle, or nutritious parts of the food, into the blood. All the internal surface of the bowels is covered with very minute orifices, which are the mouths of the lactaels, and are supposed to be always open, to receive such parts of the digested food as are destined for the nourishment of the system. It is not improbable that these minute orifices may sometimes be obstructed, or that the lacteals may be deficient in energy. Therefore when a horse continues thin and ill-conditioned, without any cause, this may be suspected; and the success we have often met with in such cases, by giving a mercurial purgative, joined with a moderate stimulant or stomachic medicine, seems to justify the opinion. The following formula may be employed on this occasion:

Barbadoes aloes,	. . . . .	$\frac{1}{2}$ oz.
Rhubarb,	. . . . .	2 dr.
Calomel,	. . . . .	1 dr.
Ginger,	. . . . .	$1\frac{1}{2}$ dr.
Oil of caraways,	. . . . .	10 drops.
Castile soap,	. . . . .	2 dr.

Sirup enough to form a ball.



I should have observed before, that we sometimes meet with horses, particularly those of the blood kind, that have an almost habitual looseness or diarrhoea; and cannot bear moderate work, or drinking freely of water, without becoming loose in the bowels, and consequently weak and faint. Such horses are generally observed to sweat much with the most moderate exercise, and sometimes when standing in the stable. This complaint is sometimes merely temporary, and is most likely to happen in the early part of spring, or about September and October; at which periods some changes are generally taking place in the coat, by which the bowels, and often the whole system, are rendered irritable and weak. In this case the symptoms generally disappear with the cause: but as a horse may remain in this situation for a considerable time, and be unfit for work, it is advisable to call in the assistance of medicine. The first medicine to be given is a stomachic laxative, and after that the tonic ball. The horse should be clothed moderately, and exposed as little as possible to a current of air: but the stable should be well ventilated, and his water at the summer temperature, that is, about 50 degrees by Fahrenheit's thermometer. His exercise ought not to exceed a walk: but he may be taken out twice a day if the weather be favorable. With respect to those horses that are habitually weak, or *washy*, as it is termed, becoming loose and weak from moderate work, or rather trifling causes, there is no great chance of radical cure: but the animal will derive great benefit from medicine and care, and often be enabled to do his work with spirit, and without much inconvenience. The proprietor of such horses should always be provided with the following cordial, which should be given not only when the looseness and weakness are actually present, but at any time when considerable exertion is required of him. If he be wanted for a journey, or a day's hunt, let him have a ball a little before he sets off, and another when he returns. If the horse be very young it may be worth while to attempt a radical cure, by a long run at grass. Horses of this description require great attention from the groom: they should never be exposed to the air without clothes, unless in the hot day's of summer. Their water should always be at summer temperature, and given in small quantities often. Their food should be easy of digestion, their oats and beans given in a broken or bruised state, and their daily allowance should be divided into four or five feeds. Their hay should be of the best quality: mow-burnt hay is particularly injurious. A brisk circulation should be kept up in the skin and extremities, by frequent wiping the body, and hand-rubbing the legs. Moderate exercise is necessary; and the horse should always be



attended to the moment he comes into the stable, either from work or exercise. (*See next chapter.*)

#### STOMACHIC PURGATIVE.

Barbadoes aloes,	3 dr.
Rhubarb,	2 dr.
Ginger,	1 dr.
Cascarilla,	2 dr.
Oil of Camomile,	10 drops.
Prepared natron,	3 dr.

Sirup enough to form a ball for one dose.

#### TONIC BALL.

Salt of steel,	$\frac{1}{2}$ oz.
Columbo root,	3 dr.
Cascarilla bark,	2 dr.
Opium,	1 scruple.

Sirup enough to form a ball for one dose.

*Remark.*—Arsenic is an excellent tonic, but must be given with caution, and in small doses.

#### CORDIAL BALL.

Ceraway seeds, <i>recently</i> powdered,	2 dr.
Wintes' bark, powdered,	3 dr.
Prepared chalk,	2 dr.
Opium,	$\frac{1}{2}$ dr.
Oil of anise seeds,	20 drops.

Sirup enough to form a ball for one dose.

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Having given a short account of the diseases or imperfections which prevent a horse from acquiring condition, it remains for us to point out what kind of stable management or grooming is most conducive to it; and as a good stable is the first thing to be attended to, and is generally allowed to have considerable influence on the health and condition of horses, it will not, perhaps, be thought superfluous if we say a few words on this subject.

### *The Stable.*

In the construction of a stable, there is perhaps no circumstance more deserving attention than that of ventilation, or of having contrivances for the ready admission of fresh air, and



for the escape of that which has been rendered impure by breathing; and it is really extraordinary that so little attention should have been paid to so important a circumstance. Grooms in general make a point of closing every aperture they can find; and if at any time they are prevailed upon to open a window, it is commonly so small, and so inconveniently situated, as to be of but little service. Let any one for a moment consider how foul an atmosphere must be produced, in a close stable in which several horses are kept, by the constant exhalation of unwholesome vapors from the litter, by the steams of perspiration from the skin, and by noxious airs from the lungs; and he will not be surprised at the long catalogue of diseases, to which this improper treatment must subject these useful animals.

If a doubt remain in the mind of any one as to the impropriety of such close stables, let him enter one early in the morning, on its being first opened, and he will experience such a painful sensation in the eyes, and so violent a cough, as will afford him the most convincing proof of the noxious and stimulating nature of such an atmosphere; yet such is the obstinacy and ignorance of grooms in general, that they cannot be prevailed upon to abandon this injurious practice. Even at this time, stables are generally built too low, and unprovided with effectual means of ventilation.

A stable should be as lofty as it can be made conveniently, at least twelve feet; the foul air will then circulate in the higher parts, and the animal will not be constantly breathing an unwholesome atmosphere, which he must do when the ceiling is scarcely higher than his head. Proper apertures must be also made in the ceiling, communicating with the atmosphere by square wooden tubes, so contrived as not to admit the rain into the stable; the foul air and other unwholesome vapors will then readily pass off, while a proper quantity of fresh air may be admitted by means of windows. The next circumstance to be attended to is nearly connected with, and not less important than ventilation; namely, the so constructing a stable as to be able to regulate its temperance, or keep the air at any degree of heat that may be thought proper. It is generally allowed, that a uniform temperature in a stable is very desirable, and it is certain that many of the diseases of horses are caused by sudden changes in this respect. Even slight variations of temperature, if frequent, are injurious; yet few stables are to be found where this inconvenience is effectually guarded against. To accomplish this desirable purpose, the windows should be in different sides, so that when a cold wind blows from any point, it may be shut out, while fresh air is admitted by the opposite window. There should be several of the apertures we have described in



the ceiling, that they may be occasionally shut either wholly or partially, so that, by means of these and the windows, the temperature can at any season be easily regulated, according to the weather, or state of the horse's health, more accurately if a thermometer be kept—an instrument which appears to be a necessary appendage to a well conducted stable. If during the cold days of winter the contrivance we have proposed should be found insufficient to raise the temperature of the stable to the desired point, the air may be easily warmed to any degree by means of stoves placed on the outside, with iron chimneys passing through the stable.

Light is also a thing of much importance in the construction of a stable; and for the purpose of admitting it readily to every part, the windows should be large and properly placed.

There is no doubt that the eyes of horses are often injured by dark stables; and when a horse is just taken from a dark situation, it is easy to perceive that light at first irritates the eye and gives pain; and this is more remarkable when he is brought suddenly into the sunshine; nor is it to be wondered at that so delicate an organ as the eye should suffer materially from the frequent repetition of this sudden change.

Though a light stable is desirable, the sunshine should not be allowed to fall on the eye of a horse as he stands in his stall; nor should the walls or ceiling be of a white color, as under such circumstances the eyes would be over stimulated, and rendered weak; and when it is considered how liable horses are to diseases of these organs, and how frequently they terminate in blindness, no one will think any circumstance tending to their preservation too trifling to be noticed. With regard to the best color for the walls and ceiling, a stone or dove color is perhaps to be preferred, and may be made by mixing a little lamp-black, ivory black, or blue black with the common white wash.

The door should be larger and higher than we usually set it, for horses are very liable in passing through a narrow or low one, to strike their hips or head; I have seen some troublesome accidents happen in this way; besides even if the hair be struck off about the hips, it is thought a blemish, because it may not grow again; or if it do grow, the hair may be white.

In fitting up the interior of a stable, particular attention must be paid to the size of the stalls, which should not be less than six feet wide, and the sides sufficiently high to prevent any sort of contact or communication between the horses. I know it will be urged as an argument against this, that they are sociable animals, and thrive better with a companion than when alone; this is certainly true: but, on the other hand, I am con-



vinced from long observation that horses do not feel themselves in solitude, when they are thus prevented from touching or playing with their neighbors; besides, if we consider the numerous accidents that happen from low stalls, how frequently they kick or bite, and otherwise injure each other, there can be no doubt I think of the advantage of high stalls. At this moment I have under my care a fine mare, who from kicking very high, got her hind leg over the stall, and has received a deep and extensive wound, which will probably prove fatal. The stall should always be of considerable depth, that a horse may not, by drawing back, have the power of kicking those in the adjoining stalls. The method of separating horses by means of bails, or poles, suspended by chains, I think very injudicious; the only recommendation it can possibly have is the little expense that attends it, and its allowing a great number of horses to stand in a stable. I am convinced, however, from what I observed during the time I had the honor of serving the royal dragoons, that, notwithstanding these recommendations, they are really in the end more expensive to government than stalls would be: scarcely a day passing without some accident happening from the bails: many dangerous, and some fatal wounds were occasioned by them. I once saw a horse break his spine, or back bone, by endeavoring to rise while under the bail; and several horses lost their sight from being bitten in the eyes: but the most serious inconvenience perhaps attending bails is the impossibility almost of feeding every horse equally; some horses feeding very slowly, and others so expeditiously, as to devour, as well as their own, great part of their neighbor's allowance in a short time. To this may be added the facility with which contagious diseases are communicated, the disturbance a horse is liable to when fatigued, and the difficulty of lying down quietly.

The floor of the stall should be made of hard brick as a more equal surface is then formed than can be obtained by paving with pebbles. Very little declivity is necessary to drain off the urine: and as great inconvenience sometimes arises from suffering a horse to stand in a stall where the fall is considerable, creating unnecessary exertion in the muscles of the hind leg, and keeping the ligaments constantly in a tense state, it has been recommended to make the drain in the middle of the stall whereby the hind and fore feet of the horse might stand on a level. In whatever way, however, the stall is made, it should be carefully cleaned once a day, that none of that putrescent matter may accumulate which generates ammonia, or that pungent vapor which is so abundantly found in close filthy stables. An iron rack is preferable to one of wood, being more easily



kept clean, and furnishing no splinters; which, where wooden racks are used, sometimes injure the mouth. The manger may be so contrived, as to slide into the wall like a drawer; and then while the groom is wispings him he would have nothing to lay hold of with his mouth, by which practice horses often become crib-biters. The height both of the rack and manger, should be such as to enable the horse to feed with the greatest ease; the former is sometimes made so high, that the horse is obliged to exert the muscles of his neck considerably in order to reach it; and this has been so placed, under an idea of its having a tendency to make him carry his head more gracefully; it is more probable, however, that the only effect of it is to make the horse uncomfortable while feeding. It has indeed been lately recommended as the best plan, to place the racks on a level with the manger, so that the horse may feed as he does in a state of nature; but I have had sufficient trial of this plan to be convinced of its being in every respect less convenient and economical than the common rack.

### *Feeding, Exercise, and Grooming.*

These are subjects of considerable importance, and require more attention than is commonly paid to them, as the health and condition of horses depend greatly on their being properly managed.

When a horse is in a state of nature, and using only voluntary exercise, there cannot be a doubt that the green food which the bountiful Creator provides for him, is better calculated than any other to keep him in perfect health, and satisfy his wants; but when he is domesticated, and employed in the various labors for which he is found so essentially useful, it is necessary to adapt the quantity of his food to the nature of the work he has to perform. When therefore we undertake to get a horse into condition, it is necessary first to inquire for what kind of labor he is designed; whether it be for the turf, the chace, or the road. A horse, without doubt, provided he is in health, may have his condition & wind bro't to the highest state of perfection it is capable of, merely by judicious management in respect to feeding, exercise and grooming; and notwithstanding the great mystery and secrecy affected by those who make a business of training race horses, I will venture to affirm, that it is a very simple process, and easily to be accomplished by any one, who will attentively consider the principles we shall lay down, and not suffer himself to be influenced by an ignorant groom. It is a fact, not sufficiently known perhaps, that the strength of an animal, or any part of the body, may be increased to a con-



siderable degree, by means of exercise properly conducted; and as breathing is affected by muscular exertion, it follows that the strength or perfection of this function, or as it is commonly termed *good wind*, must depend on the strength of those muscles by which breathing is performed; and by keeping in view this single principle, we shall do more for the improvement of a horse's wind, than we could by learning all the mysteries of training. In order to have a clear idea of the method of getting the horse into high condition and good wind, let us suppose him just taken from grass; it being understood that every horse, who works hard during the other parts of the year, will in summer be allowed this necessary relaxation; without which the feet, as well as the sinews, joints, ligaments, &c. of the limbs, will be liable to suffer materially: and not unfrequently the general health of the animal, is injured by such privation. But should any one be so situate as to be unable to procure this renovating indulgence for his horse, he must endeavor to substitute for it a large airy stable, where the animal may be turned loose. If he cannot get fresh vegetable food, such as lucerne, vetches, (tares,) clover, &c. he will find carrots a useful succedaneum during this time of rest. The horse should be allowed to drink frequently: and if he be not immoderate, he may be suffered to drink as often and as much as he pleases. He should be fed sparingly with oats, and on no account be allowed beans or any thing of the kind. The best diet of the dry kind is, perhaps, a mixture of oats, chopped hay, and bran; to be given alternately with green food; or if a sufficient quantity of green food can be procured, very little dry meat will be necessary. This treatment will serve in some measure as a substitute for a run at grass, provided the stable be large and airy. The light also should be freely admitted; and if a convenient court be adjoining to the stables, the horse may be suffered to run in and out at pleasure; but if there be nothing but the stable for him to run in, it will be proper to walk him out quietly every morning and evening, allowing him to drink freely in a running stream or river; the feet, during this time, should be kept cool and moist, for which purpose they may be stopped daily with a mixture of soft clay and cowdung. When a horse is taken from grass, or from the situation and treatment we have just described, in order to be got into a condition for racing, hunting, or the road, the first object of attention is to bring about the necessary change in his food, and other circumstances, as gradually and with as little inconvenience to the animal as possible. If he be taken from grass, let him be put at first into a large airy stable, and suffered to exercise himself in it. Let him drink frequently; and, instead



of depriving him suddenly of his green food, allow him at first some carrots, with bran, and a moderate quantity of oats. He should be walked out once a day at least. His allowance of oats should be gradually increased, and that of bran and carrots in like manner diminished, until the latter is wholly discontinued. If he be a large drinker, he should be allowed but a moderate quantity at once; but at all times, and in almost all circumstances, it is proper to allow a horse water four times a day; which, instead of oppressing his stomach, or injuring his wind, will facilitate digestion, and materially conduce to the preservation of health, and the improvement of condition. I am aware of the prejudice that exists against this practice—that it is supposed to give a horse a large belly, and render him unfit for galloping any length of time without endangering his wind. I am convinced, however, not only by my own experience, but by that of some experienced sportsmen also, that so far from injuring a horse in any one respect, it is extremely beneficial; and that, when a horse is allowed to drink four or five times a day, he is not inclined to drink much, and often does not drink so much in the twenty-four hours, as one that is allowed to drink only twice a day as much as he pleases. As the horse's allowance of oats is increased, so should his exercise be; and if this be properly managed, there will be no absolute necessity for bleeding or medicine. It is necessary, however, to observe the horse carefully during the time we are increasing his allowance, of oats, and diminishing that of carrots and bran; and if he appear dull, or have a cough, however trifling, it indicates an inflammatory disposition of the body, and points out the propriety of moderate bleeding, or a laxative. But under proper management I do not think such symptoms would ever take place, though they almost always do when a horse is changed from grass to a close stable and dry food too suddenly; and in such cases both bleeding and purging are indispensably requisite to prevent the occurrence of very serious diseases. It is from this circumstance perhaps, that the absurd custom of giving exactly three strong doses of physic, as a necessary preparative, took its origin. When a horse has been taken from grass about a week, I think it advisable to give him a very mild purgative, such as No. 1, (See *Physic*;) not that I am convinced of its being absolutely necessary, but because it cannot do any harm; and if the horse have been fed too liberally, or not exercised sufficiently—or should the stomach and bowels be out of order, or have any worms in them—a mild purgative will be of great service. It is on this ground that I always recommend two or three doses of mild physic, during the time a horse is getting into condition; but I have



seen so many instances of the injurious effects of the strong physic recommended in many books of farriery, and commonly given by grooms, that I think it necessary to advise the reader never to suffer his groom or smith to prepare or prescribe a dose of purging medicine. That such strong doses are often given without any immediate bad effect, is no proof of their innocence, still less of their utility. I can truly assert, that I have seen many horses quickly destroyed by strong physic, and a great many have never perfectly recovered from the debility it occasions.\*

During the first week of the horse's being taken into a stable, walking exercise is most proper, but after this it may be gradually increased to a trot, or canter: and if the exercise occasion any degree of perspiration, he should be carefully cleaned, and otherwise attended to, as soon as he gets into the stable.

By thus gradually bringing a horse from a state of nature, that is, from the open air and green food, to a comfortable stable and dry grain, he will be in little danger of those troublesome diseases, which are often the consequence of sudden changes, and of a different kind of management; and by duly proportioning his exercise to the nutriment he receives, and by gradually bringing the muscular system to that degree of exertion for which the animal is wanted, there is no doubt that his wind, strength, activity and general condition, will be brought to the highest state of perfection it is capable of attaining. In describing the general management of horses in the stable, we think it necessary to be very particular, as there are many apparently trifling circumstances which have considerable influence on the horse's health, though generally little attended to.

Horses employed in hunting, mail, or stage-coach horses, in short, all that are obliged to undergo great and rapid exertion,

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\*A valuable blood colt was attacked with colic, which appeared to be of the flatulant kind, and though violent, not dangerous. The usual remedies were ineffectually employed; and it was found, in attempting to give a clyster, that the internal coat of the gut was so loose and so enlarged, that there was no possibility of injecting it: the colt died about sixteen hours after the attack. On examining the body after death, all the bowels were found nearly healthy, except the *rectum*, or last gut, near its termination, in which the inner coat was so loose and large, that the cavity was nearly obliterated, and scarcely any passage left for the excrement. The internal sensible coat of the stomach appeared also in a diseased state, being very tender, and easily separated; but it was not inflamed. About a week after, I was accidentally informed, that the man who had the care of this colt, and was about to train him for the turf, had given him three doses of physic; and that the "last had operated so well, that he thought the colt would never have ceased purging." This was nearly the man's expression, which he had communicated, in the way of conversation to a groom, before the colt was taken ill.



at certain periods, require a different treatment from such as work more moderately. The former have occasion for lying down as much as possible, that the muscles may the more readily recruit their strength. But the latter do not require so much rest in a recumbent state, and suffer no inconvenience from standing during the day; therefore the litter should be removed every morning, and shook up in the open air. The advantages of this plan are considerable, though it may be thought by knowing grooms to be an unnecessary trouble. The feet will be thus kept cool; and the hoof will not be so disposed, as it commonly is, to contract and shrink; for straw being a bad conductor of heat, causes the feet to become too hot; in which state the horny matter has always a tendency to contract: hence arises sand cracks, thrushes, &c. Unless a horse has thin flat soles, it is always proper to *stop the feet*, as it is termed, with a mixture of cow-dung, beaten into a smooth mass with a little fine clay, and a small proportion of pot-ash. The feet should be examined daily, and if the soles should appear to be softened too much, that is, if the horn bends or gives way in the least, under the thumb, by the strongest pressure we can make, the stopping must be discontinued.

Horses that have been accustomed to stand on litter during the day, sometimes feel a difficulty in, or reluctance to staling, when they are deprived of it. In such cases a little straw should be thrown under the belly, so as to prevent the urine from splashing about their legs.

The best food for horses that work hard is oats and hay, with a moderate quantity of beans. The latter, however, should not be allowed, unless the horse's work be considerable, as under moderate exertion they dispose the system to inflammatory complaints, such as coughs, inflamed eyes, &c. I am convinced that horses whose labor is severe are often injured by being stinted in water, particularly when they are allowed a large quantity of food. It is a common practice with waggoners, when their horses come in from a long and fatiguing journey, their strength almost exhausted by long continued exertion and sweating, to offer them immediately an unlimited quantity of food, and very little (most commonly not a drop) of water. Under such circumstances, the stomach is not able to digest the food that is taken in: and I firmly believe that the staggers are often the consequence of such management. When a horse comes in from a long journey, he should always be allowed a small quantity of water before he is fed; and if he be allowed a little immediately after feeding, it is more likely to promote digestion, and prove beneficial, than to injure the animal. It is certainly a good plan, to give horses a moderate



quantity of water just before the end of their journey; and I am satisfied that, by allowing them to sip a little water several times during a long journey, particularly in warm weather, they are refreshed and invigorated, but never injured. When beans are given to a horse they should always be broken; and it is probable that oats would be more nutritious in that state. A horse that works moderately does not require more than a peck of good oats, and about twelve or fourteen pounds of hay in the twenty-four hours: but large draught horses require a greater quantity both of oats and hay.

Horses employed in hunting, or for expeditious travelling, require great attention, as to grooming, feeding, &c. Their allowance of hay should not exceed twelve pounds in the twenty-four hours; and it should be divided into three feeds—four pounds in the morning, two at noon, and the remainder at night. If a peck of oats be allowed for the same period, it should also be divided into at least three feeds, giving water before each. When a larger allowance of grain is required, which must be the case with hunters, post horses, &c. either the quantity of oats may be increased, or a certain proportion of beans may be added: but on no occasion should the quantity of hay be increased for horses of this description. I think there would be no danger, and perhaps great advantage, in allowing horses that work hard, either in hunting, posting, or in mail or stage coaches, an unlimited quantity of good oats, with a moderate proportion of beans, provided it be given at several times, so that they may not load their stomachs, and injure the digestive power. If any other food be given with the oats and beans, which however appears needless it should consist of clover hay, cut like chaff, and a small quantity of fresh bran: the former, if not cut too short, will make him masticate his food more perfectly, and cause it to be digested more easily: but when a horse has any kind of cough, or is imperfect in his wind neither cut hay, chaff, nor bran, should be given, as they are apt to irritate the throat, and excite coughing; and it is necessary also, in this case to sift the oats and shake the hay, so as to free them from dust, as this will often occasion a violent cough for a time, and aggravate the original complaint. This will be more effectual, if the oats and hay be slightly moistened with water. Horses of this description being generally greedy of water, and so voracious as to devour their litter if kept from hay, it is advisable to muzzle them immediately after feeding. Some advantage also will be derived from giving them a moderate quantity of carrots now and then, particularly when their work happens to be but moderate, this vegetable being nutritious and easy of digestion.—Much has been said by writers on



farriery respecting the kind of water that is most wholesome for horses. The greater part seem to prefer pond-water, where the bottom is composed of clay and chalk. It appears to me, that the most desirable kind of water is that which horses like best, provided it be not too cold; and I think it probable, that the ill effects that have sometimes been produced by drinking certain kinds of water, have not been occasioned by foreign or impure matters contained in it, but merely by coldness; and I have found it the best plan to give clear river water in summer and well water in winter; the latter being warmer in cold weather than water exposed to the air, and colder in summer. Some old author, I think Dr. Bracken, has expressed a suspicion that the *hardness*, as it is termed, in well water, might occasion the stone or gravel. This is a disease, however, that scarcely ever happens with horses, though we sometimes meet with stones of a large size in the *bowels*, formed gradually by the earthly matter taken in with the food: and if they were subject to calculous diseases like men, it is almost impossible that the very small quantity of stony matter contained in hard water could have any share in their formation, being quite of a different nature from that found in the human bladder. It seems to be generally known, that brokish water, (that is, water impregnated with saline matter, which is commonly met with near the sea) is rather injurious to horses, causing a rough dry coat and loss of condition. This, perhaps, is not occasioned by any direct operation of the saline matter which such water contains but by the horse not drinking a sufficient quantity, on account of its unpleasant taste, for the purpose of digestion.

It is by no means advisable to accustom horses to warm water in winter, or to let the water stand many hours in a warm stable, so as to become nearly as warm as the air of the stable; as it makes the horse liable to the flatulent colic or gripes, whenever he happens to drink cold water.

In sickness, and during the operation of physic, when it is absolutely necessary to allow warm water, it should never be discontinued suddenly: the change should be brought about gradually as possible. It is not a good practice to give horses nitre and other medicines in their water or food, because the dose cannot be accurately ascertained in this way; and the water instead of promoting digestion, often has a contrary effect, exciting nausea, and weakening the stomach. It appears to me a better plan to water horses during their exercise, at a pond or sunning stream, than in the stable, except it is in winter; and even then it would be advisable, were it not for the inconvenience they are liable to suffer from standing in the water while drinking: but the common practice of gallowing them immediately after is highly improper.



It has been asserted by some, that horses work better, and more effectually preserve their wind and condition, when allowed only a small quantity of water, or, as they express it, "it matters not how little he drinks, provided he feeds heartily." This opinion, like many others, has arisen from the foolish and mischievous practice of forming general rules upon a few facts or a very limited experience; and too often, I fear, from examining those facts through the medium of prejudice. It must be granted, that we sometimes meet with horses that become loose in their bowels, and fall off in condition, sweating violently, and appearing fatigued from moderate exercise, if allowed to drink even two pails (five or six gallons) in the twenty-four hours; particularly when they are employed now and then in hunting, or any kind of violent exercise; but this is to be attributed to a weakness of the constitution not often met with in horses, and points out to us the necessity of observing a horse attentively when we first undertake the management of him, in order to ascertain what quantity of water is most conducive to the preservation of his health and condition; and if we find a horse shivering, and his coat staring immediately after drinking freely, it is not to be hastily concluded, that he is to be allowed only a small quantity of water daily. In such a case, a moderate quantity should be given at once, and the horse should be exercised immediately after, in which way he will generally be brought to drink a proper quantity in the course of the day, without inconvenience.

The best time for exercising horses is early in the morning, as soon as the stable is opened: during which time the stable-doors should be kept open, and the foul litter thrown out. As horses that work moderately, do not require a bed in the day time, it will be advisable in such case to remove all the litter from the stall and expose it to the air; spreading only a small quantity at the back part, to prevent the horse from splashing his legs in staling. It will perhaps be thought unnecessary to exercise horses that work, particularly such as are employed in hunting or expeditious travelling: I think, however, they are always the better for it, provided it be done with prudence. It certainly is not proper to take out a horse for exercise, that is designated for hunting the same day: but in the intermediate days it should never be omitted; and if a horse's work be moderate, such as ten or twelve miles a day, a little exercise in the morning will enable him to perform it better. Horses of a full habit, or such as are subject to *humours* (See *Humours*,) are greatly benefitted by exercise, which on such occasions may be carried so far as to produce sweating. But great care is then necessary: they should be walked about for some time,



that they may cool gradually; and as soon as they return to the stable, they should be well wiped, and their legs hand-rubbed. Swelling of the legs, grease, inflamed eyes, and other troublesome complaints, will be thus more effectually prevented than by bleeding now and then: which though it gives temporary relief, will gradually increase the disposition to disease. The exercise which a horse enjoys, when kept loose in a large stall, is particularly beneficial, and should always be allowed when the stable is sufficiently large to admit of it, instead of being kept constantly in one position, his head tied to the manger, and his fore legs generally higher than his hind legs. he can then turn himself about, and enjoy comparatively a state of liberty.

In summer, or whenever the weather is temperate, horses should be cleaned in the open air, when they return sweating from work or exercise; for if put immediately into a warm stable, they often continue to perspire so long, as to suffer some injury from it. The common practice, however, of washing the legs with cold water, should never be allowed, unless the horse be exercised, or have his legs well rubbed immediately after. It is superfluous, perhaps, to point out the impropriety and danger of plunging a horse into a river while sweating from severe exercise, a practice commonly adopted by proprietors of post and stage-coach horses; that it is often done with impunity must be granted; but it is probable, that many of them suffer from the treatment, though the ill effect is not often immediately observed.\*

When a horse returns from exercise or work, his feet should be carefully picked out and washed: and if the hoof be dry and brittle, feeling hot, and appearing contracted, a mixture of cow-dung and soft clay should be applied to the soles. The horse's heels also require attention; and if any small ulcer or crack, as it is termed, be observed, or if they be tender, swollen, or smell offensively, the proper remedies should be immediately

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\*It appears from the experiments of Dr. Currie, that when the heat of the skin is above the natural degree, the application of cold water is highly refreshing and invigorating; but when the heat of the system has been in some measure exhausted by continued exercise and perspiration, it will generally produce considerable debility; and in the human body the most dangerous consequences have ensued from it. The same observation applies to cold water taken into the stomach, which on such an occasion has been known to cause sudden death. It is probable, therefore, that many of the diseases of these poor animals arise from the debility which this treatment occasions; and perhaps the mischief would be greater, were it not that the river or pond is generally at a little distance from the stable, so that they get some exercise immediately after their emersion, and that the stable is generally very warm.



applied. These things however, very rarely happen, when the groom does his duty. It should be remembered, that when a horse is changing his coat, that is, about the latter end of September, and beginning of October, he is more susceptible of cold than at any other time: and as the coat then falls off so readily, the curry-comb should be laid aside, and the horse exposed as little as possible to cold or rain. Moderately warm clothing, and frequent hand rubbing to the legs, will be found highly useful at this time. When these precautions are neglected, horses often become weak and unfit for much work, sweating profusely from moderate exercise, and sometimes purging: troublesome cough and staring coat generally accompany these symptoms. The common remedies on this occasion are bleeding, or strong purgatives, which are sure to increase the debility; nor are antimonials, or medicines that act upon the skin, proper to be given. The most effectual medicines are those of the *tonic* kind, with moderate stimulants (See *White's Veterinary Materia Medica*;) and when the bowels are loose, a small proportion of opium. These, however, will avail little, unless assisted by due attention to grooming. Though we have so strongly recommended ventilation in stables, it must not be inferred that a cold stable is desirable: horses seem to thrive most in one that is moderately warm. I have known old horses, that could not be kept in condition in a cold stable, even upon the highest feed, do well when removed to a warmer one: this, however, is the effect of habit; and it is probable, that if a horse were accustomed, from the time he is first taken up, to a cold stable, he would never require any other: but when from his youth he has been kept in hot stables, his body constantly clothed, and his stomach frequently stimulated by cordials, it cannot be supposed that he is able to endure cold. It is necessary therefore on purchasing a horse, to discover in what manner he has been kept, and whether he has been accustomed to any particular management; for instance, the custom of giving cordials to horses, after a hard day's hunt, is often rendered necessary by the practice of keeping them without food or water on the morning they are so employed. In describing the peculiarities, in the structure and economy of the horse's stomach, we have observed that this organ is remarkably small, requiring to be supplied frequently with food. When a hunter then goes out with an empty stomach, and is perhaps kept out eight or ten hours without feeding, generally galloping great part of the time, the stomach is so exhausted on his return, that he has scarcely any appetite, and refuses his food, until the stomach is roused by a



strong cordial, a habit is thus induced, and cordials after a time become as necessary to a horse accustomed to it, as spirit to a dram drinker.

Yet there surely can be no danger in giving a moderate quantity of oats and water very early in the morning, previous to hunting. If he have to walk four or five miles to cover, there can be no danger of his stomach being oppressed by the time he arrives, not a doubt of his performing better than he would otherwise have done.

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### *Of the Age of a Horse.*

The age of a horse may be discovered by certain marks in the front teeth of the lower jaw and the tushes, until the eighth year, about which time they are generally worn out. An experienced person can, however, after this period, judge of the age, with some degree of accuracy, by the countenance and general appearance of the animal, as well as by the length of the teeth, and form of the tushes.

Between the second and third year, a colt begins to change his *sucking teeth*, as they are termed, for others of a larger size, and of a different form and color. The *sucking teeth* are small, of a delicate white color, some of them perfectly smooth on the upper surface; others have a small narrow cavity on that surface, but very unlike those marks of the permanent teeth, by which we judge of the age. The number of teeth in the front of the mouth are twelve, six in the lower and six in the upper jaw. (We take no notice of the molares, or grinders, as they are not concerned with this subject.) When a colt is three years old, we may observe that the four front *sucking teeth* are lost, and that, instead of them four others have sprung up, of a very different appearance, being larger, of a dark color, and having a considerable cavity on the upper surface, and a small dark colored groove in front: these are termed *horse's or permanent teeth*. Between the third and fourth year, the four teeth next these are lost, and replaced, in the way we have just described, by horse's teeth: so that when a colt has completed his fourth year, there are eight horse's teeth observable, and only four colt's teeth, one at each extremity, or corner as it is termed. About the middle of the fifth year, these also fall out, and are succeeded by horse's teeth. The corner teeth of the horse, particularly of the under jaw, are different from the rest, being smaller and of a shell like appearance; their cavities are chiefly within, the upper surface being a mere edge: but about the end of the fifth year, they are larger and more like



the other teeth. It is generally between the fourth and fifth year that the tushes make their appearance, though sometimes earlier.—The tushes are four in number, and situate about an inch from the corner teeth; at first they are small, terminate in a sharp point, are rather convex on their external surface, but within have two concavities, or grooves separated by a ridge. These as well as the teeth, are gradually undergoing an alteration in their form, becoming longer, and losing the concavities on the internal surface. About the seventh year the concavity is considerably diminished, and in old horses the surface becomes convex, and the tush acquires a round form, and the extremity, instead of being sharp, is quite blunt, as if the point had been broken off, and the new surface afterward polished. We must now return to the teeth, the appearances of which we have described, as far as the completion of the fifth year of a horse's age. After this period we judge of the age by the size of those cavities which we have described on the upper surface of the tooth: for the friction to which that surface is almost constantly exposed gradually wears it down, and at length the cavity or mark is totally obliterated. The marks in the upper teeth most commonly remain until the twelfth year, sometimes longer, but those in the under teeth are worn out about the end of the eighth year; we shall therefore confine our description now to the under jaw.

As the two front teeth are the first that make their appearance, it is obvious that their marks will be lost sooner than those of the other teeth; and if we examine the mouth of the horse that has just completed his fifth year, we shall find that they are nearly and sometimes quite worn out; those in the adjoining teeth are about half their original size, while the marks of the corner or end teeth are perfect. At the end of the sixth year, the only cavities observable are in the corner teeth, and these are about half their original size; the tooth has at this period lost the shell-like appearance we have before described, and is not different from the other teeth, except in having a mark or cavity on its upper surface. At the end of the seventh year the marks of the corner teeth are also obliterated, and then the horse is said to be aged. We often find, however, that the marks of the corner teeth are not totally effaced at this period: a small dark colored spot may be observed in most horses until about the end of the eighth year. From this period we have no criterion by which the age may be ascertained, but it is said that the marks on the upper teeth will enable us to judge of the age until the thirteenth year: the marks of the front teeth being worn out when he becomes eight years old,



those of the adjoining teeth at ten, and the corner teeth at twelve: but I cannot say how far these marks can be depended upon.

### *On the Management of a Horse during a Journey.*

Previous to setting out on a journey, every precaution should be employed to bring a horse into a perfect state of health as possible, as we thereby avoid much trouble and inconvenience. Should he be at all subject to grease or swelling of the legs—a dose of physic is to be recommended, taking care to preserve the heels clean, and to keep up a brisk circulation in the legs by frequent hand-rubbing. Should the feet of the horse be tender, it is necessary to inquire into the cause of that tenderness: if it arise from corns, let the directions be followed that are given under that head; if it proceed from flat and thin soles, apply tar to them, and let the horse stand upon a flat surface, without shoes, by which means they will be rendered thicker and more firm; and when he is rode let the concave shoe be made use of. When thrushes or rottenness of the frog are the cause of the tenderness, cut away the diseased parts, apply tar with a pledget of tow, and upon this place the *artificial* frog—the *natural* frog will in consequence soon become firm and solid, and the tenderness will be in great measure removed; if the thrushes be occasioned by a contraction of the heels, which is frequently the case, it will then be necessary to rasp the quarters moderately; and should they appear to be too strong, wanting a proper degree of elasticity, keep the hoof constantly moist. Horses that travel during the winter are very liable to have their heels inflamed and cracked, as it is termed, unless great attention is paid to them in the stable. In cases where the heels are already thus affected, they should be washed with moderately warm water as soon as the horse gets in, and afterward carefully wiped dry with a soft cloth; if much inflamed, the astringent lotion is to be applied: and if there be any ulcers or cracks, use the astringent ointment, and let the alterative powder No. 2 be given occasionally. When a horse's wind appears to be imperfect, he should not be allowed to fill himself with hay or water, and must be prevented from eating his litter, which horses of this description are generally inclined to do, particularly when stinted in hay; in this case costiveness sometimes occurs, which always increases the complaint. To remedy this, let a clyster and a few bran mashies be given. Too high feeding is also very prejudicial in these com-



plaints, as any thing which tends to create a plethora, and determine too much blood to the lungs, is sure to aggravate the disease. To a horse that purges or scours in travelling, and appears faint, sweating much with moderate exercise, give the cordial ball, the efficacy of which is sometimes increased by being mixed with a pint of ale or strong beer; if the complaint do not give way to this treatment, let the astringent ball be given.

As soon as the horse comes into the stable, let his feet be well cleaned, and all dirt or gravel carefully removed. It is a very common practice with ostlers, even in winter, to tie the horse up in the yard, that he may undergo the ceremony of having his heels washed with cold water. This should never be permitted during the winter, as many bad consequences may arise from it. During hot weather, when the roads are dry and dusty, allow a horse to drink a small quantity of water now and then, while on the road; this not only refreshes him considerably, but has the useful effect of cooling and moistening his hoofs, as he will generally be made to stand in the water while drinking, nor is there the least danger to be apprehended from it, unless he is rode very hard immediately before or after. In winter he should never be taken into the water if it can be avoided conveniently.

Should the horse appear dull and lose his appetite, let him be bled moderately, and take a dose of nitre with a bran mash; this, with a little rest, will soon recover him. It is a common practice, when this happens, to give cordials, which are very improper, and often do much injury to the animal, by bringing on a fever. Some horses are particularly subject to the flatulent colic or gripes; this is often the case with *crib-biters*, on such occasions it is advisable to be always provided with a remedy, and as a ball is the most convenient form, I have given a recipe for the purpose. (See *Flatulent colic or Gripes*.) A suppression of urine, or great difficulty and pain in staling, is an accident that sometimes occurs in travelling; and in such cases a diuretic ball is generally given, which, though sometimes successful, has often done mischief. The most effectual way of relieving the horse is by throwing up a clyster, and bleeding moderately: should there be no appearance of inflammation in the kidneys, a dose of nitre may also be given. The common practice of loading a horse with clothes, and keeping him in a close warm stable, if he happen to take cold during a journey, is certainly improper, since he is liable to be frequently exposed to wet and cold in travelling. It is a well known fact, that animals are not hurt by being kept in any uniform temperature, whether it be hot or cold; and that their diseases



more commonly arise from sudden changes, or frequent variation of temperature.

When a horse becomes suddenly lame in travelling, let the feet be carefully examined. Should the lameness be occasioned by a wound from a nail or flint, apply tincture of myrrh or friars' balsam, having previously removed all dirt or gravel from it; and if the wound have been inflicted by a nail, let it be carefully opened to the bottom with a small drawing knife, and proper means used to prevent dirt from getting to it.

#### CORDIAL BALLS.

##### No. 1.

Cummin seeds,	-	-	-	-	-	}	4 oz.
Anise seeds, and	-	-	-	-	-		
Caraway seeds, of each	-	-	-	-	-		
Ginger,	-	-	-	-	-		2 oz.

Treacle enough to make it of a proper consistence for balls.

The dose about two ounces.

##### No. 2.

Anise seeds,	-	-	-	-	-	}	4 oz.
Caraway seeds,	-	-	-	-	-		
Sweet fennel seeds, and	-	-	-	-	-		
Liquorice powder, of each	-	-	-	-	-		
Ginger and cassia, of each,	-	-	-	-	-		1 $\frac{1}{2}$ oz.

Honey enough to form them into a mass. The dose about two ounces.

##### No. 3.

Cummin seeds	-	-	-	-	-	}	4 oz.
Coriander seeds, and	-	-	-	-	-		
Caraway seeds, of each	-	-	-	-	-		
Grains of paradise,	-	-	-	-	-		1 oz.
Cassia,	-	-	-	-	-		$\frac{1}{2}$ oz.
Cardamon seeds, and saffron, of each	-	-	-	-	-		2 dr.
Liquorice, dissolved in white wine,	-	-	-	-	-		4 oz.

Sirup of saffron enough to form a mass. The dose about two ounces.

##### No. 4.

Powdered ginger,	-	-	-	-	-	-	4 oz.
Powdered caraway seeds,	-	-	-	-	-	-	8 oz.
Oil of caraways, and	-	-	-	-	-	}	2 dr.
Oil of anise-seeds, of each	-	-	-	-	-		
Liquorice powder,	-	-	-	-	-	-	8 oz.

Treacle enough to form a mass.



# APPENDIX.

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## OBSERVATIONS ON WOUNDS.

IN the former editions of this work this subject was treated of rather concisely: further experience has, however, convinced me, that the common method of treating wounds is so directly in opposition to reason and nature, as to render a detailed account of the proper mode of treatment indispensable.

Wounds of the human body, when inflicted with a keen instrument, are often cured, merely by bringing the divided parts into contact, and keeping them in that situation by means of suture (stitches,) or sticking plaster and bandage. In a few days nature completely reunites the parts, without any inflammation or supuration having appeared. This surgeons call *union by the first intention*, and is so desirable a method of healing wounds, that it is generally attempted, even under circumstances which render its accomplishment doubtful. In wounds of horses this kind of union can scarcely ever be effected, from the difficulty of keeping the wounded part in a state of rest, and from the laceration and contusion with which their wounds are generally accompanied.

To render the subject more clear, we shall divide wounds into the following classes:—

1. Simple incised wounds.
2. Lacerated and confused wounds.
3. Punctured wounds.
4. Wounds of cavities

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### *Simple incised Wounds,*

Are those inflicted with a keen instrument, by which the skin or other parts are nearly divided without being torn or bruised.

This kind of wound, however, seldom happens to horses: when they do occur, though there is little probability of affecting a *union by the first intention*, it should always be attempted; and if the divided parts cannot be kept together by sticking plaster and bandage alone, the lips of the wound should be neatly sewed, so as to be held firmly in contact with each other,



with waxed thread several times doubled; and if the situation of the wound will admit of it, a bandage or roller should be afterward applied to assist in the accomplishment of this end, and render the stitches less painful. But how different from this is the practice of farriers, ignorant of the animal economy, and the wonderful power with which the Almighty has endued the animal system, of recovering itself when injured; and of re-producing flesh that has been literally destroyed? They officiously prevent this desirable union by putting *tents* (that is, lint or tow moistened with some stimulating liquid) between the lips of the wound, by which they are effectually hindered from cohering, however naturally disposed to unite; but this is not the only evil of the practice. In extensive wounds the injured parts are so irritated by exposure and their applications, that mortification is sometimes the consequence. Far better than this would it be, to leave the wound to nature, merely keeping it clean, and when the first inflammation has subsided and white matter appears, bringing the separated parts as near to each other as possible, and retaining them in that situation by means of bandage. By this method the wound would heal much more speedily, and the consequent blemish or scar, would be considerably lessened. It is unnecessary to say more of the simple incised wound, for should the attempt to heal it by the first intention fail, it becomes necessary to assist nature as in lacerated wounds: still, during the whole cure of a simple wound, it is proper to keep the divided parts together as well as we can, which will be found more useful than any balsamic vulnerary or healing application, that the most expert farrier's receipt book can furnish.

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### *Lacerated and Contused Wounds.*

The wounds of horses are most commonly inflicted with some blunt instrument, and consequently the parts are rather torn assunder, than simply and neatly divided; at the same time, the instrument is generally applied with such force that the skin, flesh, &c. are considerably bruised; for example, when a horse falls upon his knees, is kicked or bit by another horse, in attempting to leap, gets his hind or fore leg entangled in a gate, and in other such accidents. In these cases the laceration and contusion are so considerable, that the kind of union before mentioned is totally impracticable; it is, notwithstanding, advisable to keep the divided parts together as well as we can, taking care to allow the matter which forms, to escape freely, and avoiding the violent stimulating applications commonly used by farriers on such occasions, which, to say



the best of them, always increase the inflammation and danger, and obstruct the cure. I have seen a horse die in the greatest agonies from a wound received in entangling the hind leg in a gate, by which not only the skin and flesh were excessively torn and bruised, but the stifle joint was also much injured. In this case, the fatal event and the excessive pain were undoubtedly accelerated and heightened, if not altogether occasioned by the caustic applications of the farrier employed.\*

\*A short time ago, I was induced by respectable recommendation to employ a practising farrier in our Veterinary Infirmary, as superintending groom, under an idea that he might be the more useful from being capable of applying poultices, fomentations, giving balls, &c.—Though like his Vulcanian brethren, extremely ignorant, he appeared tractable and desirous of instruction; unfortunately my plan of trusting in some measure to nature in the treatment of wounds and ulcers, appeared to him to arise from negligence; and in the excess of his zeal, during the time I visited my out patients, he endeavored to compensate for my apparent omissions, by his own industry. Finding several cases unusually obstinate, I was led to make some inquiry into the business, which was soon explained, when informed that this indefatigable practitioner had used nearly an ounce of lunar caustic (*argentum nigratum*) in a fortnight. This man has since had the presumption to set himself up as a veterinary practitioner, and now deals out his caustics and opposes nature without control.

It has since appeared, that this man was induced to offer his services by supposing that such an employment would after a short time be considered by the public as a sufficient sanction for his practising the veterinary art.

The celebrated St. Bel, first professor of our veterinary college, in his observations on veterinary medicine, justly remarks, "that at this time the art appears obscured and bewildered by the ill placed confidence of the owners of horses, upon the blacksmith of the parish, upon illiterate and conceited grooms, or upon a set of ignorant and presuming men, infinitely more dangerous than all the rest, who, arrogating to themselves the title of doctors, distribute their nostrums to the destruction of thousands, whose varied disorders they treat alike, without consulting nature or art, either about the cause or effect.—Miserable animal! thou canst not complain, when to the disease with which thou art affected, excruciating torments are superadded by the unmeaning efforts of ignorant men, who, after pronouncing a hackneyed common-place opinion of thy case, proceed with all expedition to open thy veins, lacerate thy flesh, cauterise thy sinews, and drench thy stomach with drugs, adverse in general to the cure they engage to perform!"—So extensive is the mischief occasioned by this "ill placed confidence" of which St. Bel speaks, and so serious an obstacle has it hitherto proved to the progress of veterinary science, that I must beg leave to make a short quotation from Mr. Richard Laurence's ingenious publication.

"The necessity of long study in anatomy, pathology, and the composition of drugs, to qualify a practitioner in medicine, is universally acknowledged; and as the horse exists by similar laws, and is subject to many of the diseases incident to mankind, it cannot require much penetration to discover, that studies of the same nature must be absolutely requisite to constitute a good farrier: but if conclusions were to be drawn from the basis on which the veterinary system has hitherto rested, it would seem that the science of farriery, has been considered as a natural gift, and not in the least dependent on the tedious process of medical inquiry and investigation;



In the treatment of extensive lacerated wounds, the first object is to remove any dirt, splinters, or other extraneous matter that may be in the wound; if a flap of skin hang down, or flesh be nearly torn off, they should be carefully replaced, and never cut off, however unseemly they may appear to the farrier, unless so much bruised as to be irrecoverable. When the parts are so divided as to require considerable pressure to bring them together again, it is improper to sew the wound up, as the tendency of the parts to recede from each other would constantly keep the stitches upon the stretch, and so irritate the wound as to bring on excessive inflammation, and, perhaps, ultimately gangrene or mortification. The only thing to be kept in view in these extensive wounds is, to employ the most effectual means for keeping the inflammation within bounds, until supuration take place, which is indicated by the appearance of white matter, and the subsidence of the inflammatory swelling, and abatement of pain and fever. On many occasions, the parts may be brought carefully together as near as can be without employing considerable force, and may be supported in that situation by a proper bandage. Whenever stitches are employed in such wounds, and drawn tight, they give excessive pain to the animal, and bring on a dangerous degree of inflammation; the violent pain often causes symptomatic fever, and after all, the intention of employing them is not answered,

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for every blacksmith, groom and stable boy, not only conceives himself but is often believed by his employer, to be fully competent to the important task of curing diseases, of the nature of which he is totally ignorant. Surely nothing can be more absurd than to imagine that a groom, by having fed and cleaned a horse a few years, must consequently become acquainted with his diseases and their causes. It would be equally plausible to assert that because he knows by ocular experience that the sun rises in the morning and sets at night, he must be an astronomer.

"The majority of the affluent, to avoid the trouble of reflection, suffer themselves to be influenced in matters of this nature, by men whose opinions on any other subject, would be treated with the utmost contempt. Few things can be more affecting to a humane and contemplative mind, than the sufferings of a mute and patient animal, the estimable contributor to our pleasures and comforts, when affected with some violent diseases, in which nature exerts her utmost efforts to relieve herself; but how must this scene of distress be heightened could the proprietor be convinced, that the very men he applies to for assistance only aggravate the evil by their ignorance!"

The Earl of Pembroke, whose judicious treatise on horses has been universally approved, seems to have been aware of the mischievous tendency of encouraging these illiterate pretenders, when he observes, "Whoever lets his farrier, groom or coachman, in consideration of his having swept dung out of his stables for a greater or less number of years, ever even mention more than water gruel, a clyster, or a little bleeding, and that too very seldom; or pretend to talk of the nature of feet, the seat of lameness, sickness, or their cures, may be very certain to find himself very shortly quite on foot.



as they always separate in two or three days, and leave the wound as open as at first, presenting a much more formidable appearance from the mischief caused by the increased inflammation, and the retention of putrid matter. After cleaning a lacerated wound with warm water, which, when its situation and depth render it necessary, should be injected with a syringe; the divided skin, flesh, &c. should be carefully brought together and secured as we have previously directed.\*

If the horse be in good condition, and have not lost much blood from the wound, he should be bled rather freely; in other circumstances it will be proper to omit that operation, or take only a small quantity. A purging draught or ball should be given as early as possible, and the horse's diet confined to hay and mashes, or bran: he may be allowed to drink freely and frequently, and must be kept perfectly at rest.

The wound should be cleansed once or twice a day as may be found necessary, with water at blood heat; which, when the wound is deep, may be done more effectually, by means of a syringe. The only external application necessary at this period is a fomentation. (See *Fomentation*.) When this plan is adopted, the inflammation, swelling and fever, which always follow an extensive lacerated wound, will be much more moder-

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\*The common practice of farriers in these cases is, to apply freely some stimulating spiritous preparation, such as spirit of wine and camphor, firer's balsam (which is a solution of certain resins and balsams in spirit of wine) brandy, and many other things equally injurious: some of them use even a mixture of oil of turpentine, and acid of vitriol; and then, as if they were determined to do all the injury in their power, the wound is plugged up with a quantity of tow, moistened with the same stimulating preparation, with which the wound was washed or syringed. A few days ago, I was desired to attend a horse, that had met with a deep and extensive wound by entangling, it was supposed, his fore leg in a gate, while at grass; the farrier had been there before me; and observing a syringe in his hand, I inquired what liquid he had employed, and was told "Brandy." Upon expressing my fear that so stimulating an application would do mischief, the farrier immediately replied, "There is no danger of that, for I put a little oil with it; and you know the one is *hot*, and the other *cold*." I could not but smile at the ingenuity of the explanation, but requested that nothing of the sort might be again employed.

The popular prejudice in favor of those spiritous or balsamic preparations as they are termed, in all kinds of wounds, has been the cause of much mischief in veterinary, perhaps not much less in human surgery. The credit they have acquired is owing to the wonderful property, with which the animal body is endued, of uniting parts that have been divided, merely by keeping them in contact with each other. Many astonishing instances of this have been related by writers on surgery; and it has been proved, that if even a tooth recently drawn be placed in its socket, it will soon become as firm as the rest. The spur of a cock just cut off being stuck into the comb, will soon adhere, and grow as it did upon the leg. A respectable author relates the case of a man who accidentally stepped on a



ate than it would otherwise have been, and in a few days will have subsided considerably; a white matter will then flow from the wound, and the horse will not appear to suffer much pain. When this has been accomplished, it is necessary to endeavor as much as possible to bring the divided parts together, and there will be less danger and pain from drawing the bandage with more force for this purpose. Warm water may still be used for cleansing the wound; but when the inflammation is quite gone off, some stimulating liquids may be employed, but these are unnecessary when the divided parts can be brought into contact. When this cannot be effected, or when there is a loss of substance, the wound cannot heal without the formation of new parts, and stimulants are often required to accelerate this process. At first the weaker preparations are to be used, such as dilute spirit, or a weak solution of blue vitriol: but when the healing process goes on slowly, the matter becoming thin, and losing its white color, the stronger stimulants as tincture of benzoin, or even oil of turpentine, may be applied, and the constitution invigorated by a nutritious diet, such as malt and oats, or carrots; and when the discharge is very considerable and appears to weaken the animal, this is more particularly necessary, and must be assisted by medicines of the tonic kind, such as Peruvian bark, cascarilla, vitriolated iron, and sometimes porter or beer, and even opium; it is only

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keen instrument, and nearly divided his foot: all the bones, tendons, &c. were divided, except the bone going to the little toe, he bled profusely, and fainted, by which the hemorrhage was stopped. A surgeon then brought the divided parts together, and secured them with splints and bandage. The man was thoroughly cured in a short time, and the foot became as perfect as the other. Surgeons are now so convinced of the power of nature to heal simple incised wounds, when the divided parts are kept in contact with each other, without the assistance of any spirit, balsam or salve; which they know rather impedes than expedites the cure, that a practitioner would be laughed at, were he to adopt so absurd a practice; it appears, indeed, that balsams were first used on account of their glutinous quality, in order to keep the parts more completely in contact; with the same view, white of egg, gum water and other things of the same nature were employed. It is to be lamented that the public are still so prejudiced in favor of stimulating preparations, such as frier's balsam, tincture of myrrh and aloes and above all the famous riga balsam, which is preferable from being less stimulating, that a veterinary surgeon can hardly venture to trust nature a little in the treatment of wounds, without being accused of negligence. It may be depended upon, however, that in every case of simple incised wounds, where these preparations have been thought to effect a cure, they have not in the least contributed to it: nature has been the restorer, in spite of the obstacles opposed to her efforts. Wounds that have degenerated into ulcers, either from bad management, or from the parts having been lacerated or bruised, often require the application of stimulants; but even in such wounds they are not to be employed, until the inflammation which necessarily follows the injury has subsided.



in very deep and extensive wounds, however, where there is a profuse discharge, and constitutional weakness, that this treatment is required.

When wounds of this kind terminate fatally, it is generally from the violence of the inflammation and symptomatic fever causing gangrene, delirium, and total exhaustion. Our first and principal object therefore, should be to restrain this inordinate inflammation by every means in our power; but farriers, ever in opposition to nature, generally destroy their patients in these cases; torturing the unfortunate animal by the application of violent stimulants and even caustics; cramming into the wound hard tents, and persuading his employer that this cruel and absurd treatment will infallibly heal the wound. When we have succeeded in these extensive lacerated wounds so far as to bring on a healthy supuration, a discharge of white matter, and an appearance of new flesh sprouting up in various parts, in small granulations of a red color, we may be satisfied that the danger is over.

At this period we may safely use more force in bringing the divided parts together; and if the wound appear languid, wanting that red appearance we have just described, and discharging thin matter, some of the stimulants we have mentioned may be employed: still it is improper to cram tents into the wound or daub them over with stinking ointments.

If the red granulations form so luxuriantly as to rise above the level of the skin, they must be kept down by red precipitate, burnt allum, or other applications of this kind; pressure will also be effectual on this occasion, laying a piece of soft lint on the part, and confining it with a roller. Should the sides or edges of the wound become callous, caustics must be applied to remove the old surface, and then fresh attempts should be made to bring them into contact. When the matter has penetrated from having been confined, so as to form sinuses, fistulæ, or pipes, as they are commonly termed (that is, narrow, deep ulcers running in various directions,) their sides if possible should be brought into contact by means of pressure. If such sinuses have existed for some time, the sides will have become callous, and incapable of uniting; it is then necessary to apply caustic, either by injecting some liquid caustic, such as strong solution of blue vitriol, dilute nitrous acid, &c. with a syringe, or by dipping lint in the same, and passing with a probe to the bottom of every sinus. (See *Fistula, Poll Evil and Quittor*.) This is the only occasion on which tents are proper. If it be impossible to bring the sides of the sinus into contact, it can only be cured by the formation of new flesh, to promote which it is necessary to inject daily some stimulating liquid, such as



spirit of wine, tincture of benzoin, &c. keeping the orifice open lest it heal before the deeper part. Even these, however, will be found ineffectual, if the sides of the sinuses be callous; and then should be preceded by the caustic as above described, (See *Ulcers, Fistulae, Poll-evil & Quittor*,) which often requires to be repeated. I thought it necessary to be thus minute in describing the treatment of lacerated wounds, as it is a subject of great importance, and generally little understood. Under this head it is proper to treat also of gun-shot wounds, in which the ball enters with such force, and the parts are so much bruised, that then vitality is destroyed; therefore nothing can prevent their separation, or *sloughing*, as it is termed. This generally takes place a few days after the accident, and until that period it would be highly improper to use any kind of pressure, or attempt to bring the sides of the wound into contact. The first thing to be done in these wounds is to extract the ball, should it have lodged; but we must not employ any violent means to effect this, as it is more easily done after the dead parts have separated and a healthy supuration has taken place. Sometimes the ball penetrates so far as to be felt near the opposite side of the part, where an incision should then be made in order to extract it. Whenever matter ponds up, or is confined in any kind of wound, it is proper to make such an opening as will allow it to escape freely: setons are sometimes employed for this purpose. (See *Wounds of Cavities and Punctured Wounds*.) In gun-shot wounds it is improper to bleed as hemorrhage often happens when the dead parts separate: in other respects they are to be treated as we have above described. Indeed their treatment must depend greatly on the importance and situation of the wounded part, as the ball may penetrate a joint, or the cavity of the chest or belly. (See *Wounds of Cavities*.)

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### *Punctured Wounds.*

This kind of wound also often occurs in veterinary practice. The feet are particularly liable to it, and not unfrequently they are inflicted through the carelessness or impatience of the groom. During the time of my service in the army, I may truly assert, that more than fifty cases occurred, in which the wound was inflicted by the fork used about the litter, either by accident or by the savage violence of the groom. It is but just however, to acknowledge that a good soldier will sacrifice even his own repose to that of his horse, and thinks nothing a labor that can contribute to the health and comfort of his faith-



ful companion; but among so great a number of men there are too often some of a different description. Punctured wounds of the feet are most frequent, and are caused, either by the horse stepping on a nail, or *picking up a nail* as it is termed, or by carelessness of the farrier in shoeing. In the former case the nail generally enters the frog, and often penetrates the joint of the coffin bone. (See *Anatomy of the Foot*.) The sole is generally sufficiently hard to resist the nail: but the frog is commonly of a softer and more spongy nature. When the coffin joint is wounded, there is danger of an incurable lameness from the joint becoming stiff; but by proper management the wound is often closed in a short time, and the free motion of the bones preserved. (See *Wounds of Joints* under the head *Wounds of Cavities*.) Whenever the foot is wounded by a nail, it is necessary immediately to open the orifice in the horny matter by means of a drawing knife: if the joint be wounded, synovia, or joint oil will issue from the wound, but in very small quantity. An experienced person can easily ascertain this point still more certainly by tracing the wound with a probe. The treatment of this kind of wound will be described in the chapter on *Wounds of Cavities*; but when the joint has escaped the injury, after enlarging the opening made by the nail in the horny matter, and cutting away the horn from the contiguous parts, until it becomes very thin, a little tincture of benzoin is to be poured into the wound; the stimulus of which, so far from being injurious as in lacerated wounds, will soon bring on a secretion of healthy matter; a little tow or lint, dipped in tar or Venice turpentine, is then to be applied, and the whole foot kept cool by means of a bran poultice. The most essential part of the treatment is opening well the orifice in the horny matter; for in wounds of this kind we always find that soon after the nail has been withdrawn, the puncture in the horn nearly closes; but the living parts that have been wounded underneath the horn soon inflame and swell; consequently they suffer considerable pressure, as the horn is too thick and inflexible to give room to them as they swell. At length matter forms, which, being confined by the horny covering, diffuses itself between the sensible and insensible parts, sometimes so extensively as to render it necessary to remove great part, or even the whole of the latter. This operation, so often cruelly and unnecessarily performed by farriers, is termed *drawing the sole*. In the case described, where the parts are separated by the matter, the operation is performed with but little pain to the animal. But those officious practitioners too often tear it off when perfectly healthy, and, with a view to remove a lameness, of the cause and seat of which they



are totally ignorant. Often have I been desired by the owner of a lame horse to *draw the sole*, under an idea that it was an infallible remedy for an obstinate lameness, or for a desperate wound of the coffin joint.\*

When it has been found necessary to remove some part of the horny sole, in consequence of matter having formed under it, a pledget of tow dipped in digestive ointment, or a mixture of Venice turpentine and hog's lard should be applied. Sometimes we find the coffin bone diseased, in which case the injured part generally separates, and then a new horny sole is gradually formed. When a horse's hoof is wounded by the farrier in shoeing, he is said to be pricked; the nail instead of being driven into the horny insensible part only, is either forced into the living parts, or so near to them as by its pressure to give such pain to the animal as to cause him to go lame; inflammation gradually takes place in consequence, and at length matter forms, which, if not allowed to escape by removing the shoe and cutting away the horn with a small drawing knife, spreads under the hoof, and after some days breaks out at the *coronet*. (See *Anatomy of the foot*.) In this case the mischief is not always discovered immediately after shoeing. The pressure upon the sensible parts is sometimes too inconsiderable at first to occasion lameness; so that when the horse is observed to go lame, the farrier pronounces it to be in the shoulder, and the poor animal is tormented by the strong oils or even blisters applied to that part, while he is suffering from another cause. It is in this way that the disease is sometimes allowed to run such lengths as we have described. When the nail is so driven as to wound the sensible parts at once, the horse goes lame immediately after; and the cause being generally suspected, the shoe is taken off, the opening in the horny part enlarged with a drawing knife, and a little tincture of benzoin applied. The lameness is thus soon removed, the shoe re-applied, taking care not to place a nail or suffer the shoe to

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\*This mischievous and cruel operation is held in such high estimation by farriers, that they exultingly display the soles of their unfortunate patients, nailed to their doors or window shutters, as a sort of deploma, or undeniable sanction to practice the art of farriery. We have reason to hope, that this abominable and cruel practice will not long exist, as the condition of this most useful animal has of late experienced a considerable melioration, and will, we trust, by the laudable encouragement now given by many distinguished, I may say, illustrious personages to the veterinary science, be soon rescued from the hands of those barbarous and presuming practitioners. The ingenious gentleman I have before mentioned, so liberal in the use of caustics, was equally proud of his skill in tearing off the soles from horse's feet, and I am informed often boasts in ale houses, among grooms and other companions, of his skill in this operation, and more particularly of his profound knowledge of the "*Ottomy* (meaning *Anatomy of the Horse*.)"



press on the injured part, and the horse becomes capable of returning to his work.\*

When wounds of this kind have been so neglected that matter breaks out from the *coronet*, it is still necessary to enlarge the opening in the horn beneath; and if it have closed (which it generally does,) the horn must be removed with a drawing knife, that the matter may escape freely: the upper wound, (in the *coronet*) will then soon heal, by applying the tincture of benzoin. *Punctured wounds* in other parts are often inflicted with the stable fork, either accidentally or intentionally: I have often known joints wounded in this way. (For the treatment of joint wounds, see *Wounds of Cavities*.) When the flesh only is punctured, the orifice must be kept open that the wound may heal from the bottom: and if the sides become callous and indisposed to heal, a mild caustic may be injected, such as solution of blue vitriol. In punctured wounds of the fleshy parts, it is of consequence to procure a free exit for the matter: with this view we often make counter openings with a knife, or pass a seton through the wound. In recent wounds, however, of the punctured kind, those irritating applications are improper; wounds of this kind are frequently followed by considerable pain and inflammation. It is therefore necessary to keep the orifice open; and if it be small, to enlarge it with a lancet, when the pain and inflammation have subsided. Should the wound appear indisposed to heal and be found upon examining with the probe to be as deep as at first, there is reason to suppose that its sides have become callous; a caustic is then to be applied throughout its whole course; and after a day or two, or when white matter is observed to flow from the wound, such pressure should be applied, where it is practicable, as will bring the sides of the wound into contact, and continued until they are united. When punctured wounds are so situate, that the matter can freely escape, there is much less difficulty in curing them, than when they are in a situation of a different kind; or where the orifice, instead of being the lowest, is the highest part of the wound. This inconvenience, however, is sometimes obviated by making a new opening with a knife or lancet, or by passing a seton through the wound: but in some situations this cannot be done: nor can we in many cases apply sufficient pressure to bring the sides together. The wound can then be healed only by the formation of new parts, by which the cavity is filled up; to effect which we inject stimulating li-

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\*The remedy commonly employed by farriers in these wounds is *oil of turpentine* poured into the wound, and then set on fire with a candle; the more knowing ones, however, prefer *oil of vitriol*, perhaps as being more simple, rendering the application of the candle unnecessary.



quids, such as proof spirit, tincture of benzoin, or solution of blue vitriol, taking care to keep the orifice open, that the bottom of the wound may be first healed.

The most formidable punctured wounds generally happen while a horse is employed in hunting, in leaping over gates or hedges: he is then said to be staked. The deeper and more lacerated these wounds are, the more carefully should we avoid the irritating applications and tents of the farriers, adopting in their stead the same treatment we have directed for extensive lacerated wounds.

There is another kind of punctured wounds which is likely to occur in military service: and in a charge of cavalry upon a line of infantry, it is astonishing that so many should escape the *bayonet* as we generally find do on such occasions. Those are generally of considerable depth, and often followed by profuse bleeding. When the bayonet penetrates the belly or chest, the wound is commonly fatal, particularly if any of the large blood vessels within these cavities be wounded. When merely the fleshy parts are wounded, there will be little danger, particularly if there be no considerable blood vessel opened. The treatment of these wounds is nearly the same as we have already described, except that it is more frequently necessary to enlarge the orifice or mouth of the wound; and that there is often occasion to perform a rather difficult operation, namely that of tying the artery in order to stop the bleeding; for when a large artery is wounded, the blood flows so copiously as to require the most expeditious means of suppression. It is difficult for a person unacquainted with anatomy to perform this operation of tying the artery. Therefore if no professional person be present at such an accident, it is advisable to endeavor to stop the bleeding by pressure, giving up all attempts to tie the artery, and not placing any dependance upon those preparations called *styptics*.

Pieces of sponge or lint, secured with bandage, will be found most convenient for this purpose. If the wounded artery be of considerable size, which may be known by the quantity of blood and the force with which it is thrown out, the bandage should not be removed till the second or third day.\*

In these wounds, also, it is necessary to avoid the stimulating applications and tents commonly employed by farriers: but when the inflammation has subsided, and the wound does not appear disposed to heal, they may be used with advantage. It

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\*It is easy to distinguish between a wounded artery and a vein. In the latter the blood is of a darker red color, flows in a uniform stream, and with little force; in the former, the blood is of a bright scarlet color, and is thrown out by jerks with considerable force.



is of importance to procure a free exit for the matter, for which purpose a counter opening may be made, when the situation of the wound will admit of it.

All punctured wounds are liable to become fistulous, that is, when the sides cannot be brought into contact by any means, they often become *callous*. It may be necessary to repeat, that in such cases caustics must be applied to destroy the callosity, and then gentle stimulants are to be injected to promote the formation of new flesh. There is more difficulty in healing wounds of tendons or ligaments, than flesh wounds: and in such cases, after the first inflammation has subsided, the stronger stimulants, and even caustics, are often required.

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### *Wounds of Circumscribed Cavities.*

Under this head we shall describe wounds of the *Chest, Belly: Joints, Sheaths of Tendons and Blood-vessels.*

When the chest or belly is punctured, there is generally danger of a fatal termination: the danger, however, is proportionate to the extent of the injury, and is always greater when any of the parts contained in the chest or belly are injured. This kind of wound is most liable to happen in military service, and is most commonly inflicted with the bayonet and ball. Even in small wounds of these important cavities, there is danger of inflammation taking place in the bowels: it is necessary therefore, to close the wound as neatly and expeditiously as possible, by sewing it up; taking care, however, that the needle do not pass through the fleshy parts, but merely through the skin. It is proper also to bleed according to the strength and condition of the animal, and to give it a purgative draught. If swelling and inflammation come on, foment frequently with a decoction of the bitter herbs. (See *Fomentations*.) If the wound do not unite by the first intention, white matter will soon make its appearance. A little tincture of benzoin may then be applied. In extensive wounds of the abdomen or belly, the bowels often come out through the opening, in which case there is considerable danger, though the bowels may have escaped the injury. Should they have been wounded, let the wound be very neatly stitched up with a small needle and waxed silk, and then gently replaced within the belly, taking care first to remove any dirt or other matter that may adhere to them. The wound is then to be carefully closed as we have before directed, and supported if possible with bandage: the end of the silk, however, with which the bowel is sew-



ed, should be kept out of the external wound. Bleeding and a clyster are particularly necessary; bran mash, with strong gruel, or a little sweet oat meal stirred into each mash, is the most proper diet. If the bowels have been wounded, it is absolutely requisite to keep the horse from eating hay or straw, or any hard food; for as the digestive process is far from being perfected in the horse's stomach, the hay or straw might arrive at the wounded part in a state capable of doing great injury. In wounds of the chest nearly the same treatment is required; a purgative, however, may be given in such cases, before inflammation has taken place: but whenever this happens, whether it be in consequence of these wounds or of wounds of the belly, it must be treated according to the directions given under the heads, *Inflammation of the Lungs and Bowels*.

The *cavities* next in importance to the chest and belly, are those named *joints*; which in horses are more frequently wounded than the other cavities. These wounds, although from mismanagement they sometimes prove fatal, yet are of more importance from the circumstance, that without the greatest care and the most judicious treatment they almost invariably render the horse permanently lame; and sometimes in so considerable a degree, that he becomes nearly if not entirely useless. Previous, however, to entering on the consideration of their treatment, it is desirable to give such an account of the structure of a joint, as may render the directions more intelligible. A joint is formed, generally speaking, by the ends or heads of two or more bones; these ends are covered by a layer of gristle or cartilage, which is of a yielding and elastic nature; this cartilage has on its surface a firm but thin membrane, which is constantly forming a slippery fluid, termed *synovia* or joint oil; it possesses also *absorbent vessels* to prevent an undue accumulation of this fluid.\* The ends of the bones, thus covered with a smooth yielding surface, so slippery as to move upon each other freely without suffering from friction, are then firmly tied together by a strong inelastic substance, termed *ligament*, which completely surrounds the heads of the bones, as far at least as they are covered with the smooth cartilage. This ligament, termed by anatomists *capsular ligament*, it is not so tight as to prevent extensive motion of the bones, but sufficient-

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\* When a joint becomes dropsical, as in *bog spavin*, it is either from a loss of power in the *absorbent vessels*, or an increased action of the vessels which form the joint oil: perhaps both these causes may concur in producing the disease, the more remote cause of which is, generally, hard work, that is, too great or too long continued motion of the joint. The disease termed *windgalls* may be explained in the same way. (See *Windgalls*, Appendix.)



ly so to hold them firmly in their proper situation. The joint is thus completely shut up, forming a kind of sack, or what is termed a circumscribed cavity, and the joint oil which is formed is confined to its proper situation. When a joint is wounded, or in other words, when the *capsular ligament* is wounded, the joint oil, which is a transparent fluid, of a light yellow, or brownish color, is seen almost constantly oozing from the wound, particularly when the animal moves the joint. If proper means be not employed to close the wound, inflammation takes place within the joint, occasioning the most excruciating pain, and at first an increased formation of *synovia*. If the wound continue open, the inflammation and pain become more considerable, and a symptomatic fever takes place, which sometimes proves fatal. It often happens, however, in this stage of the complaint, that the vessels of the capsular ligament, instead of forming joint oil, pour out a large quantity of glutinous coagulating fluid, which, filling the cavity of the joint and becoming solid, totally and permanently obliterates it. The inflammation, pain and fever, then gradually subside, and the wound heals; but the joint can no longer be moved, and an incurable lameness is the consequence. From this description will appear the importance of attending to these wounds as early as possible, and of closing the wound as expeditiously as we can. This, however, cannot be effected by the means we have recommended for other wounds. Ligaments are of a different nature from flesh or skin, and, when wounded, cannot be healed without the assistance of strong stimulants, and even caustics:\* but these must be used with great caution, for when they are so clumsily employed as to enter the cavity of the joint, the most violent inflammation will ensue. Some of the old farriers appear to have known the utility of caustics in these wounds: but mistaking the principle on which they acted often injected liquid caustics into the joint, and thereby brought on the most excruciating torments. Sometimes their patients were destroyed by the fever which followed; more frequently, however, the joint became stiff or immoveable, as we have before described, and the wound healed. Other farriers, prefer-

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It has been supposed, that the violent pain and inflammation, which follow the wound of a joint, are caused chiefly by the admission of air into the cavity, and a deficiency of synovia or joint oil, by which the two surfaces are exposed to friction. It is certain, however, that in these wounds there is much more synovia formed than usual; which may be known by the quantity that flows from the wound. This increased formation of synovia, however, continues only a certain time; after a time the coagulating lymph is poured out, which, becoming solid, obliterates the cavity; but in large wounds of the principal joints, the animal is often destroyed before this happens, by the symptomatic fever which comes on.



ring to employ the *solid* caustics, and failing in their attempts to thrust them into the cavity of the joint, have applied them no farther than the orifice in the capsular ligament, and have by this fortunate failure effected a cure without the loss of the joint. This plan, however, can only be adopted in wounds of a small size, or of the punctured kind, such as those inflicted with the stable fork: and fortunately wounds of joints are most commonly of this kind. But we sometimes meet with cases where the wound is of considerable size, and much lacerated: there is scarcely a possibility then of preserving the joint; and if it happen to the larger joints, such as the hock and stifle, there is great danger of its destroying the animal. In such cases caustics are improper: they must be treated as deep lacerated wounds. But in the small punctured wound of a joint, the *actual cautery* (hot iron) cautiously applied, has been found the most expeditious and effectual remedy. I have succeeded also, with the *lunar caustic* (nitrate of silver.) Farriers sometimes employ the *butter of antimony* (muriate of antimony,) and *white vitriol*, (vitriolated zinc,)\* they often inject some liquid caustic into the wound with a syringe, such as solution of blue vitriol. The earlier the actual cautery is applied, the more speedily will it heal the wound: and it is particularly desirable to have it applied before inflammation takes place in the joint. The iron should have a round point, and be applied when at a dull red heat; the wound should be so seared as to stop the discharge of joint oil. It often happens, that after a short time an oozing of synovia is again observed: in such cases the iron must be again applied, and repeated if necessary several times. I have sometimes succeeded ultimately, though the iron had been applied ineffectually twice or three times. When inflammation takes place in the joint, the most powerful remedies should be expeditiously employed for its removal, such as bleeding and purging. Fomentations and poultices in such cases are not so useful as blisters, which should be applied rather extensively about the joint; but as long as the wound in the joint remains open, the inflammation will continue; there-

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\*I have heard a farrier boast of possessing a receipt for a *joint humor*, or, as he termed it, for "*killing a joint humor*." In small wounds of the inferior joints, this man sometimes succeeded. Upon examining the remedy, I found it to consist chiefly of white vitriol, which indeed was the only active ingredient. This coarsely powdered, was put into the wound; but as the man supposed its efficacy depended upon its entering the cavity of the joint, and subduing this formidable humor, he of course took great pains to thrust it in with his probe. In large wounds he generally succeeded in his attempt, and destroyed either the joint or the animal: but in small wounds of the lower joints, he merely brought it into contact with the wounded ligament, and thereby often effected a cure.



fore, our principal object should be to close the wound. There is no external complaint which occasions such excruciating pain to the animal, as inflammation of a joint, particularly when it has proceeded so far as to ulcerate the bones; several cases of which have come under my observation.

### *Wounds of the Sheaths, or Membranes surrounding Tendons.*

These require nearly a similar treatment to that we have just described, and, when of the small punctured kind, are more expeditiously healed by a judicious use of the actual cautery, than by any other remedy. These wounds also generally discharge something like synovia or joint oil, and, if suffered to remain open, are productive of very violent pain and inflammation. When they are so large as to render the caustic an improper application, they should be closed as neatly as possible, and kept so by adhesive plaster and bandage. This plan is equally applicable to similar wounds in joints; and, if adopted in time, will often be found very effectual: even when the actual cautery has been applied, and the wound seared so as to be closed, the adhesive plaster will be found a useful assistant, and will often prevent the necessity of repeating the cautery. I have known a wound in the knee joint soon healed by means of the sticking plaster alone. The tendons most liable to be wounded, are the *back sinews*; but they are enclosed in a strong tendinous sheath, which like a joint, contains a small quantity of slippery fluid, to render their motions easy, and prevent the cohesions of the parts. About the fetlock joint, or rather above that joint, there are small sacs, or little bladders, connected with the tendon and ligaments, which also contain this slippery fluid, and serve to facilitate motion in these parts. When a horse is worked too hard, these bladders contain an unusual quantity of the fluid or synovia, and appear swelled or puffed, constituting the disease termed *wind galls*. If these little bladders receive a wound, it is generally followed by violent pain and inflammation; and when improperly treated, a very obstinate lameness may be the consequence. In this case, nothing is more useful than the sticking plaster, provided the lips of the wound be neatly brought together before it is applied: but if the wound be of the small punctured kind, the actual cautery should be first applied. Great care, however, is required in this case; for if the iron be not applied very lightly, and its pointed end properly adapted to the size of



the wound, it may do much mischief. Blisters are the best remedies for any swelling, that may remain after a wound in the sheaths of tendons, or in joints; and if one blister be found insufficient, a repetition of the remedy will generally succeed. The last kind of wound we have to describe, is one that happens more frequently than any other, and is more easily cured; that is, a *wound of a vein*. When a vein is properly opened, and afterwards carefully closed in the usual way, with a pin and a little tow, it almost always heals by the first intention; but when it is opened by a rusty blunt *fleam* or lancet, and particularly when the instrument is driven with such violence as to cut not only into, but through the vein, making thus an orifice both before and behind, it seldom heals so readily: on the contrary, inflammation takes place within the cavity of the vein, which gradually extends or spreads until either the wound is closed, or the vein obliterated, by the coagulating matter which forms within it. If the inflammation extend to the heart, the animal is instantly destroyed; more commonly, however, the vein is plugged up, and ceases to convey blood. But even in this case the disease proves very troublesome; in consequence of the *jugular* or neck veins being the principal channels, by which the blood of the head returns to the heart. This obstruction to the return of the blood causes a swelling of the large gland under the ear, to which the formation of matter is often a consequence. Sometimes the eye becomes inflamed; and I have seen symptoms of *apoplexy* or *staggers* produced by this cause. If a horse be turned to grass in this situation, the inconvenience is considerably increased: the position of the head in grazing being unfavorable to the return of blood from the head. The inconvenience arising from a loss of the jugular vein is not however permanent; the smaller veins generally enlarge, and after a time, return the blood as readily as the jugular or neck vein did originally. When this accident happens, the mischief may be perceived about the second day after bleeding—sometimes the day following that of the operation. When the orifice in the vein is large and particularly if the wound in the skin be but slightly closed, or if the horse happen to rub the pin out, the wound bleeds freely; and though it be again pinned up, the blood often bursts out after a short time. I have seen a case where the horse had been bleeding at intervals three or four days, though the wound had been several times firmly pinned up: this was very soon stopped by the actual cautery: but the vein was obliterated at that part, and a little way downward and upward; and the swelling of the gland under the ear took place. When the orifice in the vein is but small, or when the vein is not transpierced, but inflames only from the orifice in



the skin, having been imperfectly closed, or from hair or blood lodging between the lips of the wound, the first symptoms are swelling and an oozing of moisture from the wound. In this case the vein is often preserved, and the disease soon cured, by applying lightly the actual cautery, and by keeping the horse at rest.—It must not be supposed, however, that in every case of swelling after bleeding the vein is inflamed: a slight swelling often takes place immediately after the operation, merely from the blood getting into the cellular membrane under the skin; and this swelling is sometimes succeeded by an oozing of moisture from the wound: but all this is soon removed by rubbing on it a little soap liniment. When the vein is really inflamed, there is generally a discharge of blood some time after the operation: and if this do not happen, the swelling extends to the gland under the ear, the whole being extremely tender and painful, often rendering the horse almost incapable of masticating or swallowing. When the disease is improperly treated, or suffered to take its own course, sinuses form by the side of the vein; so that the probe may be passed in various directions, generally upward towards the gland, sometimes inward among the muscles of the neck.

The actual cautery is undoubtedly the most effectual application at first; but when the disease has been suffered to proceed so far as we have now described, it is necessary to keep the orifice open, that the matter may escape freely; and, by injecting a solution of blue or white vitriol, cause it gradually to heal from the bottom.

When the gland under the ear is much swollen, and very painful, a poultice should be applied; but when the swelling feels hard, and without tenderness, a blister is more effectual.

In taking leave of this subject, which may appear to some of my readers, to be spun out to an unnecessary length, I must beg leave to observe, that wounds in general, more particularly those of circumscribed cavities, require so much care and consideration in order to be treated with success, as to convince me of the propriety of giving a detailed description of them.

### *Diseases of the Eye.*

Among the various diseases to which domestication and improper management have subjected the horse, those of the eye are more frequent and often more obstinate than any other; and what makes this subject peculiarly interesting and impor-



tant, is, that unless a horse's eye be absolutely perfect, he is liable to start and stumble: and it is allowed that a horse, whose visual organs are imperfect, is often more unsafe to ride than one totally blind. Another consideration induces us to make some additions to this subject, which is, that these diseases, when allowed to exist any time, or when improperly treated, are scarcely ever cured; and, though apparently removed for a time, ultimately terminate in blindness; whereas, by seasonably applying proper remedies, the eyes have been perfectly and permanently restored. When the disease first appears, our treatment must in some measure be guided by the state of the horse's condition, strength and age. Such as are young and in high order, require at first, both bleeding and purging; but old horses, particularly when low in condition, cannot bear the loss of much blood, or the operation of a strong purgative; still local bleeding is proper, and a dose of laxative medicine. The local bleeding consists in opening the vein which appears to proceed from the inner corner of the eye, or in scarifying the inner surface of the eye-lid. This operation is proper in all circumstances.

Horses of the former description often require a repetition both of the bleeding and purging, with a cooling diet and frequent exercise. The most essential local remedy is *blistering* the cheek and temple, so as to create a considerable discharge, and if the first application be not sufficiently powerful, let the part be washed with soap and water, and a fresh blister laid on. I have found this far more effectual than setons or rowels, and have now greater dependence on it than on any other topical remedy.\* When the inner surface of the eye-lid appears unusually red, it is more particularly proper to scarify it with a lancet, during the first stage of the complaint, while the eye is extremely irritable, and the inflammation considerable.

The following lotion may be frequently applied with a soft sponge; but no force should be employed to get it under the eye-lids:

## EYE WATER.

## No. 1.

Tincture of opium,	-	-	-	-	2 dr.
Water of acetated litharge,	-	-	-	-	1 dr.
Pure water,	-	-	-	-	8 oz.
Mix.					

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\*In blistering the cheek, it is necessary to prevent the horse from rubbing it off about the manger or other parts, as he then generally gets some of it into his eye, whereby the inflammation is considerably increased, and the eye lids are often so swollen from this cause, that total blindness is produced for several days. The *cetron* is on this account often preferred.



## No. 2.

Ext. of hyosciamus or hen bane,	-	-	1 dr.
Pure water,	-	-	8 oz.
Rub them together in a mortar, pouring on the water gradually; and, when perfectly mixed, add, of the water of acetated litharge,			
	-	-	1 dr.

When the inflammation abates and the horse begins to open the eye more perfectly, we often observe a cloudiness on the surface, sometimes so considerable as to intercept the light, and prevent vision. This, however, may soon be removed by putting into the eye some stimulating powder, or by washing the eye with a solution of white vitriol, two or three drams to eight ounces of water. When by these means the disease has been removed; we should carefully guard against its recurrence, by exercising the horse regularly, and avoiding such things as may suddenly suppress or check perspiration. Moderate feeding too, and good grooming are necessary. By continuing this kind of management, the eye will gradually recover its strength; but if these precautions be neglected, the disease generally returns; for though the eye appears to be quite recovered, it cannot be supposed that so delicate an organ can be suddenly restored to its original strength after such an attack. As horses are too frequently treated improperly, it is not to be wondered at, that this disease should so often return after having been apparently cured; or ought we to attribute it to any peculiarity in the constitution of the horse, or in the structure of his eye. The disease we have now been describing is that which arises from some internal cause, either a general fulness of the system, or partial determination of blood to the eye, in consequence of suppressed or diminished perspiration. When the eye becomes inflamed from a blow, a bite, or any external injury, it is generally soon cured, merely by washing the eye with the above lotion; but when the injury is considerable, bleeding and purging, and particularly local bleeding, are also necessary.

When the eye itself is wounded, so that the *humors*, as they are termed, run out from the wound, blindness must be the consequence. But if the surface of the transparent part or glass of the eye be slightly scratched only, and the whole surface or part of it become opaque, or have a *film* as it is commonly termed in consequence, such opacity is often removed by throwing under the eye-lid some stimulating powder, such as salt. If this fail, a little finely livigated glass, mixed with honey, may be put under the eye lid, by which it will soon be diffused over the surface of the eye. In these cases however,



such applications are not to be used, until the violent inflammation, which the accident occasions, has abated. Among the various diseases of the eye, described by writers on farriery, there is one which they term *moon blindness*, from its supposed periodical recurrence. This complaint is considered incurable, perhaps justly; but I have little doubt that it might be prevented. When the eye becomes inflamed from an internal cause, and the inflammation is allowed to exist for any time, a weakness of the part is the consequence; and though the inflammation be removed, the weakness will continue. But if the causes which first produced the complaint be avoided, or, in other words, if the horse be properly exercised, fed and groomed, the part will gradually recover its original strength: if, on the contrary, as soon as the inflammation is gone off, the exciting cause be again applied, the eye will more readily become diseased than it did at first; being in a weak state, and consequently more irritable, or susceptible of inflammation. The second attack will of course increase the weakness or disposition to disease; and after this the case may be justly deemed incurable. After repeated attacks the interior parts of the eye become diseased, and at length a *cataract* or incurable blindness takes place. It often happens, however, that the eye continues in this fluctuating state some time. In some cases a *cataract* forms rather suddenly.

I have often met with cases, where a small speck or opacity formed in the *crystalline humor*, and continued without alteration for twelve months. In one case no alteration happened in two years: but this speck or opacity, in the inner *humor* or *crystalline*, always hinders vision in some degree, and is frequently the cause of a horse's starting.

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### *Locked Jaw.*

I have lately met with a case of locked jaw, that appeared to have been caused by a wound in the foot, which was completely cured by the following treatment:—Upon examining the horse, I found the wound in the foot nearly healed; the jaws so closed that he could not even take food in his mouth, though he was constantly endeavoring to do it, and appeared very hungry, having been incapable of eating any thing about twenty-four hours before I saw him; the muscles of the neck were in a natural state, though the jaws were so closed as to prevent his taking food into his mouth; the teeth were not absolutely in contact; and we were able, but with great difficulty, to introduce gradually a large dose of opium and camphor. When we



first attempted to give this draught, the animal appeared so agitated and resisted so much, that it required the assistance of several men to give it. As soon as the medicine was given, a strong blister was applied to the spine, or middle of the back, beginning at the withers, and continuing it the whole length of the spine, even to the basis of the tail: the blister was carefully rubbed in, and afterwards a fresh quantity was spread upon it, in order to expedite its action. A caustic was then applied to the wound in the foot. In about six hours we endeavored to give some strong gruel, and found much less difficulty in doing it than in giving the medicine at first. The jaws, however, were still nearly close, and some dexterity was required to pour the gruel into the throat. Soon after this another dose of opium and camphor was given, and water gruel several times. During this time the jaws appeared to be rather more open, and there was less difficulty in giving the gruel. About twenty-four hours after the application of the blister, during which time he had two strong doses of opium and camphor and some gruel, the horse was able to feed, and even to eat hay. Another dose, but weaker, of opium and camphor was given; the complaint did not return. The fatality of this disease in horses, and the consideration that a clearly stated case be more closely followed than a general description of the treatment have induced me to give a detailed account of this successful case.

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### *Fever.*

In the former editions of this work, fever was considered either as a *simple* or original complaint, arising from suddenly suppressed or checked perspiration, or as a *symptomatic* or complicated disease, depending upon an affection of one or more of the internal organs, or their membranes. In both cases bleeding was recommended as an essential remedy. My practice since that time has not given me reason to change this opinion materially; but as some modern writers on farriery, have described another kind of fever, termed putrid, or *typhus*, in which bleeding has invariably been found to be injurious, I think it necessary to state the observations, which an extensive practice has suggested to me on this subject. The grand characteristic of fever I conceive to be, an unusually quick pulse, i. e. from seventy to an hundred in a minute; a peculiar kind of sensation which it gives to the finger, as if it were struck sharply by the vibration of a cord, and at the same time a feebleness, or smallness, quite different from that gradual swell of the healthy pulse. When a horse labors under considerable



debility, either from hard work, want of sufficient food, or other causes except fever, the pulse is more or less languid or weak; sometimes slower, at others a little quicker than usual; still, however, it swells gradually, and does not give that sensation we have described, and which physicians term *hardness*.

In fever there is either a total loss or a diminution of appetite, and the animal appears to be in pain; the natural evacuations (dung and urine) are generally deficient; and upon lifting the eye-lid, we generally find it unusually red. The mouth feels hotter, and the tongue is commonly dryer than usual.

In simple debility or weakness, whether it be occasioned by hard work, or any other cause except fever, the mouth and tongue are in their natural state; the pulse, though weak and not easily felt if we press much upon the artery with the finger, does not give that sharp hard stroke which characterises *fever*; the horse readily sweats; and when the weakness is considerable, the ears and hind legs will feel rather cold, and his flanks generally move quicker than usual. If blood be drawn, it will be found very different from that of a horse laboring under fever or inflammation. (See *Bleeding*.) The appetite, though diminished, is not quite gone; the inner surface of the eye-lid is seldom unusually red, often less so than in health; and the horse does not appear to be in pain. Though bleeding in such cases is extremely injurious, a mild laxative is useful, unless the dung be softer and in greater quantity than natural; and if there be a deficiency of urine, or any difficulty in voiding it, a diuretic, composed of camphor and nitre, should be given. This symptom, however, seldom occurs in these cases. After the laxative, tonics, with a nutritious diet and good grooming or nursing, generally restore the animal in a short time to health. This disease is sometimes mistaken for fever, and treated improperly; they are cases of this kind, however, that farriers so frequently cure under the name of fever by medicines of the cordial or tonic kind.

I never saw any kind of *fever*, in which bleeding and generally laxatives were not manifestly useful, if employed judiciously at an early period; that is, if the quantity of blood drawn, and the strength of the laxative, were properly adapted to the strength of the animal and the violence of the disease, and employed at its first appearance. Several cases have occurred where debility quickly succeeded the inflammatory commencement, and rendered bleeding, sometimes purging also, highly improper; and it is perhaps such cases, that some writers have mistaken for the *typhus* or low putrid fever; others appear to me to have copied their description of it from that given by writers on human diseases.



In cases of simple debility I have found the following medicines of great use, giving the laxative in the first place if the horse be costive, or even if the bowels be in a natural state; during its operation, however, it is advisable to give strong gruel instead of bran mashes.

## LAXATIVES.

Barbadoes aloes,	-	-	-	-	-	-	3 dr.
Powdered canella,	-	-	-	-	-	-	1½ dr.
Prepared kali,	-	-	-	-	-	-	1 dr.
Mint water,	-	-	-	-	-	-	8 oz.

Mix for one draught.

## TONIC.

Yellow Peruvian bark,	-	-	-	-	-	6 dr.
Cascarilla,	-	-	-	-	-	1 dr.
Powdered opium,	-	-	-	-	-	½ dr.
Prepared kali,	-	-	-	-	-	1 sc.

Sirup enough to form a ball for a dose.—It is often necessary to increase the proportion of bark, and sometimes of the other ingredients; but when the horse becomes costive, the opium must be omitted.

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The most proper food on these occasions is good sweet oats and the best hay given frequently in small quantities. The horse should be allowed to drink also frequently; his exercise should be very moderate; and when the weakness is considerable, he should be allowed to exercise himself in a large stall or box, and not taken out until he gets stronger. If he become costive, a clyster or even a mild laxative, may be given. I have met with a disease in colts of about two or three years old, in which the debility was extremely obstinate. The disease began with swelling about the chest and belly, great weakness, diminished appetite, and rather a quick pulse, without the hardness characteristic of fever. In the most remarkable case of this kind, the colt (three years old) was attacked in the month of May, while running in a fine piece of grass; the first appearance of illness was his separating himself from his company, standing with a dejected appearance, and not grazing as usual. When examined, considerable swelling was observed about the chest, between the fore legs; and when I saw him, the pulse was about sixty in a minute, yet soft: he did not refuse his food entirely, but appeared indifferent about it; nor was there any symptom which indicated an affection of the internal or-



gans. He voided his urine without difficulty, and in the usual quantity: but as the dung appeared harder, and in less quantity than is usual with horses at grass, a weak laxative was first administered. He was taken up and put loose into a cool stable, which opened into a large court, the door being left open; he was offered frequently young lucerne, clover, &c. and allowed to drink when he choose it. The swelling and weakness increased considerably; a medicine composed of bark, vitriolated iron, (salt of steel) and a little canella, was therefore given, and a more nutritious diet allowed; viz. gruel, arrow root powder boiled in the usual way with water, and a handful of oats now and then. The tonic medicine so improved his appetite, that he readily took a moderate quantity of this food; yet the weakness continued, the swelling increased, and the pulse remained in a low feeble state, but rather slower. The swelling was scarified, and a large quantity of water evacuated, by which it was greatly diminished; the dose of tonic medicine was increased, and joined with diuretics occasionally. His appetite improving, he was allowed to take an unlimited quantity of the most nutritious food, which was varied so as to keep up his appetite; and by persevering in this plan about a fortnight he appeared to be quite recovered. About a fortnight after this, the disease returned with greater violence, the swelling extended over all the under part of the chest and belly, the pulse became very weak, but not much quicker than before, and the animal was extremely feeble. By persevering in the use of the tonic medicines, and assisting them by the most nutritious diet, such as strong gruel, new milk, oats, &c. the colt perfectly recovered. I have seen several cases of this kind, one of which proved fatal from the negligence of the owner, who did not supply the colt with a sufficient quantity of nutriment, which seems to be as necessary as medicine; and when a colt in this complaint refuses his food, I have found it necessary to drench him frequently with strong gruel, boiled arrow root, sago or milk. It is proper also to vary the food, so that the animal may be tempted to eat oftener than he would otherwise: for this purpose carrots, lucerne, &c. are useful. The oats should be perfectly sweet; and should the colt be found to prefer them in a moist state, they may be sprinkled with water.

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### *Epidemic Fever, or Distemper.*

The epidemic diseases of horses generally appear in the form of a *catarrh*, or cold. The first symptoms are cough, heavi-



ness of the head, the eyes often watery or a little inflamed; sometimes there is a quickness of breathing; and the inflammation of the membrane which lines the throat, nose and wind-pipe is often so considerable as to cause a difficulty in swallowing; the pulse is generally quicker than usual. If the proper remedies be not employed at this period, the horse becomes very weak, and considerable fever takes place; the appetite goes off, the cough and quickness of breathing increase; and debility is so great that the animal staggers in his walk. There is an offensive discharge from his nose; and after lingering some time, the horse dies from a consumption. More commonly, however, a discharge of white matter takes place from the nose, after the disease has continued a few days, by which the cough and other symptoms appear to be lessened; but though the horse slowly recovers his health and strength, a troublesome and sometimes incurable cough remains. When the disease is properly treated at its commencement, the horse perfectly recovers in a short time, unless the attack is very violent; and even then by judicious management the cough as well as the other symptoms may be cured.

When an epidemic happens, horses should be carefully watched; and on the first appearance of any symptoms of the disease, the horse should be bled moderately, unless he is in low condition, or previously exhausted by hard work, old age, or unwholesome food. After bleeding, give the following laxative, and let the horse's diet consist of bran mash, sweet hay, and a very small quantity of oats. When the attack is moderate, these remedies are generally sufficient to effect a cure, taking care to prevent a relapse by nursing, and giving every day a dose of some antimonial preparation, of which that which resembles Dr. James' fever powder is the best.

But when the inflammatory symptoms are at first violent, when there is a quickness of breathing, soreness of the throat, and distressing cough, a blister to the throat is necessary: and unless weakness forbids, bleeding even to three quarts is proper. A laxative is always beneficial at first, if the bowels be not already too open; after which the antimonial with nitre is to be given daily. Warm clothing, and frequent hand rubbing to the legs, are useful; but a close stable is injurious. The horse should be turned loose into a large stall: and if a discharge from the nose appear, let it be encouraged by causing the vapor of warm water to pass through the nostrils, and clothing the head and ears. When the disease, from being neglected or improperly treated at first alarming, and the weakness considerable nothing but tonic medicines and a nutritious diet can do any good.



## LAXATIVE.

Barbadoes aloes, - - - - - 2 dr.  
 Tartarised antimony, - - - - - 1 dr.  
 Mix first with about 4 oz. of warm water; and then add 4 oz.  
 castor oil. To be given at one dose.

*Molten Grease.*

This also is a disease of the intestines, and generally dependant on some constitutional affection. Horses that have been well fed and had but little exercise are more liable to this complaint. Though such horses appear sleek and fat, they are not fit for violent or long continued exertion, unless brought to it gradually; therefore, when suddenly brought to work in this state, and particularly if employed in hunting or other violent exercises, a fever is often the consequence, which commonly depends upon general inflammation or increased action of the whole arterial system. In this disease, nature sometimes makes an effort to remove it; that is, a violent purging not unfrequently takes place; and the *mucus*, which is constantly formed upon the inner surface of the bowels in order to lubricate and protect them from the action of any acrimonious matter that may happen to be passing through, is now formed in greater quantity, and is often so abundant as to appear something like fat mixed with the dung. When blood is drawn from a horse in this state, a large quantity of the inflammatory crust (the *coagulable lymph*, or buff colored jelly, before described) appears on its surface.\*)

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\* According to Mr. John Laurence, molten grease consists in a colliquation or general melting of the fat of the body, great part of which is absorbed, and thrown upon the blood and upon the intestines, whence it is voided with the excrement. Mr. Blaine, in his treatise on Veterinary Medicine, has called this explanation of the disease an absurdity! and though I feel all due respect for the efforts of Gibson, Bracken and Bartlet, as well as for their commentator and panegyrist, Mr. John Laurence, I am compelled by experience and the knowledge I have obtained of the animal economy from the valuable instructions of those eminent teachers Dr. Baillie, Messrs. Cline, Abernethy and Cooper, to acknowledge that Mr. Laurence's description is really an absurdity, and affords a convincing proof of his incompetency either to teach or practice the Veterinary Art.

I am sorry to find myself under the necessity of making this remark; but as an opinion so erroneous must lead to practical errors, I feel it a duty so to do. And I must beg leave to add, that what Mr. Laurence has since written on the disease, his explanation of what he terms an *inadvertent inaccuracy* in his description, his satirical remarks on Mr. Blaine, and his attempt to show, that Mr. Blaine, in his explanation of the disease, meant to offer it to the world as a discovery of his own, and that Osmar, who wrote about 1765, had anticipated him, appears to me a strong confirmation of Mr. Blaine's accurate knowledge of the animal economy, and of Mr. Laurence's total ignorance of the subject.



*Molton grease*, therefore, is not to be considered as a distinct disease; but only as a symptom, which sometimes appears in *general inflammation*, or fever; it happens more frequently, however, in the latter. When a horse labors under fever or general inflammation, we most commonly find some of the internal organs more affected than others. When there is a difficulty of breathing, the flanks moving with unusual quickness and the nostrils expanded, it indicates an affection of the lungs: when molten grease appears, it shows, that the mucus membrane of the bowels is more particularly affected: sometimes both these parts are affected at the same time. The principal remedy in this disease is copious bleeding, according to age, strength, and other circumstances of the case. (See *Bleeding and Fever*.) It is often necessary to repeat the operation: oily laxatives, are to be given, and rowels inserted in the chest and belly, if the lungs be the principal seat of the disease; and the sides may be blistered, or the mustard embrocation rubbed on the sides and belly. In molten grease, or when the bowels are affected, if there be a copious purging, let no attempt be made to suppress it; rather let it be encouraged by giving frequently decoction of linseed, gum Arabic dissolved in water; starch, or the powder of arrow root, boiled in water. When the dung is voided in small quantity, but frequent, particularly if there be any knobs mixed with it, give a pint of castor oil, which may be repeated if necessary about two days after. In this case also it will be proper to rub the mustard embrocation on the belly. Should the disease continue after this and particularly if there be considerable irritation about the anus, the horse frequently ejecting a small quantity of excrement, and appearing to suffer much pain, the opiate clyster may be given. If this appear rather to increase than remove the pain and irritation, the dose of castor oil must be repeated, and a clyster thrown up, composed only of a little water gruel and a little oil.\*

Mr. Blaine, in his treatise on Veterinary Medicine, describes this disease somewhat differently, and considers it to be the same as the human dysentery. I must confess, however, that during an extensive practice of ten years, I have never met with a single case that resembled the dysentery described by medi-

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\*It is necessary on this occasion particularly, to be careful in exhibiting the clyster, as the gut is so extremely irritable and tender, that if the pipe be rough, and introduced without caution, it may rather do harm than afford relief: therefore let the pipe be perfectly smooth, covered with oil or lard, and not forced in with violence: it is probable that a small short tube of bone, about three times the bulk and length of the pipe used in human medicine, would be preferable on this occasion to that commonly employed.



cal authors. I have often observed, during the progress of symptomatic fever, internal inflammation, mucus mixed with the dung, which had sometimes the appearance of part of one of those long white worms so often found in horse's bowels; at others it resembled a membrane. I have observed the same thing in horses apparantly healthy, or after the operation of very strong physic. I have also seen many cases, where there was *tenesmus*, or considerable irritation in the rectum, the horse frequently voiding a small quantity of dung, and appearing in pain. But this was always either a symptom of some more important complaint, and easily removed, or the effect of physic, and very unlike dysentery. (See *Inflammation of the Lungs and Bowels, and Symptomatic Fever.*)

#### OPIATE CLYSTER.

Opium,	-	-	-	-	-	-	-	-	-	1 $\frac{1}{2}$ dr.
Warm water,	-	-	-	-	-	-	-	-	-	8 oz.
Mix.										

To this add about a quart of starch water; that is, starch boiled in water in the usual way, and of a proper consistence for a clyster.

### *Diseases of the Urinary Organs.*

Suppression or stoppage of urine may arise from several causes. It generally takes place when horses are attacked with flatulent colic, and is then improperly considered as the cause of that complaint; but when the colic is removed, the horse stales freely. In obstinate cases of suppression, where the horse has not been observed to stale for two or three days, it is necessary to examine the bladder, which may be easily done by introducing the hand into the rectum or straight gut, through which the bladder is readily felt when distended with urine: when the bladder is found in this state, an evacuation must be speedily obtained, or the animal may be destroyed. In mares there is no difficulty in introducing a catheter, or hollow tube, into the bladder, through which the urine will flow out. In a horse this operation is not practicable, on account of the great length and curvature of the passage: it has been recommended however, in such cases, to introduce a bougie, or long smooth probe, into the passage, and to pass it forward until it arrives at that part where the principal curvature is: that is, about two or three inches below the anus. The probe being held steadily in this situation by an assistant, the operator is to make an in-



cision carefully, so as to cut upon the top of the probe, and lay open the passage. This being done, a hollow tube, even the finger may be readily passed into the bladder, and let out its contents.

In making this incision, the skin is to be drawn on one side, so that when the operation is finished, and the urine evacuated, the opening in the urethra, or passage, and in the parts which cover it, will not correspond; and the opening in the former will be completely covered. Without this contrivance a fistulous opening would remain during the horse's life: indeed such a consequence is to be apprehended, in whatever way the operation is performed; but fortunately such obstinate cases of suppression very rarely occur.

When the bladder upon being examined through the rectum, is found empty, or when it cannot be felt at all, the suppression must depend on a disease of the kidneys. When these organs are much inflamed, they cease to form urine, or form it only in very small quantity; but the most common cause is a gradual decay of the kidney. (See *Inflammation of the Kidney*.) This is known by the horse having become thin and weak gradually; having been attacked before with similar complaints but in a less degree; having been observed to move his hind legs awkwardly in trotting; and giving way when pressed upon the loins. When it is clearly ascertained, that the suppression of urine arises from this cause, and particularly if the horse be old, and extremely feeble, there is no chance of recovery, and death soon terminates his misery. It may happen, however, that the kidneys cease to perform their office, or do it imperfectly from other causes, without having suffered an alteration or decay in their organization or structure. In such cases, provided no symptoms of inflammation exist, the following drink may be given, and repeated when necessary.

Balsam of capavi,	-	-	-	-	-	-	-	$\frac{1}{2}$ oz.
Mint water,	-	-	-	-	-	-	-	12 oz.

Mix for one dose.

It may be necessary on some occasions to give a larger quantity of the balsam: it is advisable however, to begin with a small dose, and carefully watch its effect: if it appear to increase the animal's pain, without causing an evacuation, there is reason to suspect that some mistake has been made as to the cause of the suppression: and the symptoms should be again carefully investigated. It has been observed before, that suppression of urine is most commonly occasioned by spasm in the neck of the bladder, and sometimes by an accumulation of hard excre-



ment in the rectum. In the former case, the camphorated ball soon affords relief: in the latter, it may be obtained by drawing out the hard excrement with the hand, clysters and a laxative.

We sometimes observe horses frequently endeavoring to stale, voiding only very small quantities, and that with some degree of pain or straining. Such symptoms depend on a diseased irritability or tenderness of the bladder, so that when only a small quantity of urine gets into it, it immediately contracts, in order to squeeze it out. It may sometimes depend on the urine being unusually strong or acrid: in either case the following drink may be given, and the horse should be allowed to drink freely. If he refuse to drink, he should be drenched frequently with water gruel, decoction of linseed, marshmallows, &c. If he be costive give castor oil and clysters. This disease is commonly occasioned by *blisters*, the cantharides of which they are composed being absorbed into the circulation.

#### THE DRAUGHT OR DRINK.

Camphor,	-	-	-	-	-	-	1½ to 2 dr.
Powdered opium,	-	-	-	-	-	-	½ dr.
Gum Arabic, dissolved in warm water,	-	-	-	-	-	-	4 cz.

Mix for one dose.

And let it be repeated if the symptoms continue, about 12 hours after, giving during the interval, gum Arabic dissolved in water, decoction of linseed, &c. From too great exertion in leaping, or from other causes, a horse sometimes voids bloody urine. In such cases the mucilaginous drinks, composed of gum, linseed, &c. are proper. It is necessary also to give the following draught, night and morning until the urine assumes its natural color.

Pomegranite bark,	-	-	-	-	-	-	1 oz.
Water,	-	-	-	-	-	-	1 pint.

Boil them about half an hour: strain off the liquor, and add

Powdered allum,	-	-	-	-	-	-	1 oz.
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For one dose.

If this prove ineffectual, add to it about a dram or two of vitriolic acid, or even more, provided it be so diluted with water or the above decoction of pomegranite, as to do no injury to the throat: this point may be determined by dipping the finger into the mixture, and applying it to the tongue. If it be so sour as to occasion some degree of pain, or a very unpleasant sensation, more water may be added.



When the disease continues some time, there is danger of its proving fatal: the horse's strength must then be supported by the most nutritious diet; and tonics, such as bark with opium. Vitriolated iron may also be tried, warm embrocations may be rubbed upon the back or loins, or a warm plaster laid on it, composed of common turpentine, Burgundy pitch, and bee's wax; four parts of the first, two of the second, and one of the third article. When the urine assumes a brown or coffee color, the pulse becoming very quick and weak, intermittent or irregular, and the animal getting gradually more feeble, there is no chance of recovery.

### *Cough.*

This disease so frequently occurs, and is so often rendered incurable by improper treatment, that it appears necessary to give it a more particular consideration than we have done in the former editions of this work. *Catarrh* or cold is generally the origin of those troublesome and often incurable coughs, which have been named *chronic coughs*. Sometimes, however, they depend on irritation in the stomach and bowels. When a horse *catches cold*, as it is termed, if the attack be not violent, it is seldom thought necessary to take him from his usual work; he is bled moderately, takes a little nitre, and the complaint receives no further attention, except a bran mash now and then, with nitre. By continuing his work, and becoming occasionally exposed to wet and cold, there is constantly an undue determination of blood to the membranes of the throat, windpipe, &c. or, in other words, the catarrhal inflammation is kept up by these means, till at length the membranes become thickened and irritable to such a degree, that the cold air or the vapors and dust of the stable, irritate the membrane of the windpipe, so as to excite coughing almost continually. When the inflammation has been but moderate, the irritability of these membranes will not be so considerable, and the horse will only cough now and then; or when the membrane is irritated by the food or water, or by the dust of his hay or corn, or perhaps by two great a secretion of mucus.\*

\*All these membranes are lubricated by a mucus fluid, which is constantly forming on their surface. When perspiration is checked by exposure to cold, an unusual quantity of blood is thrown upon these membranes; which causes a larger quantity of the mucus fluid to be formed. Hence the discharge from the nose in catarrh: for as the horse breaths only through the nostrils, the mucus discharged from the lungs by coughing does not pass into the mouth as in man, but into the nostrils. It is probable, that the mucus formed upon the membranes, when affected with catarrh, is rath-



In violent colds the inflammation of the membranes is often very considerable, so as to render swallowing painful and difficult, and cause a *rattling* in the head, as it is termed; that is from the increased secretion of mucus within the nostrils, or from swelling of the membranes which line them, the air is interrupted in its passage, causing a peculiar sound in breathing. In some cases the inflammation extends to the branches of the windpipe, in consequence of which many of the finer branches are either partially or wholly plugged up, by the coagulable lymph which is poured out. Sometimes there is so much coagulable lymph poured out in the windpipe as to render respiration difficult, and causes that sonorous breathing which is technically called *roaring*. When some of the branches of the windpipe are plugged up with coagulated lymph, it causes also quickness of breathing; for the lungs being now unable to contain so much air as they did before, the animal is obliged to respire more frequently to make up the deficiency. The cough in this case is very distressing and almost continual, and sometimes recurs with so much violence, that we feel apprehensive of its bursting some blood vessel. Broken wind is generally the consequence of this stage of catarrh. (See *Broken Wind*.) When the complaint has proceeded thus far, there is no probability of curing it; but if it be properly treated at first, it scarcely ever runs such lengths; it is therefore highly necessary to pay attention to colds, though they may appear trifling, and keep the horse from work until perfectly cured. Were this done we should seldom hear of incurable coughs, roaring, broken wind, &c.—complaints now so common, and so frequently the cause of disputes and law suits in the purchase and sale of horses. On the first attack of cold, let the horse be bled in proportion to his strength and the violence of the attack; then give a laxative, and let his diet consist of hay and bran mashes. As checked perspiration is commonly the cause of the disease, the head, ears, and whole body should be kept much warmer than usual; a close stable, however, is improper. Warm water and warm mashes should be given frequently; and when the horse is wisped or brushed, which should be done twice or three times a day, there should be an active man on each side for the purpose; when they have finished and replaced the clothes, let them rub the legs briskly for some time with their bare hands; the horse should also be well littered, and as the straw becomes

---

er of an acrid or stimulating nature, from being loaded with saline matter: this indeed is sometimes so considerable, as to inflame the skin of the lip over which it passes. This happens also sometimes in diseases of the eye, where the tears or water from the eye are so acrid, as to inflame the skin of the nose which it flows over.



damp from his staling upon it, let it be immediately removed, and some fresh dry straw thrown in. After the operation of the laxative, give one of the fever powders, or the following ball, every night and morning. If it occasion profuse staling, or purging, it should be given in smaller quantity, or less frequently, or discontinued a day or two. When the symptoms do not abate after the bleeding and laxative, and particularly if the cough increase, and the horse appear to feel pain and difficulty in swallowing water, a *strong blister* should be immediately applied about the throat and under the ears, and the bleeding should be repeated. By these means the most violent colds are generally cured in a short time. But when the complaint has been neglected at first, or improperly treated, a discharge of white matter often takes place from the nostrils, and the horse becomes very feeble. Under these circumstances bleeding would be improper; but a very mild laxative may be given, unless the bowels are already open, and a blister to the throat is eminently useful. The discharge should be encouraged by *steaming the head*; that is, by tying the horse's head to the rack, and throwing a hot mash into the manger, immediately under his nose. Strong gruel should be given freely to support his strength; and the ball (No. 2.) every night. In the third stage of the catarrh, that is, when coagulated lymph has been thrown out upon the membranes of the windpipe or its branches, there is little chance of a cure.\*

The following expectorants may afford some relief however, and should therefore be tried. Blistering the throat has also been recommended; but I have several times given it a fair trial without success.

The next kind of cough to be described is that which seems to depend merely upon an unnatural degree of irritability of the membrane which lines the *larynx*, or top of the windpipe; and may be distinguished by being less violent, and not being accompanied with an unusual quickness of breathing;† the cough generally comes on after drinking or feeding, particularly when

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\*I have heard of three cases, where a horse, having had that violent and distressing cough for some time, which has been described in the text as a consequence of the third stage of catarrh, was spontaneously relieved, by coughing up a large piece of coagulated lymph. In one case the horse was galloped violently up a hill for the purpose: the cough which this exertion occasioned was so violent, that the animal could scarcely stand: at length a considerable quantity of coagulated lymph was discharged, and the horse though supposed to be broken winded before, perfectly recovered.

†It is supposed, that in some cases this kind of cough depends upon the stimulating quality of the mucus fluid, which is formed upon the part. It is advisable, therefore, to add to anodyne medicines such as are of an oily or mucilaginous quality, which if not efficacious, are certainly innocent.



the hay or oats are dry and dusty. This kind of cough is always more troublesome in a close stable.

A blister to the throat is useful in this case; and if that be thought inconvenient, some warm embrocation should be rubbed about the throat and under the ears twice a day, and the head and neck kept warm; the hay and oats should be free from dust, and sprinkled with water. If the horse be inclined to eat his litter, let him be muzzled; if costive, give a mild laxative, and afterward the anodyne ball or draught every morning: moderate exercise is useful. It is sometimes difficult to cure this kind of cough; and when apparently removed, it often returns from trifling causes. By persevering in the above mode of treatment, however, I have generally succeeded.

With respect to the cough which is caused by worms in the stomach or bowels, it may be distinguished by the general appearance of the animal; he is commonly hidebound, has a rough dry coat, and becomes thin though well fed; he appears dull, and is fatigued by moderate exercise. The most certain criterion, however, of the existence of worms in the bowels is the appearance of a white stain just beneath the anus, or their being voided with his dung.

This kind of cough is less violent but more frequent than the former kinds. (For treatment of it, see *Worms*.)

#### BALL FOR CATARRH.

##### No. 1.

Emetic tartar,	-	-	-	-	-	-	1 dr.
Powdered aniseeds,	-	-	-	-	-	-	3 dr.

Sirup enough to form a ball for one dose.

#### BALL.

##### No. 2.

Caneilla bark, powdered,	-	-	-	-	-	1½ dr.
Emetic tartar,	-	-	-	-	-	1½ dr.
Powdered opium from	-	-	-	-	1 sc.	to 1 dr.
Camphor, from	-	-	-	-	½	dr. to 1½

Sirup and flour to form a ball for one dose.

#### EXPECTORANT BALL.

##### No. 3.

Gum ammoniacum,	-	-	-	-	from 3 to 5	dr.
Powdered squills,	-	-	-	-	-	1 dr.
Opium,	-	-	-	-	-	½ dr.
Powdered ginger,	-	-	-	-	-	1 dr.

Sirup enough for a ball for one dose.



## EMBRICATION FOR THE THROAT.

No. 4.

Camphor,	- - - - -	$\frac{1}{2}$ dr.
Oil of turpentine,	- - - - -	$\frac{1}{2}$ oz.

Mix.—Add,

Olive oil,	- - - - -	4 oz.
Strong water of ammonia,	- - - - -	$\frac{1}{2}$ oz.

Mix.

## ANODYNE DRAUGHT.

Oxymel of squills,	- - - - -	2 oz.
Opium, [mixed with 8 oz. of water,]	from $\frac{1}{2}$ dr. to 1 dr.	
Linseed oil,	- - - - -	2 oz.

Mix for one dose.

## ANODYNE BALL.

Opium,	- - - - -	from $\frac{1}{2}$ dr. to 1 dr.
Camphor,	- - - - -	1 dr.
Powdered aniseed,	- - - - -	$\frac{1}{2}$ oz.

Soft extract of liquorice enough to form a ball for one dose.

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*On Shoeing.*

In describing the method of shoeing *flat and convex* feet, a wide concave or hollow shoe has been recommended in all the former editions of this book; I have to acknowledge, however, my obligation to the honorable Newton Fellows, for suggesting to me a much better method of shoeing such feet. In flat convex or pumice feet (see plate 4. fig. 1.) the sole is so thin as to be incapable of suffering pressure without giving pain to the animal, and causing him to go lame: and so flat or even convex as to be much exposed to pressure. The shoe commonly employed for such feet is wide and hollow, so that it bears only on the crust, a space being left between the sole and the other part of the under surface of the shoe. When the horse has travelled a short time on the road, this space becomes filled with dirt, gravel, &c. so that the sole is exposed to the same pressure, as if the shoe were flat, or the horse without shoes; it is obvious, then, that a shoe so narrow as to cover only the crust, and so thick as to raise it about three fourths of an inch from the ground, will more effectually protect the tender sole, than the wide hollow shoe; unless the horse be going upon a hard even surface, or the rider frequently dismounting to pick out



the dirt which accumulates under the shoe. I am convinced from the trials made of this narrow shoe, both by Mr. Fellows and myself, that it will be found the best method of shoeing *flat* or *convex* feet; and it appears to me very probable, that upon a fair trial it would be found the best shoe for general use. Perhaps even heavy draught horses would do better with it, than with the wide heavy shoe, which is now universally employed for them. It may be necessary to remark, that though the narrow shoe for covering the crust only was recommended by Lord Pembroke, and employed by his order in his own regiment, the First or Royal dragoons; yet for its particular application to *flat* or *convex* feet I believe we are indebted to the honorable Newton Fellows.

Perhaps I have dwelt longer on this subject, than some of my readers may think necessary; but it should be recollected, that it is intended only for those that are inexperienced in horses. It may be thought also, what I have written may tend to excite an unjust prejudice in the minds of those, to whom it is addressed; or that it may make them over cautious, and induce them to reject horses without sufficient reason; but, if we take into consideration the many defects or diseases, to which horses are liable; the difficulty of detecting them; the numerous deceptions that are practised; and the shifts and evasions sometimes resorted to; I trust that in what I have written, the candid reader will not accuse me of having gone too far, or that it will excite an undue prejudice against the horse dealer. I am aware, that there are men in that profession, who would descend to the deceptive practices I have occasionally hinted at; but have no doubt, that there are also to be found among them, men of integrity and honor.



THE HISTORY OF



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*M.<sup>r</sup> Colemans Patent Shoe*





*The expanding Shoe*

*Fig 1.*

*Plate 2.*



*The old screw Shoe*

*Fig 2.*



*LB. Neagle sculp Phil.<sup>a</sup>*







*Plate 3.*





*Plate 4.*

*Fig. 1.*



*Fig. 2.*











*The sensible Foot...aaa The sensible Frog. bb the sensible  
Bars, ecc the sensible Sole*









The internal surface of the Hoof and Sole.—a the laminated substance. b the groove for the Coronary Ring. c the internal surface of the horny Sole. d the internal surface of the horny Frog.





A Section of the foot. — a part of the large Pastern Bone, b the small Pastern, c the Coffin-bone, d the Navicula or Nut-bone, e the Frog, f the Sole, g the Crust, the red line between the Crust and Coffin-bone represents the laminated substance, h i the Flexor Tendon or Back Sinew, i k the fatty elastic substance between the Frog and back Sinew.





A back view of the Bones, Ligaments, and Tendons. *aaa* the back Sinew. *b* its sheath. *cc* the lateral Cartilages. *d* the bottom of the Coffin-bone.





A back view of the Bones, Ligaments, and Tendons, the Tendons having been removed in order to shew the Ligaments that lie immediately under them. *a* the smooth surface over which the back sinew passes, *b* the ligament which encloses the back sinew, forming a sheath for it, and keeping it in its situation: in this preparation some part of the ligament was removed, in order to shew the smooth surface *a*; *c* *c* *c* a ligament going from the sesamoid Bones to the small Pastern; its use seems to be that of giving strength to the Pastern Joint which from the oblique position of the Pastern Bones, would otherwise have been very insecure. I believe this ligament is sometimes broken in violent strains, or when a Horse is said to be broken down.





A front view of the Bones, aa the sesamoid Bones, b the large Pastern c the small Pastern, d the Coffin-bone.





A back view of the Bones aa the sesamoid Bones.  
b the large Pastern, c the small Pastern, d the Navicula or  
Nutbone, e the bottom of the Coffin-bone.



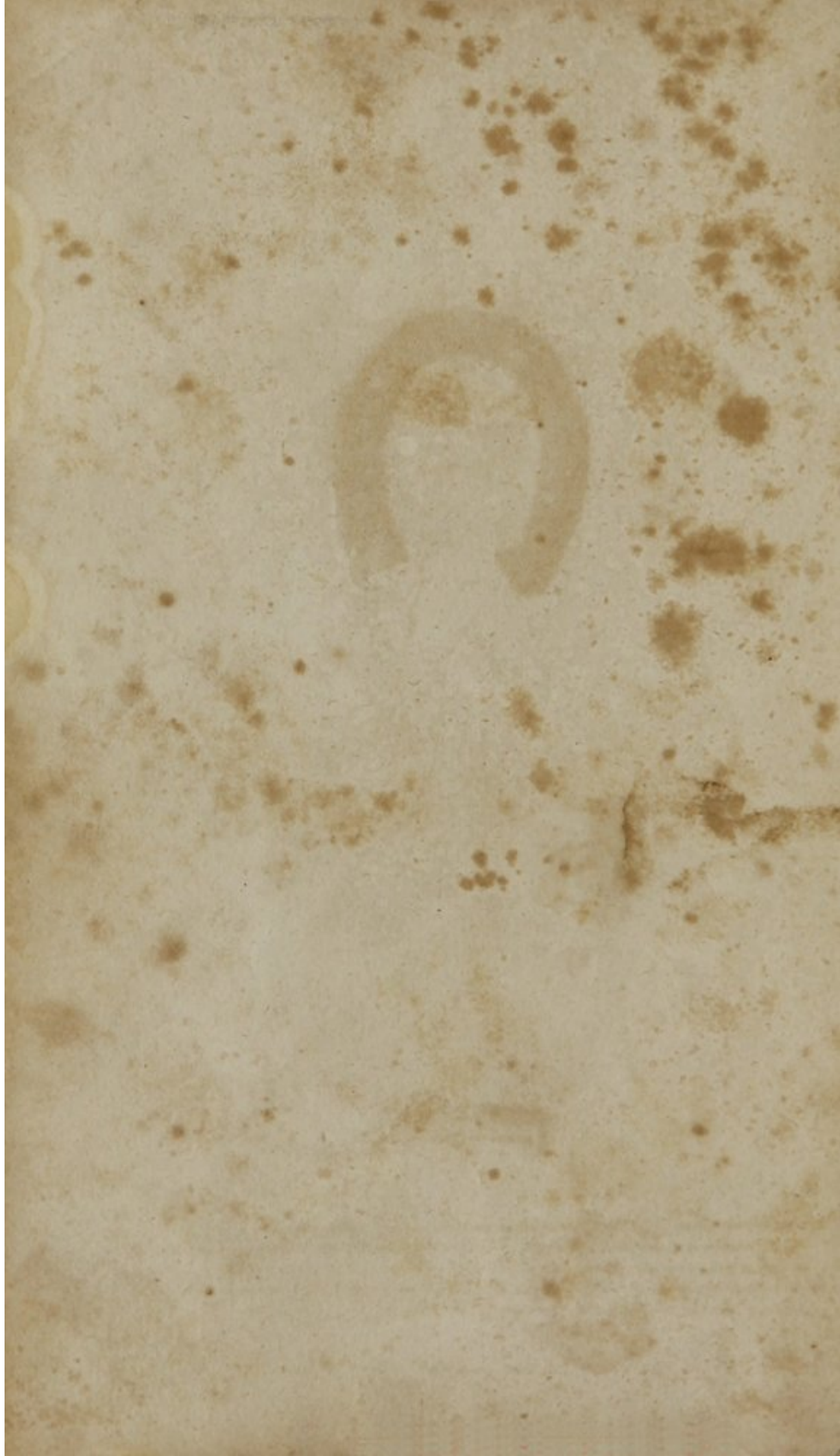






**A Frost Shoe.** — This Shoe is designed for slippery roads, and on each occasion renders a Horse perfectly secure; the sharp wedge-like substance at the Heel being merely screwed into the Shoe, may be removed and applied again at pleasure. — a the Shoe complete. b the female screw in the Heel. c the wedge that screws into b. d the Screw. e the key for fixing and removing the wedge.







# The Teeth, shewing the Age of a Horse

Teeth of 3 Weeks.



State of a Colts Teeth from 3 Months to 3 Years.



Colts Teeth of 3 Months.



A the Incisors.  
B the Separators.

C the Corners.  
D the Tusks or Tushes.





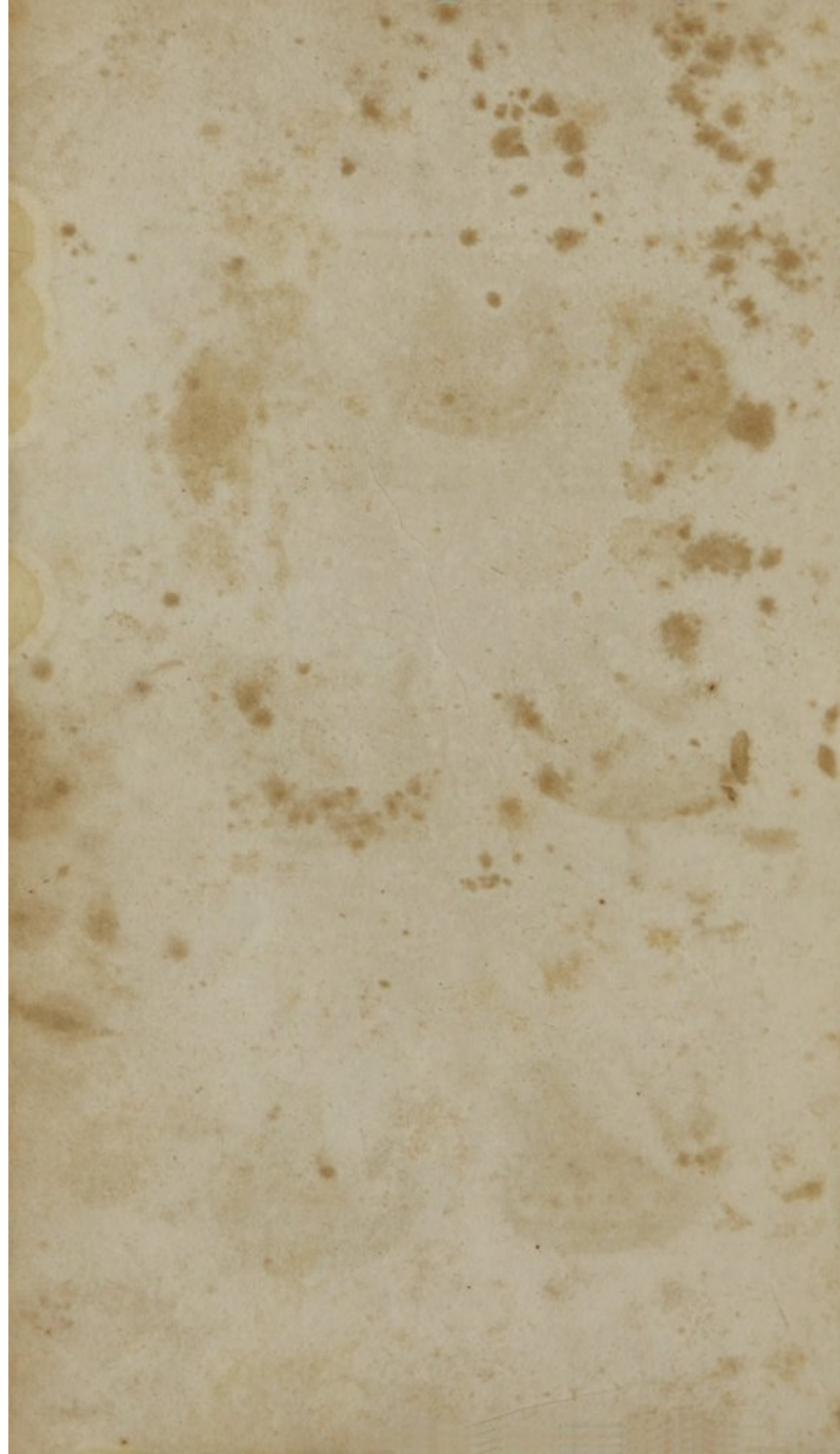




Fig 1



Fig 3



Fig 2



Fig 1. A perfect Hoof in a state of Nature...a. the Sole. bb. the Bars. c. the part on which the Heel of the Shoe is to bear, and where the Shoe is to terminate. & the Heels and quarters of the Hoof. e. the seat of Corns. & the Frog.

Fig. 3. A sound Hoof properly shod.







Fig. 1.



Fig. 2.



*Fig. 1.* A Hoof prepared in the common way in which the Frog has been deprived of its hard surface, the bars removed, a great part of the Sole cut away.—a the Frog b the Sole.

*Fig. 2.* A Hoof contracted in the highest degree.







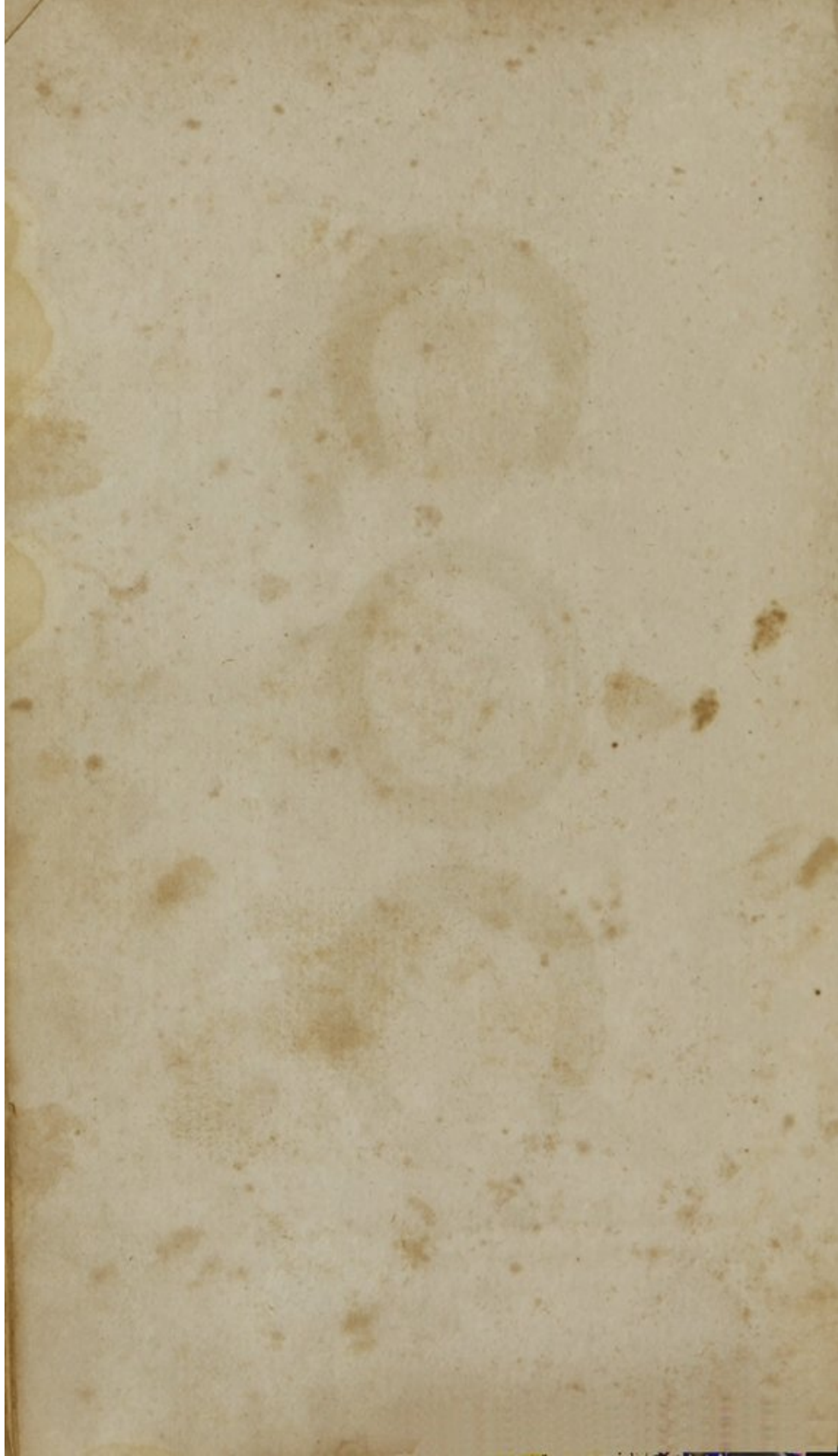


*Fig. 1.* The Concave Shoe for Feet where the Soles are flat or convex.

*Fig. 2.* The bar Shoe for tender Frogs.

*Fig. 3.* The Shoe for a sound Foot.







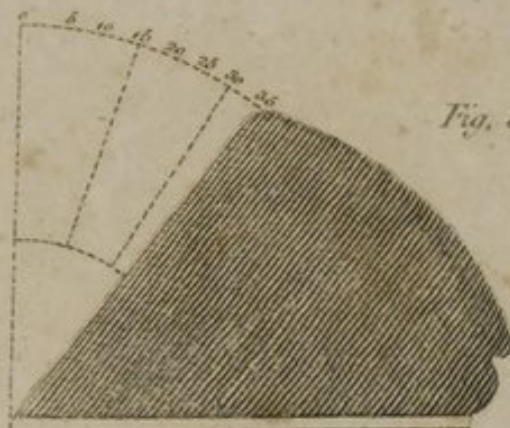


Fig. 3.

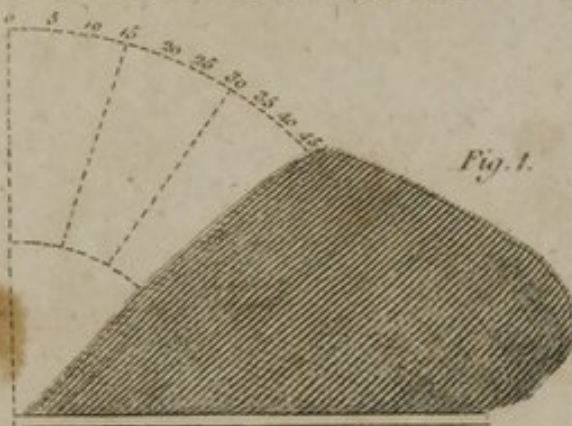


Fig. 1.

88. the proper degree of obliquity in the Hoof is marked 45 in the Scale.

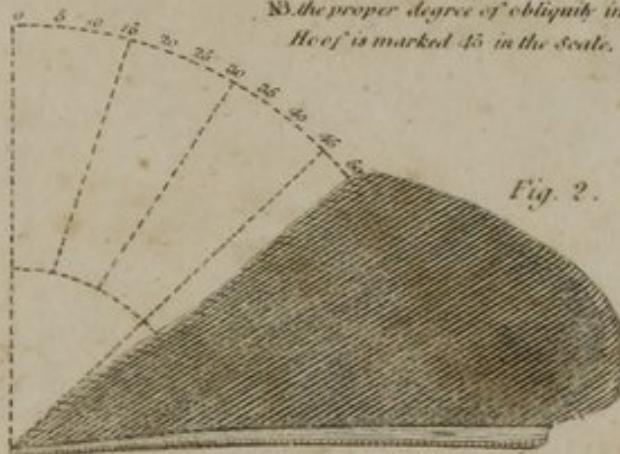


Fig. 2.

Fig. 1. A side view of the sound Hoof, with a scale shewing the proper degree of obliquity to be 45 degrees of elevation. — a the Quarter. b. the Heel d. the Toe.

Fig. 2. Side view of the Convex or Furnice Foot, in which the Hoof has lost its natural form, and approaches 5 degrees toward the Horizontal line.

Fig. 3. A Hoof approaching too nearly the perpendicular.



