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LORD BACON.

THE

HISTORY AND HEROES

OF THE

ART OF MEDICINE.

BY J. RUTHERFURD RUSSELL, M.D.

"The Philosopher should end with Medicine,—the Physician commence with Philosophy"
ARISTOTLE.



With Portraits.

LONDON:
JOHN MURRAY, ALBEMARLE STREET.
1861.

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PREFACE.

THE design of this book is to represent the condition of the Art of Medicine and its practitioners at successive periods of history. In the execution of the plan, it has naturally happened that the characters of the men who have directly, or indirectly, exerted the greatest influence in moulding the medical art have been among the chief subjects of research and delineation. Hence the volume has assumed a lighter, more biographical, and probably more popular form, than might perhaps have been expected in a work of this nature.

There does not yet exist in the English tongue a single complete History of Medicine; nor does this book aspire to supply the deficiency. In order to do so, an account must have been given of the growth of the sciences on which the Art is built, instead of merely indications of their influence; to do which with any fulness, at least five or six volumes each as large as this one would be required. It is, indeed, a task well worth attempting; for the Standard History (Sprengel's) is now nearly out of date; and it is time that justice should be done to our great modern anatomists, physiologists, and pathologists; but it is a task which, for its due execution, demands an amount of leisure at the disposal of few who cultivate Medicine as a profession. In the mean time this less ambitious

attempt may serve as a pioneer, and by directing attention to a comparatively new field of study, may be the means of encouraging others better qualified to devote themselves to that important, but laborious and difficult undertaking. With such a result I should be well satisfied; feeling that the labour bestowed on this production has not been lost. At the same time, I cannot but regret having been compelled to omit all mention of many names which might well claim a place in even the briefest sketch of a History of Medicine. I am, also, painfully conscious that, owing to my endeavour to be as brief as possible in the expression of my own opinions, I incur great risk of being misunderstood by many of my readers, unless they peruse these pages with a desire to fill up the outline rather than to complain of its incompleteness, or to dwell on the errors which they may detect. That these errors are not more numerous, is due to the kindness of two friends who have given me their assistance in the irksome task of preparing for the press a volume, which has occupied in its composition, most of the leisure hours during several years of a busy professional life.

J. R. R

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ERRATA.

Page 12, last line, *for* theme-honoured, *read* thence honoured.

Page 34, line 6 from top, for *The*, read *She*.



ÆSCULAPIUS.[1]

CHAPTER I.

Adam a Physician—Darius and Democêdes—Cure of Telephus—Value of Pedigree—Æsculapius and his Sons—Surgeons at the Siege of Troy—How Germans Acted—Rome *versus* Greece—The Wise Men—Philosophers and Atheists.

THANKS to the labours of the great modern historians, the idea of progress has now become an essential element in the very conception of history. Any period, however long it may have lasted, in which no progress was made, is beyond the pale of historical investigation. Like Chaos, as described by Milton, it is

> "A dark
> Illimitable ocean without bound,
> Without dimension, where length, breadth, and light,
> And time, and place, are lost. * * *
> The womb of nature, and perhaps her grave."[2]

Medicine, regarded as an art, remained in this chaotic

[1] From a statue in the Louvre.

[2] Paradise Lost, Book II.

condition till the dawn of the Grecian era. Le Clerk,[1] indeed, carries us back as far as the time of Adam, the title of his *fourth* chapter being "Le premier Homme a été, en certain sens, le premier Médicin." * * * That Adam, when ill or hurt, employed such appliances to relieve himself as his instinct or reason suggested, may be admitted; but in this he did not differ from a dog which, when sick, eats grass; and we might just as well claim the title of Doctor for "Cæsar" or "Dash," as for our great progenitor.

Even among the Egyptians, the most civilized nation of remote antiquity, the art of medicine seems to have been kept in a state of restraint so abject, as effectually to prevent its progress. Egypt, in its very youth, seems to have had all the rigidity of old age, and where everything was regulated by stringent and severe rules, medicine was not exempted from the stiffening process. "Doctors received their salaries from the treasury; but they were obliged to conform in the treatment of a patient to the rules laid down in their books, *his death being a capital crime, if he was found to have been treated in any other way.*"[2] So says Herodotus. How this system worked is best illustrated by a fact related by the same unexceptionable authority. The following occurrence took place after medicine had existed as a state-art for at least five hundred years. "It happened that King Darius, as he leaped from his horse, sprained his foot. The sprain was one of no common severity, for the ancle-bone was forced out of the socket." In fact, it was a dislocation. "Now Darius had already at his court certain Egyptians, whom he reckoned the best skilled physicians in all the world; to their aid,

[1] Histoire de la Medicine, par Daniel Le Clerk, Amsterdam, 1723. This is considered by the most competent authorities a very learned and trustworthy history of the period to which it refers.

[2] The History of Herodotus. A new English version, edited, with copious Notes, &c., by George Rawlinson, M.A., assisted by Colonel Sir Henry Rawlinson, and Sir J. G. Wilkinson, F.R.S. London: 1858. Vol. II. Note to page 136, by Sir G. Wilkinson.

therefore, he had recourse; but they twisted the foot so clumsily and used such violence, that they only made the mischief greater. For seven days and seven nights the King lay without sleep, so grievous was the pain he suffered. On the eighth day of his indisposition, one who had heard, before leaving Sardis, of the skill of Democêdes, the Crotonian, told Darius, who commanded that he should be brought with all speed into his presence. When, therefore, they had found him among the slaves of Crates, quite uncared for by any one, they brought him just as he was, clanking his fetters, and all clothed in rags, before the King. As soon as he was entered into the presence, Darius asked him if he knew medicine, to which he answered 'No,' for he feared that if he made himself known he would lose all chance of again beholding Greece. Darius, however, perceiving that he dealt deceitfully, and really understood the art, bade those who had brought him to the presence—go fetch the scourges and pricking irons (or blinding irons to put out his eyes). Upon this Democêdes made confessions, but at the same time said he had no thorough knowledge of medicine—he had but lived some time with a physician, and in this way had gained a slight smattering of the art. However, Darius put himself under his care, and Democêdes, by using the remedies customary among the Greeks, and exchanging the violent treatment of the Egyptians for milder means, first enabled him to get some sleep, and then in a very little time restored him altogether, after he had quite lost the hope of ever having the use of his foot."[1] What a picture of the triumph of Greek intellect, in the person of a ragged slave, over Egyptian stolidity, patronised by the greatest monarch of his age, surrounded by all the pomp and terror of absolute power!

Without further comment we leave the pre-historic fossil

[1] Op. cit. Vol. II. pp. 515, 516.

age, separated as it is by a vast chasm from the living present; for the old notion that the Greeks derived their legendary lore from Egypt—and it is with Greek legends we must begin our inquiry—is now well-nigh exploded; indeed, it is no less revolting to reason to ascribe to Egyptian thought the parentage of Grecian science, than it is to taste to imagine such a figure as the bright, airy, and curvilinear Apollo to have been born and bred in the land of pyramids and mummies. As Egypt was the land of rigidity and death, so Greece was the land of liberty and life. The living force there embodied itself in heroic songs and deeds during remotest ages, and afterwards took the form of philosophy and political organization; and when its original native development had been broken up by internal divisions and the rude strength of Rome, it still continued to act upon the course of the world's history, modifying all its important changes, even Christianity itself, and powerfully affecting the thought, feeling, and action, of all European civilized communities down to the present hour. Indeed, the characteristic peculiarity of this force is its continuity; and to comprehend its operation upon any part of medicine we must trace it from its source. That source is in the high table-land of legend, a land enveloped in impenetrable mist, a land of unrealities, but of infinite significance, because of real belief to the Greeks. This is the conclusion at which modern history has at length arrived; that what is of importance to determine is, not whether the beautiful tales of enterprise and adventure which constitute the mythology of Greece have any basis of actual events—an inquiry impossible to prosecute with any success—but which of these stories the Greeks believed, and how their faith in their legends affected their character and history. The function of science in this matter is to estimate and analyze the belief itself, not the thing believed in. The absurdity of attempting the

latter is well illustrated by the following example taken from the province of medicine:—"Some," says Pliny, "suppose that Achilles cured Telephus by the plant called Achilea, others think that it was by verdigris, which is much employed in plaisters; and for this reason they add that Achilles is painted scraping the verdigris off the point of the spear into the wound of Telephus."[1] Of the fact of the cure of Telephus by Achilles, Pliny expresses no doubt. Now who was Telephus? He was the grandson of Apheidas, king of Tegea, who was the son of Arkas, of that ilk,—that is, of Arcadia. And who was Arkas? "The beautiful Callisto, companion of Artemis (Diana) in the chase, had bound herself by a vow of chastity; Zeus (Jupiter), either by persuasion or by force, obtained a violation of the vow, to the grievous displeasure both of Héré (Juno) and Artemis. The former changed Callisto into a bear, the latter, when she was in that shape, killed her with an arrow. Zeus gave to the unfortunate Callisto a place among the stars, as the constellation of the bear: he also preserved the child Arkas, and gave it to the Atlantid nymph Mena to bring up."[2] What should we think of an astronomer incorporating this story in a treatise upon the constellations, as if it were an observation of an eclipse? Yet this tale of Arkas rests upon the same evidence as the cure of his great-grandson by Achilles.

Such attempts at interpretation of alleged facts in a purely fictitious story, are worse than a waste of time and labour, for they give an air of reality to what is in itself nothing. As well might a botanist, writing two thousand years hence upon the leguminous plants, attempt to account scientifically for there once having existed a bean of enormous size, and give a learned refutation of all possible objections to its prodigious growth, and to its having been

[1] Pliny, Book XXV. Chap. 5.

[2] Grote's History of Greece, Vol. I. pp. 241, 242.

ascended by a man of diminutive stature, in order to explain the story of "Jack and the Bean-stalk." Such a writer would not be guilty of a greater perversity of intellect than are those who attempt to gather science out of the Iliad. But while, on the one hand, we should commit a grave error if we strove to extract solid facts out of empty fables, we should, on the other, be much more in the wrong if we disregarded the legendary lore altogether. There may be no grounds for believing that such a person as Hercules ever existed, but the belief of the Spartans that they were lineal descendants of this demigod, exerted a powerful influence upon the events of Greece and the history of the world. It was in a great measure in virtue of this divine descent that Sparta claimed the leadership of the Greek confederation against Xerxes, and it was out of this admitted claim, that the most important post in battle was yielded to the Spartans. Had the other tribes refused to award what was then considered a legitimate distinction, it is by no means improbable that in consequence of the affront, the Lacedæmonian contingent would have withdrawn from the combat, as, at the battle of Culloden, the Macdonalds[1] threatened to march off without fighting for a similar reason; and had this occurred then, most likely Greece would have succumbed to the Persian monarch, and nascent Europe become a satrapy of the great oriental despot's dominions.

"The descent of the Spartan king, Leonidas," says Mr. Grote, "from Hercules, rests upon no better evidence than

[1] "As if a fate had hung over the councils of Charles, the dispositions of this order of battle involved the decision of a point of honour, esteemed of the utmost importance in this singular army, though in any other a mere question of idle precedence. The Macdonalds, as the most powerful and numerous of the clans, had claimed from the beginning of the expedition the privilege of holding the right of the whole army. Lochiel and Appin had waived any dispute of this claim at the battle of Preston; the Macdonalds had also led the right at Falkirk, and now the left was assigned to this proud surname, which they regarded not only as an affront but as an evil omen."—Sir W. Scott's Tales of a Grandfather, 3rd Series, Vol. III. p. 230.

that of Hippocrates from Æsculapius."[1] The belief entertained by his contemporaries in the pedigree of Hippocrates is an important fact in medicine, a fact which we cannot justly appreciate without tracing his genealogy into the mythical period of Greek history. Indeed, we must survey this region if we wish to arrive at a correct opinion of the estimation in which the art of medicine and its practitioners were held among the Greeks.

We have already spoken of Arcadia, the land of Arkas. In this romantic district, the Switzerland of Greece, stands Mount Pelion, now described by an eye-witness as "beautifully variegated, with groves and gardens, and glittering with towns and villages;"[2] but in ancient times a desolate region, full of caves and impenetrable thickets. Here lived Chiron "the wide-ruling offspring of Cronos,[3] the son of Uranos," "the wild centaur who ruled in the glens of Pelion," who "bred Asclepios (Æsculapius) the gentle artificer of freedom-from-pain, that strengthens the limbs, the demi-god that wards off diseases."[4] So sings Pindar in the third Pythian ode, and then goes on to tell the same tale we quoted from Grote *apropos* of Arkas, of the birth of Æsculapius: how he was the son of the nymph Coronis and Apollo; how both mother and child had very nearly been sacrificed to the vengeance of the gods, and how Apollo snatched the infant from the funeral pile and carried it off to this remote and secure cave, the retreat of Chiron, "the justest of all the Centaurs,"[5] that he might learn to cure the manifold diseases that afflict mortals. "So he rescued those who sought his abode, some

[1] Grote, Op. cit. Vol. I. p. 599.

[2] Dodwell's Classical Travels, Vol. II. p. 87.

[3] Hesiod. This Cronos was the youngest son of Earth and Heaven, who in their turn sprang from Chaos: Earth was the firstborn, "the secure seat of all the immortals, and Earth bare like herself (in size) starry Heaven, that he might shelter her around on all sides, and so she might be a secure seat for the blessed gods." —Theogony, translated by Banks, pp. 7, 8.

[4] Homer. Iliad, Book XI. line 831.

[5] Pindar.

from sores of spontaneous origin, some from wounds inflicted either by the gleaming brass, or the far-hurled stone, some whose frames were wasted by the summer's fire or winter's cold. The gentle charm gave relief to some; to others he administered the soothing potions, or round their limbs he bound the plaister made from herbs; while others again, he restored to health by cutting off the limb." But he carried his skill too far, and had the imprudence to restore a dead man to life, for which he was slain by one of the gods.[1] We venture to affirm that the disciples of Æsculapius have, by this time, amply retrieved this act of impiety, and left a handsome balance in favour of Pluto.

Æsculapius was worshipped with great solemnity in various parts of Greece, such as Trikka, Cos, Cnidos, and especially at Epidaurus. In these places magnificent temples were erected to his honour, surrounded by sacred groves, and hung round with the offerings of those who had been rescued from death or suffering by his power. The remains of some of these temples are still extant.[2]

Although Æsculapius is probably as mere a fiction of the Greek imagination as Jupiter or Neptune, yet the fact of his having two regularly-born sons at the siege of Troy, gives to him a certain air of flesh and blood reality. Not that there is any better evidence of the actual existence either of the father Æsculapius, or of his sons, Machaon and Podalirius, than there is of the fabulous inhabitants of Olympus; but the genius of Homer has given so marked and interesting an individuality to his heroes, and has secured

[1] Pindar gives, as the reason of Æsculapius' restoration of a dead man, that he was tempted by the offer of a large reward. Upon this the great German critic, professor Boeckh, of Berlin, observes, "Mercede id captum Æsculapium fecisse recentior est fictio; Pindari fortasse ipsius, quem tragici secuti sunt: haud dubie a medicorum avaris moribus profecta qui Græcorum Medicis nostrisque communes sunt." This is a very sweeping charge against the medical profession, both ancient and modern. Has it any better basis of actual fact than the story of Chiron, the Centaur? I believe not.

[2] Dodwell's Travels, Vol. II. p. 257. Clark's Travels, Vol. III. p. 620.

for them so permanent and positive a place in civilized tradition, that, in the teeth of the most satisfactory critical demonstration to the contrary, we cling to the old belief that Achilles, and Hector, and Troy, and the divine Scamander, were just as real as Pompey and Cæsar of Rome and the Tiber. These legends have become facts to us, because they were facts to the Greeks. And when we adduce Homer as evidence for the status and achievements of these sons of Æsculapius, we are giving the best possible proof, if not of the facts themselves, at least of the universal belief in them as such, during the long period of the acceptance of the Homeric testament. Indeed it may be questioned whether, in those seminaries where classic learning is most exclusively cultivated, Homer does not exercise as powerful an influence upon the faith and feelings of the students, as the Scriptures from which they profess to derive their rules of this life, and hopes beyond it.[1]

The first introduction of these two sons of Æsculapius occurs in the second book of the Iliad. They are represented in the account of the marshalling of the clans as the leaders or chieftains of the people of Trikka, a district in the north-west of Thessaly.

> "All who in Trikka dwelt, and in Æchalia, the city
> Of Eurytus the Æchalian, and many-knoll'd Ithone;
> Two sons of Æsculapius, Podalirius and Machaon,
> Excelling in the healing art, were over these the leaders,
> And thirty smoothly-hollow'd ships were ranged beneath their guidance."[2]

Thus it appears that the first military surgeons mentioned in Greek history are ranked by Homer among the great leaders in right of their birth and influence. That his skill in medicine did not prevent this son of Æsculapius from fighting bravely at the head of his clan, appears from the passage in the fourth book, which describes how

[1] See Gladstone's Homer.

[2] Homer's Iliad, faithfully translated into unrhymed English Meter, by F. W. Newman. 1856. Book II. lines 729 to 734.

Meneläus, the brother of Agamemnon, king of Mycenæ, was wounded by an arrow from the bow of Alexander, in execution of a plot contrived by the gods who sided with the Trojans. Agamemnon is in a dreadful state of alarm and distress when he sees his brother carried off the field, and bitterly reproaches himself for having placed him in a post of so much danger, and then he turns to the divine herald, Talthybius, and thus addresses him :—

"Talthybius ! with utmost speed
Machaon hither summon,
The son of Æsculapius,
Chirurgeon unblemish'd ![1]
Straight must he visit Atreus' son,
The warlike Meneläus,
At whom some skilful archer-hand hath aim'd an arrow truly.
Glory to him, but woe to us,
Or Lycian or Troian."
He spake ; nor disobedient
The herald heard his bidding,
But sped to go along the host
Of dapper-greaved Achaians,
Peering to see Machaon's form,
And soon espied the hero
Standing : and all around were pour'd the shielded stout battalions
Of men, who with him companied from courser-feeding Trikka.
There near before his face he stood,
And winged accents utter'd :
"Rise ! son of Æsculapius !
King Agamemnon calleth,
Quick must thou visit Atreus' son,
The warlike Meneläus,
At whom some skilful archer-hand hath aim'd an arrow truly.
Glory to him, but woe to us,
Or Lycian, or Troian."
He spake, and strongly did bestir the hero's heart within him.
So they, returning, hied along
Achaia's ample army

[1] There is an ambiguity about the word here rendered "unblemished." Sometimes it means that there was no use made of impure magic, while at other times it is used in the sense of refined and accomplished. Perhaps in the modern language of chivalry it would have been rendered "*sans reproche.*"

Amid the crowd. But when they came where auburn Menelāus
Was wounded, and in circle thick
Around him all the noblest
Were gather'd, and midst of them
The godlike man was standing ;
First would Machaon pull the shaft
From the well-fitting girdle,
But that the pointed barbs were snapt and tangled as he drew it.
Then from his waist unfasten'd he the girdle all embroider'd,
The sash, and baldric underneath,
Which smiths of copper labour'd.
But when he saw the wound, wherein lighted the stinging arrow,
He suck'd from it the blood, and spread within it mild assuagements,
Which friendly-hearted Chiron once unto his sire imparted."

That Machaon, the son of Æsculapius, this knight "*sans reproche*" was also "*sans peur*" seems plain, from a passage in the eleventh book of the Iliad, in which this mighty man of war, as well as medicine, is represented as staying the advance of Hector himself, and rallying the Greeks in their extremity ; and he requires to be disabled by an arrow from the bow of the skulking Alexander, who always plays the mean and shabby parts, shooting down heroes from behind rocks, and running away from a personal encounter. So Alexander plants a triple-barbed arrow in Machaon's right shoulder, and effectually cripples the hero of Trikka. When the valorous Achaians saw their defender from Hector and their healer of wounds in this sorrowful plight, they were sore afraid lest the tide of battle should roll back, and their brave champion and shepherd of the people should be overtaken and slain : so Idomeneus called out to godlike Nestor, who could be ill-spared at such a moment,

"O Nestor, Neleus' progeny, great glory of the Achaians,
Haste, mount upon thy chariot : beside thee take Machaon,
And quickly to the galleys drive the single-footed horses :
Surely a sage chirurgeon, skilful to cut out arrows,
And overspread assuagements soft, *hath many fighters' value.*"[1]

Nestor did as he was requested, and bore away to the Greek camp the wounded Machaon. These are all the

[1] Op. cit. Book IV. lines 194 to 219.

glimpses we get of the rank and estimation of the art of medicine and its practitioners in the great panorama depicted by Homer, the only exponent we possess of the thoughts and feelings of the ancient Greeks. It is impossible not to be struck with the contrast that it presents to the *status* of the same class in later ages. The Niebelungen Lied may be called in a rough way the Homeric poem of Germany; it gives almost the only accredited traditions of the prehistoric Teutonic epoch, just as Homer does of a corresponding period of the Greek era. Now what a miserable position the medical men here occupy as compared to Machaon and his brother! Take for example the fourth adventure of the hero Siegfried, when he goes on a chivalrous errand to encounter the Saxon army which is advancing against his host, King Gunther, father of the incomparable beauty Kriemhilden, with whom he, like all the world, was in love. The brave Siegfried accomplished prodigies of valour, and of course overthrew the Saxons, killing hundreds with his own hand and taking many wounded prisoners. In Homer's time they gave no quarter; but we have now got into the Christian era. Had this adventure been conceived and narrated by a Greek of the Homeric age, he no doubt would have sent out with it some sturdy son of Æsculapius to tend the wounded; but no such attendant accompanied Siegfried, so that his wounded had to be taken all the way back to King Gunther's land before their wounds were dressed, and then what an unheroic posture do the Physicians occupy!

"Den wohlerfahrnen Aerzten bot Man reichen Geld,
Silber unbewogen, dazu das lichte Geld,
Wenn Sie die Helden heilten nach des Streites Noth." [1]

"Rich remuneration was offered to the experienced physicians—unweighed silver and bright gold—if they cured the heroes after the battle's need."

With what indignation and astonishment on the other hand would Aristotle, an accredited and theme-honoured

[1] Das Niebelungen Lied, übersetst von Dr. Karl Simrock. Bonn, 1839, p. 43.

descendant of Æsculapius,[1] and himself a physician, have heard the question proposed by a Frenchman of the seventeenth century of the Christian era, "Is the art of medicine derogatory to nobility?" He certainly would not have set about proving that there was no degradation to nobles in the exercise of the divine art of healing by citing, like the learned interrogator, instances to show that there were many physicians ranked among the saints, that numerous popes, emperors, and kings practised medicine as well as not a few queens and other "*Dames de qualité*," and even several gods and goddesses."[2] Aristotle, had he thought the subject worthy of serious entertainment, would doubtless have raised some such preliminary questions as the following:—Is there any just conception of man's nobility that can in any degree, or at any point, clash with the proper exercise of an art which we honour the great gods themselves for having practised?—Is not the highest epithet of honour we can bestow upon a man "godlike," or "godborn?"—Do not the sons of the gods take the first rank among the heroes—the nobility of Greece? How then can dishonour come from sharing the attributes of the only recognized fountain of honour?

Such an argument would probably have satisfied both the reason and the feelings of the Athenians at the time of Aristotle; but it ceased to be sufficient after the invasion of Christianity. The first great Christian orator overthrew it when, standing upon the very spot where Socrates had stood three hundred years before, he proclaimed to the inhabitants of Athens the God whom in ignorance they worshipped, and taught them that their false gods were demons. It could be no compliment to a man to be told

[1] "Aristotle was the son of Nicomachus, a citizen of Stagira and Phæstias (Phæstiada); and Nicomachus was descended from Nicomachus, the son of Machaon, the son of Æsculapius."—Diogenes Laertius, translated by C. D. Yonge, B.A., p. 181.

[2] Le Clerk, Op. cit., Preface.

he was descended in a direct line from a demon of dubious position in the land of spirits.[1]

The promulgation of the doctrines of Christianity converted the Greek mythology into a demonology. Hence the necessity of an entirely new source of nobility. The purely Christian view exalted every human being who accepted the Gospel of Christ into an heir of the kingdom of Heaven. According to it every believer held his patent of nobility direct from the Almighty. But the great doctrine of humility and the insignificance of material objects of ambition and desire, as compared to spiritual, was far too repugnant to men's pride and habits to obtain more than very partial, temporary, and theoretical acceptance. Beside it rose, or rather had already risen, in stupendous magnitude, its permanent antagonist the worship of strength and force, represented by the Roman empire. Between these two, Christianity cutting away the ground on which she had raised such exquisite fabrics of philosophy and poetry, and Rome reducing her sons to slavery, Greece lost her life.

The life of Greece was distinguished from that of all other nations by having incorporated into it, as a part of its most intimate nature, the element of art. Other peoples, as the Romans, put on art as an adornment to their mature power; as a man in England, who has made his fortune by spinning cotton, orders a Correggio or a Turner, as well as a handsome carriage. But the Greeks were a nation of artists; by superiority in art, whether by the art of thinking as philosophers, or of speaking as orators, or by the art of medicine as physicians, or any other art, an Athenian became great in his social and political position. Such a condition of society never existed before, and the infinite distance at which we in England are at present removed

[1] "The things which the Gentiles sacrifice they sacrifice to *devils* and not to God."—St. Paul's 1st Epistle to the Corinthians, chap. x., verse 20.

from it, may be estimated by the fact that when it was proposed to raise a statue to Jenner in a conspicuous part of London, there was a clamorous voice raised against it in the House of Commons, as if it were absurd to place so insignificant a personage as Jenner by the side of the hero of Scind. This could not have occurred at Athens in the time of Pericles, or indeed during any period of its existence as a civilized capital.

This contrast is not brought forward to reproach the age we live in, but on account of its historical significance, to bring into prominent view the fact that we are even now more Roman than either Greek or Christian—that force and power are our divinities. Such a condition may be the only possible one at present for a great nation, but surely there is no offence in hopefully anticipating a future which shall combine more of the Greek element of art, and be penetrated by more of the Christian element of peace, so as at once to repress and refine the Roman element of force which now lords proudly over the whole earth, and seems to defy the Almighty himself to accomplish his promise of a season of perpetual respite from the pressure of the iron hand of war, a promise announced at the close of the rude Pagan age, and whose fulfilment has been hourly expected to commence for nearly two thousand years.

At this stage of the history of medicine we encounter what the geologists would term a fault. There is an abrupt termination of the Homeric era, and all trace of medicine is lost for several hundred years. "Strange to say," says Pliny,[1] "it was concealed *in thickest night* from the time of the Trojans to that of the Pelopennesian war." When it revisits the light, it finds Greece a changed country. No longer are the tales about Time being the youngest son of Earth and Heaven, themselves gods and children of Chaos, accepted by the leading intellects among the Greeks,

[1] Pliny, Lib. XXIX. Chap. 1., quoted by Le Clerk, p. 75. "A Trojanis temporibus, mirum dictu, in nocte densissimâ latuere usque ad Peloponnesiacum bellum."

but a wholly new order of men has taken the place of the old poets—"the wise men" have come on to the stage. The beautiful sunny-haired boy we left dreaming beside the great god Neptune, and watching the approach of Aphrodite and Apollo, and enjoying the glorious trance of the rosy dawn of genius—when all that the eye saw and the ear heard was received with delight, and without any disposition to doubt—has grown into a young man, has gone to college, has been taught to question everything, has entered, in short, the age of Scepticism. Still it is the same youth, the poet-boy is father of this philosophic man; there is no decline of imagination, but there is a quickened faculty of analysis and reasoning superinduced upon the primitive exuberant loam of the mind. We now stand on the threshold of the scientific era, we can scarcely be said to have entered it; for the methods of investigating the natural phenomena, which were becoming recognized as being, at least in some degree, not the immediate actions of gods and goddesses, but forces of nature, were too vague to lead to any practical progress: they were gropings after another sort of cosmogony than that of Homer and Hesiod, but purely tentative gropings.—What was the origin of all things? "Water," was the reply of Thales, the companion of Solon; "or rather the element of fluidity—always the same in its essence, but capable of assuming an infinite variety of forms."[1] His attempts at solving the physical problems indicate the same kind of intellectual effort as he displayed in a more appropriate field, when, in answer to the question, "What is difficult?" he replied, "To know thyself;" and, "What is easy?" "To advise another." The following passage presents a striking contrast between the Greek mind of this and the Homeric period: "God is the most ancient of all things, for he had no birth: the world is the most beautiful of things, for it is the work of God: place is the greatest of things, for it contains all things:

[1] Grote, Op. cit. Vol. IV. p. 518.

intellect is the swiftest of things, for it runs through everything: time is the wisest of things, for it finds out everything." The following lines remind one of Goethe:—

> "It is not many words that real wisdom proves:
> Breathe rather one wise thought,—
> Select one worthy object,—
> So shall you best the endless prate of silly men reprove." [1]

At some distance after Thales came Pythagoras, whose mind was of the same composite character, but showed evidence of more advancement. On the one hand, he indulged in speculations about the universe, of the same general and altogether unpractical nature as those of Thales; while, on the other hand, he applied himself to the study of geometry, and made some important discoveries in that science—as, for example, the proposition now known as the 47th of the 1st book of Euclid, that the square of the hypotheneuse of a right-angled triangle is equal to the squares of the other two sides. He is said to have been so delighted with his success, as to have sacrificed a hecatomb of oxen—a curious illustration of the feelings remaining in their childhood state after the intellect had attained to man's maturity.

While Pythagoras tended towards the two extremes of speculation about the world and the cultivation of pure science, his disciple, Empedocles, seems to have been among the first to touch upon the application of science to the wants of his age. He was a physician; and although it is more than 2000 years since he lived, he contrived to execute a task similar to one which at present is puzzling the ingenuity of modern engineers. "When a pestilence attacked the people of Selinus by reason of the bad smells arising from the adjacent river, so that the men died and the women bore dead children, Empedocles contrived a plan, and brought into the same channel two other rivers

[1] Diogen. Laert. Op. cit. p. 19.

at his own expense, and so by mixing their waters with that of the other river, he sweetened the stream."[1] For this the people of Selinus adored him as a god. If some modern Empedocles would do the same to the Thames, even at the public expense, no doubt the people of London would honour him after their fashion.

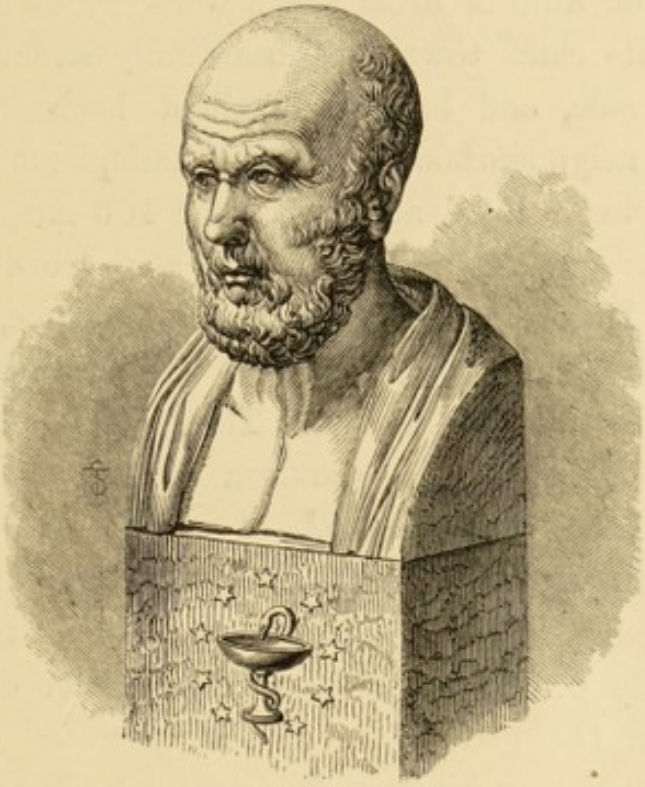
It is important to note that the word *Philosopher* was about this period invented and applied to the leaders of Greek thought. Thales and Solon were called "the wise," but their successors, entering the region of physical speculation and discovery, recognized their own ignorance, and refused any title but the modest one of "lovers of wisdom." It was to this class of speculations about the origin of the world, that at that time the name Philosophy was confined.

Along with the progress of Greek intellect towards a discrimination of the physical causes of events, we find, not unnaturally, a renunciation on the part of some of these early thinkers, of all the old beliefs in the gods. Thus, for example, Diagorus,[2] called the Atheist, was once at a tavern where the fire was very low, and there was no wood at hand except a statue of Hercules. This he pitched into the waning flames, and exclaimed, "Bravo, Hercules, this is the thirteenth and last of thy labours!"[3] What a distance we have now drifted from the Hercules of Homer! We have come to the beginning of the modern era of speculation and investigation, the era of Socrates, Plato, and—the Father of Medicine—HIPPOCRATES.

[1] Diogen. Laert. Op. Cit. p. 366.

[2] Cicero de Nat. Deor., quoted by Le Clerk.

[3] This reminds one of a somewhat similar act, performed by a very different man, in very different circumstances, thus graphically described by Mr. Carlyle:—"Scottish John Knox, such world hero as we know, sat nevertheless pulling, grim, taciturn, at the oar of the French galley in 'the water of the Lore,' and even flung the Virgin Mary over, instead of kissing her, as a 'pented bredd,' or timber virgin who could naturally swim."—French Revolution, Vol. II. p. 136.



HIPPOCRATES.

CHAPTER II.

Facies Hippocratica—Love-sickness—Sacred Diseases—Freedom and Slavery—Vow of Purity—Elements and Humours—Greek Physics—ψυχὴ and πνεῦμα—Ghosts—Healing Power of Nature—Spirit Manifestations—Principle of Contraries—Empirics—Methodists—Sensible System—Dogmatists—Allopathy and Homœopathy—General Culture—Temple of Æsculapius—His Descriptive Power—His Inductive Method—His Serious Diligence—Follow Nature—Barley Water—Surgical Treatment—Aphorisms.

On the south-eastern coast of Asia Minor, there is a deep indentation known by the name of the Ceramic Gulph. At the entrance of this long bay is the island of Cos. It is rather smaller than the Isle of Wight, being ninety-five square miles in extent, and of somewhat the same shape. On the opposite shore, to the right, looking eastward, on a point of the main land, stood its great rival the town and

temple of Cnidus. Cos was a fertile country, carrying on an extensive trade in wine and ointments, and manufacturing a peculiar kind of dress which went by its name (*Coæ Vestes*). Its chief town was beautifully situated on the north-east side, and had an excellent harbour. In the immediate neighbourhood stood the Asclepieum, or temple of Æsculapius.[1] Here, about the year 460 B.C., were born Apelles, the greatest painter of his age—possibly of any age—and Hippocrates, the second of his name, called the Great: his grandfather, the first Hippocrates, was the great-grandson of Sostratus the Third, whose ancestor, the first Sostratus, was the grandson of the Homeric hero, Podalirius, son of Æsculapius.[2]

We may fairly assume that Hippocrates and Apelles were early companions; and, possibly, some of the peculiarities of the style of the great physician may be due to the influence of the great painter. Hippocrates' descriptive faculty, in which, in his own department, he has never been even approached in excellence, is wholly destitute of literary merit. It has the severity of naked truth. He sees with the eye of an artist, but tells what he sees in the plainest, most unartistic method. For example, take his picture of a dying face: "a sharp nose, hollow eyes, collapsed temples; the ears cold, contracted, and their lobes turned out; the skin about the forehead being rough, distended, and parched; the colour of the whole face being green, black, livid, or lead-coloured." This still goes by the name of the *facies Hippocratica*, or "the dying face, by Hippocrates." If we compare this picture of a dying man with that drawn by Shakespere, we shall at once perceive the points of resemblance and contrast: "After I saw him fumble with the sheets, and play with the flowers, and smile upon his

[1] Smith's Classical Dict., Art. Cos.

[2] The genuine works of Hippocrates, translated by Francis Adams. Sydenham Soc. p. 23. Dr. Adams has laid not the profession alone of which he is so great an ornament, but humanity itself, under a debt of gratitude by his admirable revival of Hippocrates.

finger-ends, I knew there was but one way; for his nose was as sharp as a pen, and he babbled of green fields."[1] Both these pictures give the permanent and universal, stripped of the accidental; they both exhibit a *perception of the type*, which is the first step in art; but while Hippocrates contents himself with this and jots it down, as becomes a physician, to assist him and his followers in recognizing the indications of approaching death, Shakespere completes it by giving form and finish to the wording, so as to satisfy the mind with the picture itself.

When old enough to go to school, Hippocrates was sent to Selimbria, in Thrace, on the coast of the Propontis, not far from where Constantinople now stands. Here he came under the tuition and discipline of Herodicus, a man of great celebrity in his day, who seems to have been the first to institute a regular system of exercise and regimen, not only for the use of his pupils, but for invalids. He was the Priesnitz of Greece, and as such incurred the ridicule of Plato,[2] who describes him as sending his patients on a walk from Athens to Megara and back without a rest, a distance of fifty-two English miles. This is probably a caricature. He is blamed, however, by Hippocrates—at least, in one of the Hippocratic treatises[3]—for attempting to cure fevers by exercise; and Plato hits the blot in the whole system of this kind of treatment—no less applicable to the modern Water-cure than to the method of Herodicus—when he observes,[4] that this way of going on may do very well for rich people, who can afford to spend their life in taking care of it; but that when a mason or carpenter falls ill, he sends for a physician to cure him then and there by some immediate expedient, otherwise he must starve. Notwithstanding the objections to the extravagances of this

[1] Death of Falstaff, Henry V., Act II.

[2] Phædrus, in principio.

[3] Book of Epidemics.

[4] Republic, Book III.

Gymnasium, it was doubtless an excellent training for the young Hippocrates, as his master insisted upon rigid abstinence from all deleterious food and habits.

After leaving Herodicus, he went to Gorgias, a celebrated orator and philosopher in Sicily, and to Democritus of Abdera, who seems to have been quite an encyclopædia of learning. His knowledge "embraced, not only the natural sciences, mathematics, mechanics, grammar, music, and philosophy, but various other useful arts;"[1] and he was, besides, a founder of an atomic theory, which we shall have to consider more in detail in the sequel.

Having finished his university education—taken his degree, as we should now term it, Hippocrates returned to the study of medicine at the schools of Cnidos and his native Cos; and in time—how long it took we can form not even a conjecture—he acquired a reputation as a physician, which gradually increased till it ripened into a splendid renown, and bore his name over Greece to foreign courts. Perdikkas, the young king of Macedonia, was supposed to be dying of consumption, and Hippocrates was sent for. After carefully observing the patient, the physician noticed an aggravation of the febrile accession every time a certain lady, of the name of Phila, in the employment of the youth's father, approached. Hippocrates pronounced the consumption to be love, and that Phila alone could cure him. The issue justified the prediction.[2]

It is strange that several of the most celebrated cures in history should be of a similar complexion. Erasistratus detected the love of Antiochus for Stratonike by the following device. The young man was wasting away, and no one could divine the cause. Erasistratus put his hand upon the chest of the invalid, and arranged that the attractive attendants of the court should file past him. When Strato-

[1] Smith's Class. Dict., Art. "Democritus."

[2] Apologie des Hippocrates, von. K. Sprengel, p. 58.

nike appeared, the heart of Antiochus throbbed so violently as to reveal the cause of all his illness.[1]

Avicenna, the Arabian, is reported to have gained great repute, when he himself was quite a youth, by making just such a hit.[2]

If it require such men as Hippocrates and Avicenna to make the discovery, there must now be many sufferers from this complaint undergoing daily examination with stethoscopes, and all the ingenious modern substitutes for the discerning eye which sees at a glance what no science will ever reveal.

No wonder that, with such a reputation, his advice should be sought by the Athenians at the time the plague committed such deadly havoc in their city. Although the fact is not mentioned by the great historian of the event, Thucydides, there are good grounds for the general belief that Hippocrates was consulted, and recommended the lighting of large fires all about the city to stay the progress of the infection.[3]

By this we learn what a vast step had been made in recognizing disease as a natural result of certain physical causes, not the baneful act of some incensed god or goddess. Indeed, in this respect, Hippocrates was far in advance, not only of his own age, but of much later periods. Nothing can be more emphatic than his rejection of supernatural influences as causes of any disease whatever.

We may take, as proof, what he says of Epilepsy, which, from its mysterious character, was called *par excellence* "the sacred disease."[4] "It is thus with regard to the disease

[1] Plutarch, quoted by Sprengel, Vol. I., p. 240.

[2] Sprengel, Vol. II., p. 420.

[3] Galen says, the wood used for the fires was of an aromatic kind, probably some species of pine.

[4] Aretæus gives the following explanation of the epithet in his Chapter on Epilepsy:—"There is a sort of ignominy, too, in its character, for it seems to attack those who offend the moon, and hence the disease is termed '*sacred*,' as it may be from other sources, either from its magnitude (for what is great is sacred), or from the cure not being in the power of man, but of God, or from the notion that a demon had entered into the patient, or from all put together, that it has been so called." — Aretæus on the Causes and Signs of Acute or Chronic Disease. Translated from the Greek, by T. F. Reynolds, M.B., 1837, p. 62.

called sacred; it appears to me to be in nowise more divine or more sacred than other diseases, but has a natural cause from which it originates, like other affections. Men regard its nature and cause as divine from ignorance, and wonder because it is not at all like other diseases . . . But if it is to be reckoned divine because it is wonderful, instead of one there are many diseases which would be sacred . . . And they who first referred this disease to the gods appeared to me to be just such persons as the conjurors, mountebanks, and charlatans now are, who give themselves out for being excessively religious, and as knowing more than other people. Such persons, then, using the Divinity as a pretext and screen of their own inability to afford any assistance, have given out that this disease is sacred."[1]

In another place, speaking of an affection peculiar to the Scythians, and which they attributed to a god, he observes:[2] "To me it appears that such affections are just as much divine as all others are, and that no one disease is either more divine or more human than another; but all are alike divine, for each has its own nature, and no one arises without a natural cause."

What a sad contrast to this true and admirable exposition of the causes of disease do we find in the writings of some of the most justly venerated Fathers of the Church who lived five hundred years later than Hippocrates. "It is demons," says Origen, "which produce famine, unfruitfulness, corruptions of the air, and pestilence. They hover, concealed in clouds, in the lower atmosphere, and are attarcted by the blood and incense which the heathen offer to them as gods."[3] "All diseases of Christians," says Augustin, "are to be ascribed to these demons: chiefly do they torment fresh-baptized Christians, yea! even the guiltless new-born infants."[4]

[1] Adams' Hippoc., Vol. II. p. 843.
[2] Op. cit., Vol. I. p. 216.
[3] Origen, contra Celsum, Lib. VII. c. 31, p. 765.
[4] Augustin, de Divinit. Demon, c. 3, p. 371. Sprengel, Vol. II., p. 209.

Besides being sought for by the republic of Athens, to which he doubtless was proud to render any aid he could, Hippocrates was invited by the great King of Persia, but refused to go. There seems no reason for disbelieving this; it rests upon respectable testimony, and is quite in accordance with the practice of the Persian monarch and the sentiments of Greek physicians. For example, there exists a very curious correspondence between King Darius and Heraclitus of Ephesus. The royal missive runs thus, after a flourish:—"King Darius, the son of Hystaspes, wishes to enjoy the benefit of hearing you discourse, and of receiving some Grecian instruction. Come, therefore, quickly to my sight and to my royal palace," &c. To which the respondent, without a word of thanks, replies, "I will never come to Persia, since I am quite contented with alittle, and live as best suits my own inclination."[1]

That Hippocrates was of the same mind may be gathered from various passages of his works. For example, when speaking of the difference between the Asiatics and the Greeks, he says: "For these reasons it appears to me the Asiatic race is feeble, and, further, owing to their laws; for monarchy prevails in the greater part of Asia; and when men are not their own masters, nor independent, but are the slaves of others, it is not a matter of consideration with them how they may acquire military discipline, but how they may seem not to be warlike; for the dangers are not equally shared, since they must serve as soldiers, perhaps endure fatigue, and die for their masters, far from their children, their wives, and other friends; and whatever noble and manly actions they may perform lead only to the aggrandisement of their masters, whilst the fruits which they reap are dangers and death."[2] What a noble picture of a free over a slave State! No

[1] Diogen. Laert., p. 380.

[2] Adams' Hippoc., p. 210.

wonder that the mind which conceived it should revolt from the idea of serving a tyrant![1]

It was probably a profound respect for mental and moral as well as political liberty that kept Hippocrates free from the slightest taint of priestly assumption in circumstances which would have made it almost pardonable. Although he was of the order of priests, born and bred in the temple of the god from whom he was believed to be descended, and himself reverenced as a divinity, yet, strange to say! all his writings are characterized by wonderful modesty, and his claims to credit invariably rest upon appeals to the reason, and never either to the passions, or to respect for blind authority Indeed, the most striking feature of this great man's mind was common-sense.[2] We may hesitate to award him the attribute of genius—certainly he is not pre-eminent among men of genius; and if we compare his writings with those of Bacon, for example, we feel disappointed at the absence of this quality; but for sense, at least, he equals Bacon, or perhaps any man that ever lived. Hippocrates had the sense to see through the superstition of his age, and the more uncommon sense to let it alone, testifying, by his speech and life, to the truth he believed in, and leaving to others the exposure of errors. It was his common-sense that led him to give such minute details of how the physician should conduct himself, even to the arrangement of his dress. "The robe," he says, when describing an operation, "is to be thrown in a neat and orderly manner over the elbows and shoulders, equally and

[1] In our own days we have had an example of a celebrated geologist refusing to return from America, his adopted, to France, his native country, although tempted by a personal and flattering appeal from the Emperor Napoleon III.

[2] The term common-sense is often understood as being equivalent to "the average amount of intelligence," instead of representing, as it does, the *sensus communis*, or universal faculty of apprehending truth, by an intuitive process, and pronouncing an infallible judgment upon every proposition that comes legitimately within the sphere of its jurisdiction.—See Sir W. Hamilton's edition of Reid.

symmetrically."[1] Here we get a glimpse of the elegant and fastidious Greek, graceful in figure, movement, dress, and language.

This fine attention to decorum of attire is a natural attendant of the high sense of moral purity which Hippocrates inculcated in his writings and displayed in his life. "I swear by the physician, Apollo,"—so runs the vow which he exacted from the aspirant to the ministry of the temple over which he presided—"and Æsculapius, and Hygæa, and Panacea, that, according to my ability, I will keep this oath and this stipulation . . . . I will follow that system of regimen which, according to my ability and judgment, I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous. I will give no deadly medicine to any one if asked, or suggest any such counsel. . . . . With purity and holiness I will pass my life and practise my art. . . . . Into whatever houses I enter, I will go into them for the benefit of the sick, and will abstain from every voluntary act of mischief and corruption; and further, from the seduction of females or males, of freemen or slaves. Whatever, in connection with my professional practice, or not in connection with it, I see or hear in the life of men which ought not to be spoken of abroad I will not divulge, as reckoning that all such should be kept secret. While I continue to keep this oath inviolate, may it be granted to me to enjoy life and the practice of the art, respected of all men in all times; and should I trespass and violate this oath may the reverse be my lot."[2]

If the respect of all times be a voucher for the fidelity with which this vow was kept by its framer, no man has a better claim than Hippocrates to the Homeric epithet of "the unblemished." Yet, strange as it may appear to those unread in the history of medicine, not even the reputation of Hippocrates saved him from an accusation, invented

[1] Adams' Hippoc., p. 475. [2] Ibid., p. 779.

by the malice and jealousy of his professional enemies, of a crime of almost incredible enormity, taking all the circumstances of the case into consideration. They accused him of having set fire to the library of the Temple of Cnidus after he had extracted all its treasures. According to this reading of his character, he was base enough to purloin all that was valuable from a rival school for his own selfish purpose; and to theft he added the crimes of sacrilege and arson—in short, that he was a miscreant whose career would have terminated on a gallows, had he not saved his ignominious life by a timely flight.[1] This may be a lesson to us not to place implicit confidence in the accusations that rivals of the present day are in the habit of proclaiming against those who have the courage to avow a belief in medical novelties, especially if such novelties should have the unpardonable sin of popularity.

The character of Hippocrates, his political opinions, and his social position, are comparatively easy for us to appreciate. It is much more difficult to represent, with any accuracy and distinctness, his notions about physical and metaphysical subjects; we combine the two, for it was not the way in his day to separate them. From his own writings it would be impossible to obtain materials for a just conception of how he dealt with these problems, and we are compelled to grope our way by the side-lights—faint enough—of his contemporaries and immediate predecessors and successors. Here we encounter the difficulty of delineating a mist or vapour. We can get no distinct outlines in ancient physics. It is very difficult to apprehend the ideas of Aristotle upon this subject, and even he—the most scientific mind of his, or perhaps any age—is obscure when he treats of matter. The notions of this great

[1] Pliny, who seems to be the greatest of literary *gobemouches*, mentions the story without a token of disbelief. Hist. Nat. XXIX., referred to by Sprengel and Adams.

thinker seem to be, that there are two fundamental conceptions about existence of any kind, the one—existence possible, the other—existence actual. The first is what we may call the raw material—primæval matter, devoid of all qualities, and without form; the second is what we may call formative force, by which the possible is converted into the actual.[1] The machinery by which all that is actual is raised out of this passive ocean of the possible, according to the Pythagoreans—and their doctrines held sway generally on this subject with slight modifications—was what they called "the contraries;"—these were heat and cold, dryness and moisture. But these contraries could not reside in mere formless matter; something more definite was required. Hence they arrived at Fire, Water, Air, and Earth, *the four Elements* familiar to us at the present day.[2] Such is probably something like the general conception of the universe held by Hippocrates, although it is not unlikely he may have accepted some of the notions of his teacher, Democritus, which were a sort of dim antetype of what in modern philosophy is known as the atomic theory, but which bear a nearer resemblance to "the Vortices" of Descartes. "Atoms and vacuum were the beginning of the universe," according to Democritus. "The atoms were infinite in magnitude and number, and were borne about through the universe in endless revolutions. Thus they produced all the combinations that exist—fire, water, air, and earth; for that all these things are only combinations of certain atoms, which combinations are incapable of being effected by external circumstances, and are unchangeable by reason of their solidity."[3] This theory of atoms, in constant revolution in all space and in all bodies, is one which we

[1] The Ethics of Aristotle, illustrated with Essays and Notes, by Sir A. Grant. Vol. I., p. 185.

[2] Ocellus Lucanus on the Universe, quoted by Adams, p. 133.

[3] Diogen. Laert., p. 394.

shall find turning up so frequently in a variety of forms in medicine, that it is of great interest and importance to be acquainted with the exact form the idea is said, by the earliest writers, to have assumed in the mind of its original propounder. In this way we may avoid one great source of historical error, which consists in taking for identical, opinions of different ages which happen to go by the same name. To what extent Hippocrates agreed with or differed from the philosophers of his age, in respect to the general theories of the origin of matter, we cannot form even a conjecture; but we know from various passages that he held some doctrine of elements, and probably it was the one commonly received at the time. The following quotation[1] Galen considers to be from a genuine treatise: "In the universe there are four elements—fire, air, water, and earth; and in the living body, there are four humours—*black bile, yellow bile, blood, and phlegm. Out of the excess, or deficiency, or misproportion of these four humours there arise diseases; by restoring the correct proportion, diseases are cured.*"[2] Here we have the first exposition of the great doctrine of the humours; a doctrine which has, more than any other or all others put together, affected the development of medicine as a practical art. It is, as we see, of as purely hypothetical an origin as that of the four elements, and as unworthy of reliance in the treatment of diseases, as the other in the construction of railways; yet it is by no means altogether exploded even now, and both in the popular and professional mind exerts a powerful influence in perpetuating the reign of purgatives. How directly this hypothesis affected the practice of Hippocrates, we may illustrate by a sentence from his treatise upon the food proper in acute diseases. Speaking of an acidulated drink, he says, "In a word, the acidity of vinegar agrees rather with those who are troubled with

[1] On the Nature of Man.

[2] Sprengel, Vol. I., p. 377.

bitter bile, than with those whose bile is black; for the bitter principle is *dissolved in it and turned to phlegm by being suspended in it.*"[1] That is, there is a restoration of the balance of the humours, by the conversion of yellow bile into phlegm. Thus even the wise, cautious, practical philosopher is unable to withstand altogether the influence of prevailing opinion.

The inaccuracy of the Greek notions upon physics was owing to the absence of materials on which to employ their faculties of observation and reflection, not to any defect of mental power. They had just emerged from the "dim water world" of Thales, and with uncertain steps began to explore the margin of the dry land. No force of speculation advanced them over the surface of the earth. They could and did discover all the properties of circles and triangles with, or even without, the help of a piece of chalk and a board. Their geometry exercises the intellects of our own day, but their knowledge of geography was almost nothing. No amount of thinking could ever inform them that there existed such a place as Britain: to know of it and its shape required that either one of them should go thither, or a Briton come thence to tell them about it. Before this was possible, a thousand discoveries connected with navigation had to be made, and Time was one of the elements required for the solution of such problems. The vagueness, then, of the Greek physics, was the necessary result of the period in which the early philosophers lived; not of a difficulty inherent in the subject. It is the reverse with metaphysical speculations. We know the relation between mind and matter no more than the Greeks; we have the same data as they had; knowledge here is not cumulative; no amount of railway journeys, or electric telegraphs, or steam printing, or even parliamentary debates, sheds one ray of additional light upon the

[1] Adams' Hippoc., p. 302.

questions which every thoughtful man asks, "What is the soul? Where does it reside? How does it act upon the body, and the body on it?" These questions are just as likely to be wisely answered by Aristotle as they would now be by a Prime Minister of England or the President of the United States of America—the two most enlightened nations in the world, in their own opinion.

Let it not be supposed that we can give the question the go-by as having nothing to do with medicine; the notions which prevailed about the soul have had enormous influence in modifying both medical theory and practice, from the earliest to the latest times. We *must* grapple with the difficulty, and the sooner the better, for it is simpler in the first than in the latter stages of its existence. Historically, therefore, we are bound to examine these notions, and to expound them as best we can; but in our attempts we are embarrassed by the want of proper language; we have no expressions in the English tongue which exactly correspond with the words in constant use among the Greeks, and which have given their names to schools and sciences. What are we to understand by ψυχὴ (psyche) and πνεῦμα?—from the former of which we derive Psychology, from the latter, Pneumatics—two very distinct spheres of science, and yet the two words at the time of Hippocrates represented ideas by no means so dissimilar as we should suppose from their subsequent derivatives. We cannot suggest a better explanation of the meaning of the word ψυχὴ than that given by Sir A. Grant, in the following passage of his clear and able treatise, to which we have already referred[1]:—"If we ask now what were Aristotle's opinions as to the nature of the human soul, as far as they influenced his ethics? we are met at once by a difficulty. For the Aristotleian word ψυχὴ does not exactly correspond with our word Soul.

[1] Grant's Aristotle, p. 236.

It implies both more and less. More, as having on one side, at all events, a directly physical connection; less, as not in itself implying any religious associations.[1] We cannot translate ψυχὴ 'vital principle,' because though it is this, it is a great deal beside; nor 'mind,' because this would leave out as much at the one end as the former translation did at the other. In short, we cannot *translate* ψυχὴ at all; we can only see what Aristotle meant by it. He meant (advancing, as he shows us, from the more or less distinct views of his predecessors), in the first place, to conceive of the ψυχὴ, as a vital principle manifesting itself,[2] in an ascending scale, through vegetable, animal, and human life. . . . Aristotle doubts, but on the whole concludes, that the ψυχὴ is the proper subject of physical science.[3] This he justifies by the fact,[4] that the physical phenomena, anger, desire, and the like, are inseparable from the body and from material considerations. . . . 'The ψυχὴ,' says Aristotle, 'is to the body, as form is to matter,[5] as the impression to the wax, as sight to the eye, . . . *it is the efficient, the final, and the formal cause of the body* . . . The ψυχὴ therefore, is inseparable from the body, at all events, some of its parts, if it be divisible. Nothing, however, hinders that some of its parts may be separable from the body, as not being actualities of the body at all. Moreover,[6] it is not certain whether the ψυχὴ *be not the actuality of the body in the same way that the sailor is of the boat.*' "—

It is not easy to form a definite notion of Aristotle's idea of this ψυχὴ. But we do not find later writers a bit more clear; in fact, the subject does not admit of definiteness; it is in its nature beyond the limits of linear concep-

[1] Surely, "relations to the supernatural" would be a more correct phrase: for the word "soul" does not necessarily imply the conception of obligation to a Divine Being, which the word "religious" does.

[2] De Animâ. II. iv. 2.
[3] De Animâ. I. i. 18.
[4] De Animâ. I. i. 11.
[5] De Animâ. II. i. 7.
[6] De Animâ. II. i. 12.

tions. Milton probably had these passages of Aristotle in his mind when he wrote :—

> "Since light so necessary is to life,
> And almost life itself, if it be true
> That light is in the soul,
> *The all in every part.*" [1]

And here we ascend another step which identifies the ψυχὴ, or the soul, with life, or the vital principle.

"And the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul."[2] We are here introduced to another element in addition to body and soul; we have "the breath of life," or the living or vital breath, or *pneuma*, or spirit. What the exact office held by pneuma, or spirit, was in the opinion of the ancients, it is very difficult to determine; it was in some way essential to life. "The soul, ψυχὴ, slipped into the body along with the pneuma,"[3] according to some Hippocratic treatises. According to the Stoics, "the soul is sensible, and is a spirit which is born with us; consequently it is *a body*, and continues to exist after death." . . . "The soul is a warm spirit (or pneuma); by it we have our breath (or life), and by it we are moved."[4] Sleep, according to Plato,[5] is the relaxed tension of this pneuma—the slackened speed of a train when some of the steam is let off; death its entire cessation—the train stopping when there is no more steam to be had at all, the fuel exhausted, the vital breath no longer generated. According to Erasistratus, this pneuma, or spirit, is double; the one division occupies the breast as the breath of life, or vital air[6] as we now call it; the other inhabits the brain as the soul-spirit.[7]

[1] Samson Agonistes.

[2] Genes. ii. 7. ψυχὴν ζῶσαν, so translated in the Septuagint.

[3] Hippoc. de Diaet. I. p. 342. Sprengel, Vol. I. p. 502.

[4] Diogen. Laert. p. 316.

[5] Plutarch. Plac. Phil., 5-24. "Perhaps," observes Sprengel, "a spurious addition to the views of Plato." Perhaps!

[6] πνευμαζώτικον.

[7] πνευμαψύχικον. Galen de Dogm. Hipp. Plato, Lib. II. Quoted by Sprengel, Vol. II. p. 544.

Perhaps the English word which would best represent either ψυχὴ or πνεῦμα, is one of most unfortunate associations—Ghost. Ghost is the Saxon rendering of the Latin Spirit and the Greek Pneuma—(yet how different is a treatise on Ghosts from one on Pneumatics!). In our English Bible, the terms Holy Spirit and Holy Ghost are used indiscriminately; and when we compare the notions of the Greeks about spirits, we shall find them to be exactly those entertained by ghost believers in the present day. They are visible and impalpable, to be seen and heard, but not to be touched. Thus Achilles, having been favoured with an interview by Patroclus, after that hero had been slain by Hector, makes a speech and

> "This having said, with loving hands he stretch'd him to Patroclus,
> But fail'd to catch him; for the ghost, like smoke to realms infernal,
> Shrieking departed."

"Alas, poor Ghost!" exclaims Hamlet, when his father makes a somewhat similar and hasty exit.

Achilles, too, philosophizes upon ghosts, and observes:—

> "Ye spirits! then within the courts of Aïdes resideth
> *A soul and image*, yet within wanting is sense entirely."

By the last phrase is meant, of course, that it cannot be felt—that it produces no sensation. The conception of ghosts or spirits thus exhibited by Homer and Shakspere, is like that expressed by Mr. Tennyson; at the same time somewhat different from it. For example, let us compare with the passage just quoted the following lines:—

> "Dare I say
> No spirit ever brake the band
> That stays him from the native land
> Where first he walk'd when claspt in clay?
>
> No visual shade of some one lost,
> But *he, the spirit himself*, may come
> When all the nerve of sense is numb:
> Spirit to spirit, ghost to ghost." [1]

And at another part of the same poem, he says:—

> "Come, beauteous in thine *after form*." [2]

[1] In Memoriam, xci. [2] Ib., lxxxix.

It is very remarkable, and shows how entirely barren is this field of speculation, that from the time of Homer to the present day there has not been the slightest progress in a physical theory of ghosts. They hover still in a mid region, between earth and heaven, equally disowned by both. They are no part of either religion or science, and yet their very tenacity of life, such as it is, gives them a certain historical importance. It is much easier, however, to imagine disembodied spirits, than it is to realize embodied ones; that is, what the spirit, ghost, pneuma, or vital principle does in the body. Out of the body it represents the perished tenement.

It was right and natural for the great and unfortunate Raleigh to write:—

> "Go, soul! the body's guest,
> Upon a thankless errand;
> Fear not to touch the best,
> The Truth shall be thy warrant."

His soul, or spirit, was to represent him after his death. This is legitimate enough; but we come back to the question, what does *it* do *in* the body?

To get a satisfactory reply to this we must go back to the notions the ancients entertained of where the soul, or spirit, came from. One of the most prevalent theories—a parent spring of subsequent speculation and belief—on this subject was, that the origin of the world was God, or eternal fire; that this universal and intelligent principle of heat and light penetrates all matter, acting upon it according to fixed laws of growth and decay; that the soul or spirit of man is a portion of this everlasting flame, inhabiting a body, which it presides over, and guards from injury to the best of its ability; and that it "although untaught and uninstructed, does what is proper," to cure diseases which befall the body. Thus "nature," or this intelligent soul of the world, is the physician of diseases.[1] Hence

[1] Celsus, Lib. I., Preface.

comes the term "vis medicatrix naturæ," the healing power of nature, derived, as we see, from a pantheistic theory utterly repugnant to science, and yet paraded with a certain pseudo-pietistical air by writers of the present day, who would be greatly shocked at being supposed capable of propagating heretical, to say nothing of blasphemous doctrines. Let it not be thought that we have here to do only with an erroneous and antiquated mode of expression, as when we speak of the sun's journey round the earth; and that all that is meant by the healing power of nature is, that the body tends to recover from diseases without the intervention of human effort or skill. This is not the case: we have in this phrase the perpetuation of one of the most mischievous figments that have ever retarded the progress of science. Sometimes it takes one name, sometimes another; now it is Pneuma; by-and-by, it will be Archæus; then Vital Principle; but at bottom the idea conveyed by these various expressions is identical—that there is a something, different from the immortal soul on the one hand, and the mortal body on the other, endowed with intelligence and appointed as a sort of internal guardian angel to avert dangers and cure the maladies of the body over which it presides. Now if this angel be supposed to be a direct emanation from the Almighty, the notion is impious, for it lands us in the conclusion that the representative of Omnipotence is subject to continual defeat and overthrow by the most paltry causes. It is a reproduction of the gods of Homer, without their power or dignity. If, on the other hand, there is no such claim made, then the hypothesis is simply unnecessary, useless, absurd, and opposed to all scientific progress; for it introduces into every problem connected with the restoration of the health of an animal the unknown quantity x, as a co-operating cause with or against the physician, according as he takes a right or wrong view of a case he is treating. For example, if the body be attacked with apoplexy, and

if this intelligent guardian spirit be so instructed by direct revelation as to know that bleeding is mischievous, then when the lancet is plunged into the vein it will strive to restrain the flow of the vital fluid; and again, if it knows that a copious sweat is salutary in fever, we shall have its effective co-operation when we give a patient a drop of Aconite. Thus it will oscillate for and against the efforts of the medical operator, and make all positive observations upon the effects of drugs in disease an impossibility. We have seen a revival of something of the kind, in the modern Spirit-rapping; and by the calm observer the idea of disembodied spirits affecting physical changes is rejected on this ground, that if such undeterminable agencies were at work, their presence would frustrate all calculations of engineers, who, if they failed in any attempt, would only have to lay the blame upon counter-plotting spirits; and if we once admit such agents at all, we go back at one leap into the dark ages, and have old women galloping past express trains on their broomsticks; and when we are "dead asleep," we shall find ourselves, like the crew in the "Tempest," "all clapped under hatches, where with strange and several noises of roaring, shrieking, howling, jingling chains, and more diversity of sounds, all horrible," we shall be awakened to be tormented or amused according to the accidental supremacy of fantastic or malignant spirits; and a "Midsummer-Night's Dream" will become a waking reality.

The only reason why the sentence of banishment passed years ago upon spirits, as active agents in the ordinary affairs of life, was not rigorously applied to those supposed to exert a power over living bodies is, that there is an undefined sense of mystery about life, and this mysterious sentiment naturally associates itself with the supernatural, and has a sort of gratification in the region of ghosts and demons; but if we subject the idea to a rigid

examination, we shall discover that there is no more mystery in the growth of a man, or a horse, or a tree, than of a rock; rather there is as much mystery in both—it is all mystery—the mystery being represented in one word—Force. What is, and whence comes Force? This is the ultimate mystery, the starting point of all speculations about matter, the creation of things, &c., &c. It was infinitely more consistent in the ancients to endow the whole world, animate and inanimate, with life, than it is in the moderns to draw an arbitrary line between the two provinces, and require a different kind of machinery to account for the one from that which suffices for the other. We must either admit spirits into winds, and waves, and trees, or banish them from the bodies of animals. Science requires that we shall accept the latter alternative, and give up all belief in Pneuma, Archæus, and Vital Principle, as in Jupiter and Apollo. That is, we must give up the conception of an intelligent internal independent existence, watching over the welfare of the body and *acting* upon it. This idea is untenable, being irreconcilable with progress.

But must we give up the whole world of spirits? Must we disbelieve in a something between an immortal soul and a mortal body diffused through every part of the latter—some nerve-spirit? The assumption of such an existence, so long as it does not outrage physical laws, is perfectly harmless; it is an hypothesis impossible to establish or to overthrow. We may believe in such subtle existences, incorporeal, yet defined; and may conceive of them acting, like upon like, one spirit upon another spirit; and we may imagine them receiving impressions from agencies inappreciable by the senses; we may even go one step further and suppose them, in their turn, acting upon sensitive nervous systems, and thus becoming a kind of corporeal power. All this is harmless speculation so long as they transgress no physical law, nor usurp the place of

mind, will, and conscience. What the exact opinions of Hippocrates upon this subject were, it is impossible to gather from his writings; most probably he did not attempt to define them to himself, but accepted a certain vague notion of a ψυχὴ, or πνεῦμα, which, in some unknown and unknowable way, exerted a constant influence upon all organic bodies.

We have now dwelt at sufficient length upon the subject, giving it much greater proportion than it occupies in the writings, or than it occupied in the thoughts of the great physician of antiquity; but not greater than is due to its importance as a constantly-recurring influence in the efforts of the human mind to arrive at some solution of the problems which tantalize its efforts to reconcile the seemingly contradictory experience of a creature, who "thinks he was not made to die," to whom immortality seems an ultimate fact of consciousness, but who is linked to a body, liable to a thousand casualties, and subject to a death by which this very consciousness appears to be annihilated—the mystery of the union of Life and Mortality.

There still remain for our consideration, the services of Hippocrates in improving the practice of the art of medicine. He belongs to no sect, although claimed by each as its exclusive possession. From the earliest times there were three principal medical sects; and as the distinctive attributes of these divisions depend upon the preponderance of certain elements of character common to all ages, we find them represented throughout the entire history of the art down to the present day. They used to go by the names of the Dogmatists, or Rationalists, the Empirics, and the Methodists. Let us see in what respect Hippocrates agreed with and differed from each and all of them.

The fundamental principle of the Dogmatists was, that

we cannot cure a disease unless we know its cause. In the words of Celsus, "they held it impossible that any one should know how to cure diseases, if he be ignorant of the causes whence they proceed."[1] A very plausible proposition! But what are we to understand by the causes of disease? If all that is meant be the external circumstances which induce unhealthy conditions of the human body, then the statement is incontrovertible: it is true that ague would never have been got rid of by draining the pestiferous marsh, unless it had been known that swamps produce that disease. But the Dogmatist went a step further; not only would he say that ague is caused by a swamp, but it is caused by the swamp increasing, to a mischievous amount, the radical moisture of the body; and it must be cured by opposing to it some remedy which shall increase the radical dryness or heat, so as to neutralize the predominant temperament. This was mere guess-work, and such vain hypotheses still hold their place in modern medicine. We may read in the newest books that leprous affections of the skin are owing to an acid state of the blood, and that the proper cure of the disease is the administration of alkalis. All such vagueness Hippocrates rejected, for the following conclusive reasons, worthy of deliberate consideration even by Members of the College of Physicians of London. "I wish," he says, "the discourse to revert to the new method of those who prosecute their inquiries in the art by hypothesis. For if hot or cold, or moist or dry, be that which proves injurious to man, and if the person who would treat him properly must apply cold to the hot, hot to the cold, moist to the dry, and dry to the moist (on the principle of contraries), let me be presented with a man—not, indeed, one of a strong constitution, but one of the weaker—and let him eat wheat, such as it is supplied from the thrashing-floor, raw and unprepared, with raw meat, and let him

[1] Celsus, Lib. I., Preface.

drink water. By using such a diet, I know that he will suffer much and severely, for he will experience pains, his body will become weak, and his bowels deranged, and he will not subsist long. What remedy, then, is to be provided for one so situated—hot, or cold, or moist, or dry? for it is clear it must be one of these. For according to this principle, if it is one of these which is injuring the patient, *it is to be removed by its contrary.* But the surest and most obvious remedy is to change the diet which the person used, and instead of wheat to give bread, and instead of raw flesh boiled, and to drink wine in addition to these: for by making these changes it is impossible but that he must get better unless completely disorganized by time and diet. What then shall we say? whether that as he suffered from cold, these things being hot were of use to him, or the reverse? I should think this question must prove a puzzler to whomsoever it is put."[1] An opinion in which we doubt not his readers entirely coincide.

We find, then, that Hippocrates, so far from countenancing the doctrine of curing diseases by applying the contraries to their supposed causes, condemns the notion as utterly absurd. But let us not rush into the opposite error, and because Hippocrates is opposed to the dogma of *contraria contrariis*, assume that he is in favour of its opposite, *similia similibus curantur.* In the above quotation he is shown as objecting to assuming imaginary causes at all, as subjects of treatment, and consequently, he would object as much to the principle of similarity as opposition. It is true there is a remarkable passage in favour of the doctrines now known as Homœopathic in one of the Hippocratic treatises, which, although of questionable authenticity, is of undoubted antiquity, and has received the greatest respect from all commentators. On it our learned countryman, Dr. Adams, remarks: "It thus

[1] Hippoc. on Ancient Med. p. 169.

appears that the principles both of Allopathy and Homœopathy are recognized by the author of this treatise."[1]

Although Hippocrates dealt in this summary style with the obvious false reasonings of the Dogmatists, exposing them with Socratic conciseness and subtilty, yet he was very far indeed from rejecting inference and induction, and the application of a strictly-philosophic method in dealing with difficulties which he was unable to surmount by previous experience. So that when Celsus says he was the first to separate medicine from philosophy, he must mean by the latter term the signification it had at the time of Hippocrates, not at the time when he himself wrote; much less what we mean by philosophy. In fact, as we shall see by-and-by, Hippocrates unconsciously discovered the inductive method, and used it as far as he possibly could, being as much allied to the Dogmatists, whose errors he so mercilessly exposes, as to the Empirics.

The Empirics suffer from the prejudice of what the name by which they were called came afterwards to signify. The term is now deservedly used as one of reproach. But originally it meant rather what we should now call the school of experiment and experience. They held that "it is much better to seek relief from things certain and tried, that is, from such remedies as experience in the method of curing has taught us, as is done in other arts; for that neither a husbandman nor a pilot are qualified for their business by reasoning, but by practice; and that these disquisitions have no connection with medicine, may be inferred from the plain fact, that physicians, whose opinions on these matters have been directly opposite to one another, have, notwithstanding, equally restored their patients to health: that this success was to be ascribed to their having derived their methods of cure, not from the occult causes (such as changes in the elements), or the

[1] Adams' Hippoc. p. 77.

natural actions (changes in the temperaments) about which they are divided, but from experiments, according as they succeeded in the course of their practice."[1] Now, although Hippocrates says that "experience is fallacious," and therefore "judgment difficult," he would be the last man to discard experience altogether. Indeed, it is impossible to conceive of medicine making a single step without experiment or experience unless we had a revelation. The question is, what the kind of experiment and experience is to be? If we have nothing but these to guide us, how are we to act in new circumstances? The experience which taught us how to treat a sword-cut will not help us to cure the gout. To this the Empiric would reply that the objection, so far as it went, was an inherent difficulty in the acquisition of all knowledge of matters beyond the immediate consciousness of the human mind; and that we must make the best of it by accumulating experience and registering it so as to make it available, and by separating what is essential from what is accidental in the conditions of every case of cure. This they called, technically, "History." When we have no exact parallel to fall back upon in any puzzling case we must take the one nearest to it. Thus the art of medicine formed *a tripod*, consisting of observation, history, and analogy.[2]

If the Empirics did not embrace the whole truth, they at least propounded doctrines both true and most important; and it is probable that the severe criticism they have met with is owing more to the violent and exclusive spirit of the teachers, than to the reprehensible character of the teaching. They seem, like not a few moderns, to have slighted large cultivation and exalted the technical above the general endowments of the physician. This circumstance accounts for the admirable observation of Celsus, which

[1] Celsus. Op. cit. p. 343. Sprengel, Op. cit. Vol. I. p. 576.
[2] Galen de Sect. Le Clerc, Op. cit.

would otherwise be irrelevant:—"Although many things are taken into the study of the arts which do not, properly speaking, belong to the arts themselves, yet they may greatly improve them by quickening the genius of the artists. *Wherefore the contemplation of nature, though it cannot make a man a physician, yet may render him fitter for the practice of medicine.*"[1] What an admirable rebuke to those who raise the cry of "*Cui bono?*" whenever it is proposed to liberalize the profession of medicine by giving a higher character to University medical degrees! "Can *logic*," say these medical Falstaffs, "set a leg? No. Or an arm? No. Or take away the grief of a wound? No. *Logic* hath no skill in surgery then? No." Wherefore, as I am going to be a pure surgeon, "I'll none of it."

Between the Empirics, or experimentalists, on the one side, and the Rationalists, or speculators, on the other, arose another sect who maintained, according to Celsus, "that the knowledge of no cause whatever bears the least relation to the method of cure; and that it is sufficient to observe some *general symptoms* of diseases; and that there are three kinds of diseases, one bound, another fluent, or attended with some kind of discharge, and the third a mixture of the two." That these kinds of distempers are sometimes acute and sometimes chronic, sometimes at their stage of development, sometimes at their acmé, sometimes at their decline. "That one kind of treatment is required in acute, another in chronic; one when a disease is developing, another when it is at its acmé, and, again, another when it is declining into health." That the observation of these things constitute the art of medicine which they define as a *certain way of proceeding*, or *method*. Hence they got the name of *Methodists*. The corresponding *sobriquet* in modern English is, perhaps, *Routinists*. They differ from the Empirics in holding experi-

[1] Celsus. Op. cit.

ments to be of comparatively little value, and from the Rationalists, in disallowing conjectures about the hidden causes of disease.[1] They were, in fact, the first nosologists, or classifiers of diseases; and they have had a large following from the time of Themison[2] of Laodicea,—who lived in the first century of the Christian era, and who may have been a member of the Church which St. John charges with being neither "cold nor hot,"[3] but of a certain neutral temperature in religious zeal, as he undoubtedly was in medical speculation,—to the days of Cullen, who lived in the reign of George III., and practised in Edinburgh, whence he influenced the whole medical world, during his life and long after his decease.

This sect, too, upheld a principle of fundamental and permanent importance in the growth of art—the principle of Tradition. Method or routine is good if *the* method be good. It is only by some classification that the most capacious and strongest memory can retain the almost infinite variety of morbid phenomena which constitute diseases, and arrange them side by side with the remedial appliances fitted for their removal. All practical men must be, more or less, lovers and followers of routine; it is essential to the despatch of business. Such being the case, it is unwise to denounce routine, or certain method, if it be confined to its proper place—that is, if the arrangement of diseases rests upon some *real* identity or similarity of their nature, not upon an imaginary or assumed one. For example, we know that certain symptoms

[1] Celsus, Op. cit. Preface.

[2] The Themison who has had the misfortune to be immortalized by Juvenal in the line—

"Quot Themison ægros autumno occiderit uno,"

is probably not the great Methodist, as Le Clerc supposes, but a namesake, perhaps a son, who lived at Rome a generation later than the Laodicæan. Juvenal speaks of a contemporary, and the earliest satire was written at the very end of the first century.—Smith's Class. Dict., Art. "Juvenal and Themison."

[3] "And unto the angel of the church of the Laodicæans write, 'I know thy works, that thou art neither cold nor hot: I would thou wert cold or hot.'" —Rev. iii.

indicate a particular condition of the lungs, to which the name of Inflammation is given; we may experiment upon this pneumonia, and accumulate experience about it as if it were an object of natural history, till we arrive at the most certain method of curing it. Following this method, without reflection or further experiment, we shall be routinists, or Methodists; but while we so far enroll ourselves among the Methodic school, our treatment will be very different from that of its head—Themison—who treated this disease with baths and the rubbing in of oils,[1] led thereto by mere conjecture. We give remedies, not only because they theoretically correspond with the disease, but because a very great accumulation of experience has taught us their value; and had it not been for the labours of the classifiers, or Methodists, we could not have so registered our experiments and experience as to make them thus available.

Thus we see, what Hippocrates evidently felt, that no one sect held exclusively the whole truth in medicine; but that of the three a better *tripod* than that of the Empirics was to be raised, of which the one support was Reason, another Experiment, and the third Tradition. Upon this tripod stood Hippocrates, whose method of practice, if it must have a distinct title, may be termed *the Sensible System;* that is, the plan which the most enlightened and liberal man pursues in acquainting himself with all the causes which produce derangement of the health, and all the means by which such disorders may be best remedied or relieved.

What the sources were whence Hippocrates derived his wonderfully exact knowledge of the symptoms, course, and terminations of diseases is, in a great measure, left to conjecture; we know that he was an *élève* of his father, who was at the head of the sacred Sanaturium of Cos. There, doubtless, he saw a considerable number of patients; besides, he had access to the clinical records of this hospital, which he diligently studied, and out of them he procured the

[1] Sprengel. Vol. I. p. 229.

materials for his aphorisms. The histories of the cases were recorded in three different styles; some were upon votive tablets, others were formal descriptions by literary visitors, and the third were drawn up by the physicians themselves. Of the inscriptions on votive tablets there are but four specimens extant, found on an island in the Tiber. As they are of the highest historical interest, and as we are not aware of there being a version of them in any English work, we shall translate the German one, made by Sprengel, who also at the same place gives the original.

I. "In these days the oracle spake to a certain blind man of the name of Gajus: he was to go to the altar and to pray, then make a circuit from right to left, lay his five fingers upon the altar, raise his hand and place it upon his eyes. Thus, in the presence of the people, loudly rejoicing, he regained his health. This manifestation of Omnipotence happened under the Emperor Antoninus.

II. "The oracle spake to the blind soldier, Valerius Aper: he was to come and mix the blood of a white cock with honey, make an eye-salve, and smear his eyes with it for three days. He recovered his sight, and came and returned thanks to the god before all the people.

III. "Julian appeared to be in a hopeless state after an attack of spitting of blood. The god, by means of the oracle, ordered him to come and take a pine-cone from the altar, and to eat this mixed with honey for three days. He was cured, and came and thanked the god before all the people.

IV. "The son of Lucius, who lay hopeless with a stitch in his side, was ordered by the god, in a night vision, to come and take ashes from the altar, to mix them with wine, and lay them on the side. He was rescued, and thanked the god before all the people, and the people wished him joy."[1]

It will be admitted that, if this be a fair sample of the

[1] Hundertmark. De Incrementis Artis Medicæ per Expositionem Ægrotorum in Vias Publicas et Templa. 4to, Lips., 1749. Quoted by Sprengel.

cures recorded on the tablets, and we have no reason to suppose it is not, it would be about as hopeless to extract trustworthy observations from them as from the columns in the newspaper which publish the success of Professor Holloway; nor shall we find anything in the next class of much greater value.

The most celebrated literary man of antiquity, who describes the proceedings in the temple of Æsculapius, and celebrates the cures there performed, is the orator Aristides. We find him constantly referred to, and we may estimate his fitness for the task by the following specimens taken from one of his orations. Speaking of Æsculapius, he says, "There are that say they have been raised from death by him." "But also some, both men and women, lay to his account that limbs of the body have been given them by the providence of the god, their natural ones having been destroyed." "But to me, on the other hand, not a part of the body, but the whole body, having preserved and compacted it together, he himself has given as a gift, just as Promætheus, according to the legend, is said to have formed man." "And how extraordinary are the visions he sends! telling some to drink gypsum, some hemlock, some to strip naked and bathe in cold water; me, too, indeed, has he honoured in this way—curing catarrhs by river and sea-baths, and fits of prostration by long journeys; and when I was unable to breathe, ordering me to read and write."[1] The god evidently saw he had to do with a hypochondriacal rhetorician, and doubtless he treated him in a very judicious manner; but it would be as difficult to extract solid facts from this narrative as sunbeams from cucumbers.

If, however, the clinical records kept by the predecessors of Hippocrates were at all like his own account of cases, then, indeed, they must have afforded a large field of profitable study. Take the following case in illustration :—

[1] Aristides Orat. in Æsculap.

"In Larissa, a man who was bald was suddenly seized with pain in the right thigh; none of the things which were administered did him any good. On the first day fever, acute, of the ardent type, not agitated, but the pains persisted. On the second day the pains in the thigh abated, but the fever increased; somewhat tossed about; did not sleep; extremities cold. * * * On the third day the pain of the thigh ceased; derangement of intellect, confusion, and much tossing about. On the fourth, about noon, he died."[1] "I believe," says Dr. Adams, "this to be a faithful report of a disease which on three several occasions I have met with during an active professional practice of thirty years, *and which I have not seen described elsewhere.*"[2] What exactness of observation and description does this display! A Greek, travelling in Thessaly, is called to attend a man taken suddenly ill; the illness is of a most unusual kind; he makes a few notes of it, which are preserved, and a case is recognized by this brief record to be of the same kind, by a physician in Aberdeenshire, after an interval of 2400 years! If Hippocrates enjoyed the advantage of descriptions at all approaching in graphic conciseness in the records kept by his progenitors, we almost cease to wonder at his marvellous excellence; for certainly, when we compare his *encaustic* pictures, which by a few lines convey an indelible impression of actuality, with the tedious elaboration of petty insignificant detail that characterizes most modern medical writing, and gives the same impression to the mind that a flat, featureless face would to the eye if seen through a magnifying glass, we are half disposed to believe that Hippocrates was as superior to physicians of our day, in his opportunities of acquiring knowledge, as he undoubtedly is in the way in which he used them. "Several sections of the work are perfect masterpieces—such, for example, as the parts which relate to dis-

[1] Epidemics, Book II. Case 5. [2] Adams' Hippoc. p. 557.

locations at the shoulder and hip-joint; and more especially the latter, in which it appears to me, Hippocrates has given *a fuller and more complete history of everything relating to the subject than is to be found in any single work, even to the present day.*"[1] These are the words of a practical surgeon, and a learned and trustworthy man.

While the descriptions of the injuries and diseases which Hippocrates has left us are so accurate and complete that the subsequent experience of twenty-four centuries has found nothing to alter, and yielded little to add; and while the observations on climate and diet, both as they affect the sick and those in health are so enlightened as to be useful to the present day; the rules for the administration of medicine are altogether useless, being founded upon exploded theories of the animal formation and constitution; and the treatment pursued, beyond the adoption of suitable diet and regimen, can be described by no milder epithet than utterly barbarous. It is impossible to arrive at any other conclusion than this, if we take the trouble carefully to read through his undoubtedly genuine works, which are not numerous. We shall go over the list:—

I. *On Airs, Waters, and Places.*—This treatise Dr. Coray divides into six chapters. The first is introductory, and points out how essential it is that a physician should make himself acquainted with the situation and exposure of the cities where he practises his art, what the kind of water is, the nature of the soil, and the habits of the people. The second chapter describes the different winds that prevail in Greece, and their effects on persons exposed to them. The third, the various kinds of water, and how they affect the health of the inhabitants of the districts where they are. The fourth is on the nature of the seasons of the year, in their relation to health and sickness. The fifth and sixth present the contrast between the climate and

[1] Adams' Hippoc. p. 557.

institutions of Greece and Asia, in the formation of their respective characteristics. Hippocrates attributes an immense influence to climate, as producing, on the one hand, men of valour and enterprise, who preferred death to slavery; and engendering, on the other, an effeminate and cowardly race, the willing slaves of any tyrant. Strange to say, Hippocrates is censured for this by two of his ablest modern expositors—Littrè, a Frenchman, and Dr. Adams, a hardy Caledonian—who seem to be of opinion that it is the discipline that makes the soldier, not the soldier the discipline. On the side of the old Greek *versus* the modern Frenchman and Scot, we have the great English Bacon, who says, "A man may truly make a judgment that the principal point of greatness in any State is to have *a race* of military men; therefore, let any prince or State think soberly of his forces, except his *militia of natives* be of good and valiant soldiers." "As for mercenary forces, all examples show that whatsoever State or prince doth rest upon them, he may spread his feathers for a time, but he will mew them soon after."[1] How triumphantly before 1857 would India have been named, in refutation of this last observation! Since that fatal year, what frightful corroboration of the judgment of the great thinker! what a lesson to heed the thoughts of the wise, whether uttered to day in a newspaper, or in the market-place of Athens two thousand years ago![2]

We need say no more of this first treatise of Hippocrates than that it is so pre-eminently judicious, "that," in the words of Dr. Adams, "at the present day it would be difficult to detect our author in a single error of judgment."

II. *On the Prognostics.*—This book treats of the value of the symptoms of disease, what they indicate in respect

[1] Bacon's Essays on the True Greatness of Kingdoms and Estates.

[2] This was written before the volunteer movement was set on foot, and with the hope of attracting attention, so far as lay in my power, to the importance of some such organization.

to the course and issue of the case. It is compiled from the records kept in the temple of Cos, and exhibits Hippocrates' power of induction. It is probably the earliest example of this method of reasoning that exists—certainly the oldest in medicine—and it has never been surpassed, never perhaps equalled, by any of his successors. The following may be taken as samples of the work :—

"It is well when the patient is found by his physician reclining upon either his right or his left side, having his hands, neck, and legs slightly bent, and the whole body lying in a relaxed state, for thus the most of persons in health recline, and these are the best of postures which most resemble healthy persons. But to lie upon one's back, with the hands, neck, and legs extended, is far less favourable. And if the patient incline forward and sink down to the foot of the bed, it is a still more dangerous symptom ; but if he be found with his feet naked and not sufficiently warm, and the hands, neck, and legs tossed about in a disorderly manner and naked, it is bad, for it indicates aberration of intellect. It is a deadly symptom also, when the patient sleeps constantly with his mouth open, having his legs strongly bent and plaited together, while he lies upon his back ; and to lie upon one's belly when not habitual to the patient to sleep thus while in good health, indicates delirium, or pain in the abdominal regions. And for a patient to wish to sit erect at the acme of a disease, is a bad symptom in all acute cases, but particularly so in pneumonia."

"Respecting the movements of the hands, I have these observations to make: when, in acute fevers, pneumonia, phrenitis, or headache, the hands are waved before the face, hunting through empty space, as if gathering bits of straw, picking the nap from the coverlid, or tearing chaff from the wall,—all such symptoms are bad and deadly."

"Those sweats are the best, in all acute diseases, which

occur on the critical days, and completely carry off the fever; those are favourable, too, which, taking place over the whole body, show that the man is bearing the disease better. But those that do not produce this effect are not beneficial. The worst are cold sweats, confined to the head, face, and neck—these, in an acute fever, prognosticate death; or in a milder one, a prolongation of the disease. And sweats which occur over the whole body, with the characters of those confined to the neck, are in like manner bad. Sweats attended with a miliary eruption, and taking place about the neck, are bad. Sweats in the form of drops and of vapour, are good. One ought to know the entire character of sweats, for some are connected with prostration of strength in the body, and some with intensity of inflammation."

"All dropsies arising from acute disease are bad; for they do not remove the fever, and are very painful and fatal."

"With regard to sleep—as is usual with us in health, the patient should wake during the day and sleep during the night. If this rule be anyways altered, it is so far worse; but there will be little harm provided he sleep in the morning, for the third part of the day; such sleep as takes place after this time is more unfavourable, but the worst of all is to get no sleep, either night or day; for it follows from this symptom, that this insomnolency is connected with sorrow and pains, or that he is about to become delirious."[1]

Such are a few specimens of the careful way in which Hippocrates went over the various functions of the body, and noted the differences between their healthy and morbid phenomena, and the indications afforded by the latter of the course and termination of the cases in which they were present. These sentences have been recognized as so truthful by subsequent writers, as to form a part of the

[1] Adams' Hippoc. Prognostics.

staple of medical literature; they display a rare combination of powers of observation, description, and generalization.

The first deficiency noted by Lord Bacon, in his review of medicine, is "the discontinuance of the ancient and serious diligence of Hippocrates, which used to set down a narrative of the special cases of his patients, and how they proceeded, and how they were judged by recovery or death."[1] "This, in fact," wisely writes Dr. Adams, "constitutes the great superiority of the ancient *savans* over the modern, that the former possessed a much greater talent for apprehending general truths than the latter, who confine their attention to particular facts, and too much neglect the observation of general appearances. I trust no one will be offended if I venture to pronounce, regarding the present condition of our professional literature, that (to borrow an illustration from the logic of Kant) it is altogether cyclopic—that is to say, it wants the eye of philosophy; for although we have learned to examine particular objects with greater accuracy than our forefathers did, the sphere of our mental vision, so to speak, is more confined than theirs, and cannot embrace the same enlarged views of general objects." [2]

We now come to the reverse of the medal, and we shall find that while Hippocrates, so long as he pursued the plan of careful observation and induction, was a mighty architect constructing an edifice of cyclopæan magnitude and strength, which the lapse of centuries has rather consolidated, like a vitrified fort, than impaired; so soon as he left this sure method, and resorted to speculation as a guide, he became weak as other men. "For," again to use the words of Bacon, "the wit and mind of man, if it work upon matter, which is the contemplation of the

[1] Of the Proficience and Advancement of Learning. By Francis, Lord Verulam. Edited by B. Montague, Esq. 1838. P. 171.

[2] Adams' Hippoc. p. 232.

creatures of God, worketh according to the stuff, and is limited thereby; but if it work upon itself, as the spider worketh his web, then it is endless, and brings forth, indeed, cobwebs of learning, admirable for the fineness of thread and work, but of no substance or profit."[1] The test of true induction is experience; any proposition concerning matter, which will not stand this, if legitimately applied, must have been a false or insufficient inference from facts, or an imagination not derived from facts at all. To this latter order belong most of the rules laid down by Hippocrates for the selection and administration of active remedies. He imagined the existence of certain humours—black bile, yellow bile, &c.,—and he imagined that disease depended upon changes, either in the just proportion of these, or that they wandered out of their natural channels, and invaded the territories of their neighbours,—that this produced a disturbance in the animal economy; that the perturbation thus set a-going went through a stage of "coction," or cooking, and ended in a "crisis," or judgment;—that is, Nature's judgment of the patient, according to which he was either absolved, if innocent—that is, if if strong enough—and returned to the world of life; or condemned, if guilty—that is, if weak—and consigned to Pluto's dark domain. The plan Hippocrates steadily pursued was, if possible, to obtain a verdict for the patient by assisting the proper coction of the humours, and getting the judgment on a propitious day. Hence the doctrine of critical days applicable to a limited class of disorders, such as fevers, but applied by him to all acute diseases. Now, as these humours had no existence, it is impossible they could have had any action, and it follows that this great physician really fought with shadows. Unfortunately, it was not the air he beat, but the body of the patient he tormented with drugs, or knife, or fire. His

[1] Advancement of Learning, p. 41.

grand rule of practice was not *contraria contrariis*, or *similia similibus curantur*, but *follow Nature*, that is, imitate her operations in effecting first a proper coction, then a favourable crisis. His was, however, the very reverse of what is now called the expectant method; or, "the contemplation of death." The drugs he used were of frightful, often fatal, virulence; and these terrible weapons were employed, as we see, not in accordance with any legitimate deduction, but in obedience to a figment about humours which existed only in his imagination. We shall now adduce the proof of this by continuing the examination of his writings.

III. The treatise whose title is rendered by Dr. Adams, *Regimen in Acute Diseases*, should rather be called the management of such: for, besides the diet proper for these cases, it also mentions drugs and venesection. It is true that the principal part is devoted to *barley-water*, so that by some it is quoted under this title, and yet the acute diseases included "Pleurisy, Pneumonia, Phrenitis, and Apoplexy." It looks like a burlesque upon medicine to write a book upon barley-water as a cure for apoplexy and inflammation of the lungs and brain! Yet it is a serious treatise, giving the most minute directions how it is to be made and administered. "Barley-water, then, appears to me to be justly preferred before all the other preparations from grain in these diseases, and I commend those who made this choice; for the mucilage is smooth, consistent, pleasant, moderately diluent, quenches thirst, if this be required, and has no astringency." It was his great remedy in acute disease, but he had recourse to the powerful auxiliary of blood-letting, when a case was obstinate, and the administration of black hellebore, the favourite purgative in his days. In the treatment of pneumonia or inflammation of the lungs, he recommends bleeding from the arm till the patient faints, if the pain pass upwards to the clavicle.

On the use of water he makes the following observations:—"I have nothing further to add as to the effects of water when used as a drink in acute diseases; for it neither soothes the cough in Pneumonia, nor promotes expectoration, but does less than the others in this respect, if used alone through the complaint. But if taken between Oxymel and Hydromel in small quantity, it promotes expectoration from the change which it occasions in the qualities of these drinks; for it produces, as it were, a certain overflow. Otherwise, it does not quench the thirst, for it creates bile in a bilious temperament, and is injurious to the hypochondrium; and it does the most harm, and does the least good when the bowels are empty, and it increases the swelling of the spleen and liver when they are in an inflamed state; it produces a gurgling noise in the intestines, and swims on the stomach; for it passes slowly downwards, as being of a coldish and indigestible nature, and neither proves laxative nor diuretic."

Now it is quite certain that many of the statements here made are incorrect, not being inductions from experience, but inferences from notions then prevailing about things being in their nature hot or cold, moist or dry. Water was held to be cold, therefore injurious as repressing the process of "coction," hence indigestible, and the fertile source of all sorts of discomforts. Now, we know, by ample experience, that water does not produce all these calamitous consequences, and, in fact, that it is safely substituted for *barley-water;* and we also know that the pain in Pneumonia, going upward to the collar-bone, has no special significance, and, therefore, cannot, when present, justify the bleeding of the patient to fainting. These are examples of the hypothetical indications which Hippocrates allowed to mislead him.

To do him justice, however, we should observe that it is evident he, himself, seems to have been fully aware of the

immense superiority of his knowledge of the symptoms, course, and termination of the various disorders he describes over his ability to treat them, as we shall see by continuing the catalogue of his writings.

IV. *The First and Third Books of the Epidemics.*—There are in all seven books which have come down to us under this title, but of these only two are recognized to be genuine; and most remarkable productions they are. They consist of forty-two admirably drawn-up cases, and out of this number no less than twenty-five ended in death. This, in itself, presents a striking contrast to the cases now generally published, which too often seem intended rather to advance the interest of the narrator than the art of medicine. Still more extraordinary is it to find that, with one exception,[1] there is no mention whatever made of the treatment of all these cases. The exception cannot possibly be related in order to illustrate his successful treatment, but because it was a departure from his ordinary routine; for after describing an acute fever, attended with dry cough, delirium, and which did not abate under the use of warm applications, he says: "I opened a vein on the *eighth day*, and much blood of a *proper character* flowed; the pain abated, but the dry cough continued." The case went on for thirty-four days, when "he sweated all over." "It is possible," he adds, "that *the evacuation of the sputa brought about the recovery* on the thirty-fourth day." It was not a *cure* by blood-letting on the *eighth*, but a *recovery* by a natural crisis on the *thirty-fourth* day. It is suggested by Galen, that the reason of mention being made of venesection in this case is, that the ordinary practice of Hippocrates was to bleed upon the fourth day, and that in this particular instance, for some reason or other, he delayed it to the eighth. It may be so; but surely it is most worthy of observation, that this—the

[1] Case VIII. Book 3.

wisest of physicians, ancient or modern, who was so thoroughly impressed with the difficulties of his art, and who, therefore, we may suppose was most anxious to ascertain, and lay down rules for its practice, should be almost entirely silent in reference to the use of such powerful appliances as bleeding and purging to the verge of destruction. This was not his way when he knew what to teach, as we learn from his surgical papers: for example, take the following:—

V. *On Injuries of the Head.*—Besides giving a description of the different forms of the skull, the accidents to which it is liable, the means the physician must take to ascertain the precise place and kind of fracture or wound, Hippocrates gives exact directions for the treatment, both medical and surgical. After describing how the preliminary examination is to be made, and an incision, so as to expose the bone supposed to be fractured, he proceeds:—"If you perceive an indentation left in the bone by the blow, you must scrape the dint itself and the surrounding bones, lest, as often happens, there should be a fracture and contusion; or a contusion alone, combined with the dint, and escaping observation. And when you scrape the bone with the raspatory, and it appears that the wound in the bones requires the operation, you must not postpone it for three days, but do it during this period, more especially if the weather be hot, and you have had the management of the case from the commencement." "If you suspect, but do not know, the bone is broken or contused, then apply to the scraped part a black pigment (the technical name is given), and having wiped it off, you will distinguish the contused part by its absorbing the colour, while the surrounding bone can be cleaned. You must again scrape more deeply at the black part, and by thus doing, you may remove the fissure which has been caused by the fracture. But if the fracture extends deep, and does not seem likely to disappear

when scraped, such an *accident requires trephining.*"[1] Then we have minute directions as to how the trepan is to be applied, and delineations of the instruments. Now, no one will maintain that Hippocrates thought it was an easier thing, or one less requiring full instructions, to treat an acute disease, such as inflammation on the lungs or brain, than a blow on the head. Indeed, he says, "I would more especially commend the physician who, in acute diseases, by *which the bulk of mankind are cut off*, conducts the treatment better than others."[2] It could not then be indifference, as to the best method of treating these forty-two cases of deadly pleurisies and fevers, which he so graphically describes, that induced Hippocrates to abstain from uttering a word upon therapeutics, and confined him to pathology alone. His reticence must be from a different cause, and this cause will disclose itself when we analyze the greatest of all his works—his famous Aphorisms. Between them and the works just quoted, intervene books VI. "The Surgery," in which all surgical apparatus is minutely catalogued and described; VII. "Fractures;" VIII. "Articulations;" and IX. "Mochlicus." These are all either anatomical or surgical treatises, admitted, even at the present day, to be masterpieces of exact and exhaustive descriptions of the accidents to which bones and joints are liable. The marvellous thing about them is, how Hippocrates contrived to acquire such accurate knowledge of the human frame. It has been a question keenly debated by the learned, whether or not the father of medicine ever prosecuted the study of anatomy by dissecting the bodies of men. On the one hand, it is urged that the feeling of his age would have been so outraged by a violation of the dead, that he could not have ventured to do it, even had he been so disposed; while on the other hand, we have proof positive of his possessing knowledge so minute, as could

[1] Injuries of the Head, 14. [2] Regimen in Acute Diseases, 2.

only be accounted for by careful personal inspection of the objects described. Perhaps the truth lies between the contending parties. Hippocrates exhibits wonderful exactness in all that he has to do with bones, but less when he speaks of the soft parts. He may have had a skeleton in his possession; besides, he doubtless took advantage of every chance which revealed to him the internal human structure. Possibly, he did not lose so much by this want of familiarity with dead bodies, as modern men of science are apt to imagine; and had he from his unripe youth frequented dissecting rooms, he might not in his maturer years have exhibited such exquisite refinement of feeling, by which he is as much distinguished as by his unsurpassed knowledge, and his unequalled sagacity.

The Aphorisms—translated into every civilized language—commented upon by so many learned men that the titles alone of the various editions of the work occupy ten pages of Littrè's "Hippocrates," and even more of Kühn's—consist of 412 short sentences in regard to diseases and their treatment. Small as is this latter division, we find in it frequent repetitions, and some of the aphorisms express not any rule of practice, but the danger of certain medicines. Of the 377 pathological aphorisms, we need only say that they have stood the test of the experience of twenty centuries, and the estimation in which they were held is a fair indication of the degree of enlightenment of an age. With the remaining thirty-five it is different—almost the reverse—obedience to them is a mark of ignorance, not of knowledge. They are founded almost exclusively upon notions of certain humours doing mischief in the body, and, therefore, requiring to be evacuated. "We must evacuate such humours as are concocted, not such as are unconcocted, unless they are struggling to get out, which is mostly not the case.[1] But, alas, we know

[1] Book I. Aph. 22.

nothing of coction now; we have left it far behind, like a legend of Homer. "If the matters which are evacuated be such as should be evacuated, the evacuation is beneficial and easily borne; but if otherwise, with difficulty."[1] We now know we can only evacuate either the ingesta, or parts of the blood, not black bile, yellow bile, and phlegm, at our pleasure; and we know it is not from the aberrations of these imaginary humours that diseases arise, so that their evacuation, even if possible, would be useless.

"Diseases which arise from repletion, are cured by depletion; and those that arise from depletion, are cured by repletion; and in general, diseases are cured by their contraries."[2] This is rendered in Latin, *contraria contrariis curantur*. It is evidently not a therapeutic, but a dietetic formula. Hippocrates was acquainted with no medicine which could replete, therefore it is impossible he could recommend the cure of depletion by repleting medicine; but he must have meant that when the body is of too full a habit, it must be lowered; when too low, raised by such means as sense and experience suggested.

"When you wish the hellebore to act, move the body, and when to stop, let the patient get sleep and rest."[3]

"Hellebore is dangerous to persons whose flesh is sound, or it induces convulsions."[4]

"A spasm after taking hellebore is fatal."[5]

"Convulsion after severe purging is mortal."[6]

We need quote no more in proof of the evident fact, that the remedies Hippocrates was in the habit of employing, were of the most uncertain and dangerous character.

[1] Book I. Aph. 25.
[2] Book II. Aph. 22.
[3] Book IV. Aph. 15.
[4] Book IV. Aph. 16.
[5] Book V. Aph. 1.
[6] Book VII. Aph. 26.

The practitioner who, at the present day, gave a patient such a dose of hellebore, or *veratrum album*, as made him die convulsed, would be sent to prison for manslaughter; and yet it was a frequent occurrence, even in the hands of the most skilful and cautious physician of antiquity.

The Aphorisms stand forth as an imperishable memorial of man's greatness and its limitations; the achievements of Hippocrates in the province to which he had access were almost superhuman; he spared no labour in mastering all the knowledge of his time; the judgment he displays in arranging it is matchless; and his deductions have stood unscathed the test of two thousand years. But one thing he could not do; no force of intellect, no ingenuity, could enable him to construct a system of administering remedies which was of the slightest value, because he had not access to any facts from which to make his inferences; and in the absence of facts, he was obliged to have recourse to fiction. He bequeathed to posterity a perfect manual of the natural history of disease,—he stated the problem he could not solve. "Such are the causes, such the course, and such the termination, alas! of all the diseases of my day; but if you ask me how to cure them, then I must close my mouth,—I did my best, with the rough means at my disposal. After me, perhaps, there may arise one who can give the answer to this riddle; and not till then shall my full merit be perceived; for the dreadful failures in the practice of the art which I can foresee, but cannot avert, will drag down its credit and expose its cultivators to universal dishonour." Such, we imagine, might have been the reverie of Hippocrates, when surveying the past and speculating upon the future of medicine. But well for him it was, that the degradation which was approaching did not come within the sphere of his vision, but lingered till, full of years and honours, he was carried

to the tomb along with all his mighty contemporaries; and when darkness fell upon the land of light and liberty, of poetry, art, medicine, of almost everything which raises man above the beasts that perish, it enclosed no braver, better, nobler man than the great HIPPOCRATES.



GALEN.[1]

CHAPTER III.

Letter of Diocles—The Rude School—Christ's Miraculous Cures—Christianity and Medicine—Medical Practice in Rome—Ghost Story from Pliny—Asclepiades' Homœopathy—His Travels—Pneuma again—The Pulse—Contraria contrariis curantur.

In medicine, as in politics, the defects of a system or theory may be so effectually concealed by a first-rate administrator, as to escape detection, so long as such an one is at the helm; but when the vessel is made over to less-competent successors, then the flaws become manifest. The physicians who succeeded the great Hippocrates furnish a striking illustration of this general remark. One of the first and most celebrated of these was Diocles, who lived between three and four hundred years before the Christian era. There exists a letter which he wrote to Antigonus, the general, who, on the death of Alexander the Great,

[1] Ex vetûssimo codice Dioscoridiano Bibliothecæ Cæs.: Vindob.: from a work entitled, "Veterum illustrium philosophum, poetarum, rhetorum et oratorum imagines ex vetustis nummis, gemmis," &c. Desumptæ a P. Bellario, &c. Romæ. 1685.

became master of the greater part of Asia Minor. The date of this epistle is probably about the year 312 B.C., and it is headed—"On the Preservation of Health." The following extracts will show what his notions upon Pathology and Therapeutics were :—"We divide the human body into four parts. . . . . When a disease is about to fix in the head, it is usually announced beforehand by a vertigo, pain in the head, heaviness in the eyebrows, noise in the ears, and throbbing of the temples ; the eyes water in the morning, attended with dimness of sight ; the sense of smell is lost, and the gums become swelled. When any such symptoms occur, the head ought to be purged ; not, indeed, by any strong medicine, but, taking the tops of hyssop and sweet-marjoram, pound them and boil them in a pot with half a *hemina* of must or rob ; rince the mouth with this in the morning before eating, *and evacuate the humours* by gargling." Quite Hippocratic !—evacuate the humours out of the head, where they are doing mischief, by gargling with marjoram tea ! "The head also should be warm, by covering it in such a manner as that the phlegm may be readily discharged. Those who neglect these symptoms are apt to be seized with the following disorders :—Inflammations of the eyes, cataracts, pain of the ears as from a fracture, strumous affections of the neck, sphacelus of the brain, catarrh, quinsey, running ulcers called achores, caries, enlargement of the uvula, defluction of the hairs, ulceration of the head, pain in the teeth. . . . When some disease is about to fall upon the chest, it is usually announced by some of the following symptoms :—there are profuse sweats over the whole body, and particularly about the chest, the tongue is rough, expectoration bitter or bilious, pain suddenly seizing the sides or shoulder-blades, frequent yawning, watchfulness, oppressed respiration, thirst after sleep, despondency of mind, coldness of the breast and arms, trembling of the hands. These symptoms may be relieved in

the following manner :—Procure vomiting after a moderate meal without medicine ; vomiting also when the stomach is empty will answer well ;—to produce which, first swallow some small radishes, cresses, rocket, mustard and purslain, and then, by drinking warm water, procure vomiting. Upon those who neglect these symptoms the following diseases are apt to supervene :—pleurisy, peripneumonia, melancholy, acute fevers, frenzy, lethargy, ardent fevers, attended with hiccough."[1] When we read this singular document, we can scarcely believe that it was written by a man whose reputation endured for four hundred years. Galen mentions Diocles, along with his idol Hippocrates, as the greatest of medical authorities. Cœlius Aurelianus [2] quotes him more frequently than he does Hippocrates ; and in giving an account of the opinions, he generally places the two names in immediate conjunction. In regard to the authenticity of the letter, Dr. Adams says, "All we shall say on this point is, that the evidence against the authority of this epistle appears to us to be very inconclusive."[3]

When Greece fell into subjection under Philip and Alexander, Mind went into exile; and its first asylum was the city of the latter conqueror. Alexandria had a civilization quite different from that of Athens. When the sun sinks in the desert, there is at first total darkness ; after a brief interval, a pale light shimmers over its surface before night comes on: this strange appearance is called the *after-glow*. Alexandria was the after-glow of Athens. Literature and science were cultivated under patronage, and produced corresponding fruits, rich and corrupt. The Ptolemies were the first of

[1] Paul. Ægineta, Book i., Sect. c.

[2] Cœlii Aureliani, Siccensis, medici vetusti, secta Methodici, de Morbis Acutis et Chronicis. Lib. VIII. Soli ex omnibus methodicorum scriptis superstites. J. Conradus Amman, M.D. Amsterdam, 1709.

[3] The Seven Books of Paulus Ægineta, translated from the Greek, with a Commentary embracing a complete View of the Knowledge possessed by the Greeks, Romans, and Arabians, on all Subjects connected with Medicine and Surgery. G. Fran. Adams. Vol. I. p. 186.

royal patrons. They formed libraries and museums, and collected men of learning; they did all they could to increase knowledge; and had it been possible to rear philosophers as prize-cattle are bred, Alexandria would have been unrivalled. Here, for the first time, those addicted to literature lived in clover; they were fed and lodged out of the royal exchequer; they were treated like silk-worms, and they spun their cocoons. They were great in criticism and burlesque, but the spirit was either dead or corrupt. Medicine took to the prosecution of anatomy. Herophilus and Erasistratus are spoken of by Galen and Celsus as possessing a more accurate knowledge of the human frame than any physicians that lived before their time. It was thus acquired: "They procured criminals out of prison by royal permission, and, dissecting them alive, contemplated, while they were yet breathing, the parts which nature had before concealed—examining their position, colour, figure, size, order, hardness, softness, smoothness, and roughness."[1] In short, they dissected living men,—criminals, perhaps, in the eye of the law, or a lawless tyrant, but probably political offenders, and at all events men of like feeling with themselves. Tertullian[2] says of one of these celebrated anatomists, that "in order to know men he hated them"—a very devilish initiation! Celsus reports the practice, without reprobation, "as being considered far the best method."

The natural result of this brutal proceeding, combined with an entire laxity of morals and excessive voluptuousness, was the utter degradation of the art and practitioners of medicine. Indeed, how could men who had been taught to look upon a human being undergoing the agonies of various prolonged surgical operations, for the amusement or instruction of the operator, be very much concerned about the fate of their patients—so long as they were paid.

[1] Celsus. Pref. p. 7.

[2] "Herophilus ille, medicus aut lanius, qui sexcentos exsecuit ut naturam scrutaretur, qui hominem odit ut nosset."—Tertullian de Animâ, c. 10. Quoted by Sprengel.

And we find a characteristic reply of one of the most distinguished physicians of this school put upon record. He was asked by a man whom he was attending, if there was any hope. He quoted the answer of Achilles to Lycaon, who had piteously touched the knees of the ferocious hero, and implored him to spare his life:

> "Die also thou! why thus to wailing yield thee?
> Dead also is Patroclus, who than thee was greatly better."[1]

This answer was given by Kalianax, who may be looked upon as the founder of the "rude school"—a school which has had several most successful disciples in England, and is far from extinct there now.[2]

In Alexandria, at this period, was introduced the distinction between Physicians and Surgeons. The practice of the latter, if it included lithotomy, was sometimes of rather an equivocal character, although highly remunerative. For when, in 144 B.C., Tryphon aspired to the throne which, two years previously, he had secured for Antiochus VI., he was induced to consult a celebrated lithotomist, who, under the pretext of giving him relief, contrived to operate so dexterously as to make a vacancy in the succession.[3]

We are now coming in sight of that great event from which human history takes a fresh departure. Christianity at first must have acted injuriously upon medicine. The divine Founder of our Faith appeared not only in the character of a preacher, or prophet, but very conspicuously in that of a Healer, or, in fact, of a MEDICAL MAN,—we use the expression with all reverence. One of his appellations, that of Saviour, is translated into German, by the word Heiland, or Healer; and to the common eye of the time, his work was the curing of the sick. Most of the deeds recorded of Him in the Gospels, were instances of

[1] Homer's Iliad, Book XXI.

[2] A professor of the practice of physic in a northern university teaches his students, when they find patients tedious, to desire them "to put out their tongues!"

[3] Liv. Lib. 55.

the restoration of health or life. That this was the impression made upon his contemporaries, appears from the following letter, written by King Abgarus, of Arabia, and translated out of the Syriac language by Eusebius.[1]

"Abgarus, prince of Edessa, sends, greeting, to Jesus the excellent Saviour, who has appeared in the borders of Jerusalem. I have heard the reports respecting thee and thy cures, as performed by thee without medicines, and without the use of herbs. For, as it is said, thou causest the blind to see again, the lame to walk, and thou cleansest the lepers, and thou castest out impure spirits and demons, and thou healest those that are tormented by long disease, and thou raisest the dead. And hearing all these things of thee, I concluded in my mind one of two things,—either that thou art God, and, having descended from Heaven, doest these things; or else, doing them, thou art the Son of God. Therefore, now I have written and besought thee to visit me and *to heal the disease with which I am afflicted.*" "This epistle," observes Eusebius, "he thus wrote whilst yet somewhat (*i. e.* partially) enlightened by the rays of divine truth." Although the genuineness of this letter is much questioned, yet the fact of its approval by Eusebius, shows his sentiments upon the subject of its contents.

But the power of "healing all manner of diseases" was not restricted to the great Author of our Salvation; it was given by Him to his disciples, and their miracles in that direction were as wonderful as his own. Let us consider how this "gift" must have worked upon medicine as a human art and science. Take, for example, one of the greatest of the early converts, the Evangelist Luke. He, according to ~~universal~~ tradition, was a physician. If, after his conversion, he continued to exercise his calling for his support,

[1] The Ecclesiastical History of Eusebius Pamphilius, translated from the Greek by the Rev. C. F. Crusé, A.M. p. 32.

he must have been placed in a very embarrassing dilemma. Suppose him sent for to see some great man, such as King Abgarus, who, being ill, called him in to cure him, how was he to act? If, as one possessing the gift of direct healing, would he be justified in taking a fee? If, on the other hand, he prescribed, as Hippocrates would have done, was he not therein doing despite to the miraculous endowment?

In short, medicine, as an art based upon the natural and ordinary course of events, was superseded for a time by the extraordinary and preternatural power of certain men. Had this power continued in the Church, then the medical profession must have entirely disappeared; for who would have gone through the painful, uncertain, and expensive methods of treatment, then and since in vogue, if all that was required to be done was to send for a holy man to pronounce certain words, and so end the distress? It may be objected, that the cure required faith on the part of the patient. This was, certainly, not always the case; as, for example,—when a youth was cured of fever at the intercession of his father; for the distance and the probable delirium of the patient made any intelligent and mental effort impossible for him; and it is clearly inapplicable to the greatest of all cures—the restoration of those already dead—by no means a very uncommon occurrence.[1]

When we consider the inextricable confusion at this period between the natural and supernatural cures, and how the fact of there being real miracles of healing must have engendered a swarm of impudent pretenders who, of course, would glory in their contempt of science, we cannot be surprised at the antagonism which existed in the first centuries between Christianity and Medicine; or that, while "Galen, and the best heads of Greece and Rome,"[2] despised alike the doctrine and the teachers, confounding them with

[1] Eusebius, p. 203.

[2] Sprengel, Vol. II. p. 147.

the Jews, the early fathers, on their part, were annoyed at the influence of philosophers. Thus, we find in Eusebius the following passage quoted from one of the Christian writers of that period :—"They abandon the Holy Scriptures for the study of geometry ; as, being of the earth, they talk of the earth" [a play upon the Greek words from which *geometry*, or *earth measurement*, is derived], "and know not Him that cometh from above. Euclid, therefore, is industriously measured by them; Aristotle and Theophrastus are also admired ; and as to Galen, he is even, perhaps, worshipped by some."[1] The opposition of religion and science was, at that period, absolute and irreconcilable. The foundation of all science, the reliability of a material cause producing a material effect, and a material effect involving an antecedent material cause, was undermined by spiritual agencies, acting directly upon matter, and suspending what we call its laws. This subserviency of the material to the moral, of matter to spirit, was an exceptional mode of announcing an eternal fact. Should similar occurrences ever reappear, it would be as impossible to reconcile them with science as it was in the case of the miracles.

While medicine, as a practical human art and science, was paralysed in the East by the appearance of the Great Physician, and his wonder-working disciples; it was exposed in Rome, the metropolis of the world, to influences of a very destructive and wholly different character. It is not till the time of the Empire that medicine can be said to have existed in Rome at all ; and the medical celebrities of this period in the history of the art, belong chiefly to the second and subsequent centuries. It is impossible to imagine a great city worse calculated for the honest and independent practice of the medical profession than Rome was under the emperors. It was then nearly as populous as London now is, containing, by the smallest

[1] Eusebius, p. 203.

computation, two millions and a quarter of inhabitants, apparently a promising field of practice. But when we analyse these numbers, we find that there were only 10,000 of what we should call gentry; there were 1,250,000 populace, and about a million of slaves. This populace, or *Plebs*, were always paupers in feeling; a large proportion of them actually received public alms, all of them gratuities in the form of cheap bread and free admission into the theatres, where they witnessed combats between gladiators, and where they not unfrequently saw the noblest men and women torn to pieces and devoured by wild beasts. From a mob fed on unearned bread, and glutted with sights of horror, it would have been folly to expect one spark of genuine feeling, or a sentiment of independence. They were dragooned into outward order by a powerful *gensdarmerie*, chiefly foreigners, who patrolled the streets in great force, and arrested all they found there at night.[1]

The condition of the slaves was most deplorable. "The way in which the Greeks treated their slaves was far more humane than among the Romans. The general notion of the ancients respecting slaves was, that they were entirely the property of their masters, who might make any use they thought fit of them, according to their pleasure, and, if they chose, kill them. . . . Throughout the republic, and with few exceptions up to the time of the Antonines, the master held absolute control over the slaves. He could practise the most cruel barbarities on them, or even kill them with impunity. So that slaves were looked upon as pieces of goods, and tyrannical masters had serious doubts whether they should be considered as human beings at all."[2] There was no middle class in Rome.

[1] Gallus; or, Roman Scenes of the Time of Augustus, by Prof. W. Becker, translated by the Rev. F. Metcalfe, M.A. Parker, 1849.

[2] Ibid.

The position of the physician must have been a degrading one. Galen found it intolerable, although he was probably caressed, and as much respected as any man not of the military or ruling cast could be. He only stayed in the city for three years at a time, and one of the reasons of his quitting it was the intense animosity of his profession out of spite at his splendid success and renown. It is clear there could have been no satisfaction in practising among a vulgar, brutal, greedy, licentious, pauper populace; and as for the slaves, they had no life to be saved; their bodies were their masters', and physicians were even required to perform the most horrible mutilations upon them; "since we are sometimes compelled, against our will, by persons of high rank, to perform this operation,"—writes Paulus Ægineta.[1] Among the upper ten thousand alone, and the strangers who congregated to the capitol, could anything like a satisfactory practice be sought.

But these upper ten thousand of Rome, although immensely rich, some highly cultivated and probably well-bred, must have been a most disagreeable class of patients for many reasons, of which two will suffice. They must have been domineering, and they were superstitious—a combination the most unfavourable possible for the success of a high-minded physician, and the best soil imaginable for the growth of quacks. The Roman magnates could not but be domineering to their physicians, many of whom were slaves. The great men were, or had been, or expected to be, governors of provinces, where, far from the emperor's control, they ruled, with absolute authority, barbarians whom they despised. Nothing reveals the sentiments with which a Roman of the best possible type regarded his subjects, better than the younger Pliny's letter to the Emperor Trajan. This Pliny belonged to one of the best families in Rome. Educated by his learned uncle, the

[1] Paulus Egineta, Vol. II. p. 379.

naturalist, brought up to the bar, an intimate friend of Tacitus, addicted to the study of philosophy and history, and mixing in the most refined and learned society of his day,—if from any one we might expect humanity, liberality, and freedom from superstition, it was from the younger Pliny. In Letter CVII. of Book X., there occurs the celebrated passage wherein the blamelessness of the lives of the Christians in his province is narrated. He then adds:—"From these circumstances, I thought it more necessary to try to gain the truth, even by torture, from two women who were said to officiate at their worship; but I could discover only an obstinate kind of superstition, carried to great excess." These women, whom this elegant scholar exposed to the indignity and horrible anguish of public torture, were the deaconesses of the Christian church—"honorable ladies," in the eyes of St. Paul.

One would naturally expect that a gentleman so indignant at "obstinate superstition," would be remarkably free from it himself; on the contrary, in various passages scattered through his correspondence with his friends, there is abundant evidence of his belief in the most absurd dreams and omens of all kinds; and he relates, without an expression of doubt, the following ghost story, which is interesting, not only as an evidence of Pliny's superstition, but as an example of the unchangeable form of what we may call the ghost-legend; for the following tale is exactly like what we find current among ghost-believers at the present day:—"There was at Athens, a very large and spacious house, but of evil report and fatal to the inhabitants. In the dead of night the clanking of iron, and upon a closer attention the rattling of chains, was heard; first at a great distance, and afterwards very near. A spectre immediately appeared, representing an old man, emaciated and squalid, his beard long, his hair staring,

bolts upon his legs, chains upon his hands, which he rattled as he carried. From these circumstances, the inhabitants, in all the agonies of fear, continued watching during several melancholy and dreadful nights. Such constant watchings brought on distempers, illness was increased by fear, and death ensued; for even in the day, when the spectre was not visible, the representation of the image wandered before their eyes; so that the terror was of longer continuance than the presence of the spectre. At length the house was deserted, and left entirely to the presence of the apparition. A bill, however, was posted up to signify that the house was either to be sold or let, in hopes that some person ignorant of the calamity might offer for it. Athenodorus, the philosopher, came at that time to Athens; he read the bill, the price surprised him; he suspected some bad cause to occasion the cheapness; and upon enquiry, was informed of all the circumstances, by which he was so little deterred, that they were stronger inducements to hire it. When the evening came on, he ordered a bed to be prepared for him in the chief apartment. He called for lights, his table, book, and pen. He sent all his servants into the further parts of the house, and applied his eyes, his hands, and his whole attention to writing, lest, as he had heard of apparitions, his mind, if unemployed, might suggest to him idle fears, and represent false appearances. The beginning of the night was as silent there as in other places. At length the iron clanked and the chains rattled. Athenodorus neither lifted up his eyes nor quitted his pen, but collecting his resolution stopped his ears. The noise increased; it approached, as it was now heard at the threshold of the door, and immediately after within the room. The philosopher turned back his head and saw the figure, which he observed to answer the description that he had received of it. The

apparition stood still, and beckoned with a finger, like a person who calls another. Athenodorus signified, by the motion of his hand, that the ghost should stay a little, and again immediately applied himself to writing. The spectre rattled his chains over the head of the philosopher, who, looking back, saw him beckoning as before, and immediately taking up a light, followed him. The ghost went forward in a slow pace, as if encumbered with the chains, and afterwards, turning into a court belonging to the house, immediately vanished, leaving the philosopher alone; who, finding himself thus deserted, pulled up some grass and leaves, and placed them as a signal to find the spot of ground. The next day, he went to the magistrates, informed them of the event, and desired that they would order the place to be dug up. Human bones were found buried there, and bound in chains. Time and the earth had mouldered away the flesh, and the skeleton only remained, which was publicly buried; and after the rites of sepulture, the house was no longer haunted. I give credit to these circumstances, as reported by others."[1]

When we recollect that of the upper ten thousand a very considerable number were successful military adventurers, who had returned to Rome enormously rich from extortion in the provinces over which they had been placed; that they were idle, ignorant, and given up to every kind of debauchery, the fruitful source of distempers; and that, besides the permanent residents, there were computed to be about 50,000 strangers in the city, we cannot wonder that Rome should be the paradise of quacks. The extravagance of some of these gentry is almost incredible. Athenæus [2] mentions one who styled himself Jupiter,

[1] Pliny's Letters, translated by Lord Orrery. Vol. II. p. 172.

[2] Athenæus, Vol. II. p. 454. "He compelled all who came to be cured by him of what is called the Sacred Disease, to enter into a written agreement that if they recovered they would be his slaves. And they followed him,

and made it a condition with his patients that in the event of his curing them they should submit to his will in all things. He dressed some up as the lesser gods, and so used to hold a court of Olympus in Syracuse. It was the fashion in Rome for physicians to make their rounds attended by a retinue of followers, and Martial describes how his doctor came with his disciples to see him :—"A hundred frozen hands are laid upon me; I had no fever—now I have!" he exclaims.[1]

Even in men of great renown, who exercised a long and powerful, and on the whole beneficial influence on medicine, there was a sad dash of the quackish element, and in none more than in Asclepiades. He was born in Bithynia, and after practising a while in Alexandria, he finally settled in Rome, where he acquired enormous fame by his general talents, especially his eloquence, to which his friend Cicero[2] bears witness. He was evidently a very bold and independent thinker as well as practitioner. He maintained that the body was formed out of corpuscules which were endowed with the power of motion, and that out of the action and reaction of these arose the vital phenomena, while the imperfect performance of their career produced disease; so that all Hippocrates had written about Nature and critical discharges was little better than nonsense, for that Nature did harm as well as good.[3] And as for a soul, he saw no necessity for it at all. To him we are indebted for the brief exposition of

one wearing the dress of Hercules, and being called Hercules; another in the dress of Mercury, with cloak, and caduceus, and wings. But Jupiter Menecrates himself, clad in purple, and having a golden crown upon his head, and holding a sceptre, and being shod with slippers, went about with his choruses of gods."

[1] "Languebam : sed tu comitatus protinus ad me
Venisti, centum Symmache, discipulis,
Centum me tetigere manus Aquilone gelatæ.
Non habui febrem—Symmache! nunc habeo."
Martial. Lib. V. Ep. 9.

[2] De Oratore. Lib. I. Medico *amicoque*.

[3] "Non semper prodest natura sed etiam nocet."—Cœlius Aurel. p. 110.

a physician's duty—"To cure safely, promptly, and pleasantly."[1]

Rejecting the Hippocratic theory of disease, with logical consistency he abandoned the practice founded on it, and maintained that the administration of powerful drugs, instead of expelling the evil from the body, induced an unnatural noxious condition. He trusted much to diet and the proper use of friction and exercise. He was also skilled in various modes of bathing, and was the first who employed the shower-bath. His choice of medicines seems sometimes to have been dictated by the homœopathic formula; for example, he used to give wine in cases of lethargy, although he also gave it in phrenitis to produce sleep. His knowledge of homœopathy, however, was probably of the vague and popular character expressed by the following lines of Antiphanes, who lived B.C. 404, and whose poem contains the fullest and earliest announcement of the doctrine we have met with. One would almost suppose it must have been known to Shakespere when he wrote his famous passage to the same effect. Antiphanes' lines are as follow:—

"Take the hair, it is well written,
Of the dog by which you're bitten;
Work off one wine by his brother,
And one labour with another;
Horns with horns, and noise with noise;
One crier with his fellow's voice;
Insult with insult; war with war;
Faction with faction; care with care;
Cook with cook, and strife with strife;
Business with business, and wife with wife."[2]

The name of GALEN is probably better known in connection with medicine, than that of any other man. His influence has been enormous, extending paramount over a period of fifteen hundred years at the least. He was born

[1] "Tuto, cito, jucunde."—Celsus, p. 110. [2] Athenæus. Op. cit.

A.D. 131, at Pergamus, a town in Asia Minor, celebrated, like the birth-place of his great predecessor, for a Temple of Æsculapius. His father, by name Nicon, was "of surpassing skill in geometry, architecture, astronomy, arithmetic, and logic; but was best known on account of his justice, modesty, and goodness," according to his distinguished, but rather rhetorical son.[1] Nicon must have been somewhat superstitious, for he was induced by a dream,[2] to devote Galen to the study of medicine. After studying in his native place for some years, and obtaining honours in the schools of philosophy, he began his travels, which were for scientific purposes, such as the investigation of asphalte by the Dead Sea, not a safe or easy undertaking in those days. He then spent some time at Alexandria, the great school of anatomy at that period; and, returning to his native town at the age of twenty years, became physician to the temple, where, among his other duties, he had to attend to the accidents which occurred at the public games. Here he remained till the age of thirty-four, when, in consequence of a political disturbance, he left Pergamus and went to Rome. The first thing he did when he got there, was to go to one of the gymnasia or fencing-schools, and, in a wrestle, he got a fall, which dislocated his shoulder. He himself gave directions how it was to be set, telling the attendants not to mind how loud he holloed out from the pain, but to do to him what he did to others. The operation was quite successful. He very soon acquired great renown in Rome, chiefly through his accuracy in prognosticating the course that cases would take, and he was called in by all the grandees. His fees seem to have been very handsome. For curing the wife of the consul Böethius, he received about £350,—a large sum, even in Rome, where every-

[1] De Euchymia et Cacochymia. Lib. VII.

[2] De Medendi Methodo. Lib. IX.

thing was very dear. Another cure he made was very celebrated; it was that of a distinguished philosopher, Eudemius, who had brought on an illness by an excessive dose of theriacum. Strange to say, it was by administering this very medicine in proper measure, that Galen restored him!

"Take a hair," &c.

At this time, he gave public lectures in Rome; but very soon his splendid renown excited such diabolical hatred in the minds of his professional brethren, that he found his life no longer safe. It seems that another Greek physician, along with his two assistants, had actually been poisoned by their rivals, out of envy at their success.[1] So at the age of thirty-seven he was again adrift, and wandered over many lands in pursuit of natural history. At length he returned to Rome, at the requisition of the Emperor Commodus, to be his physician. However, he did not stay long there—probably he found little to his taste in that corrupt capital; and having been warned in a dream to return to his native country, he obeyed the omen, and spent the remainder of his life in the place of his birth. The exact date of his death is uncertain, but it is believed not to have occurred before he had attained the age of seventy years.[2]

"Speech is silver, silence is gold," says the proverb. Hippocrates, the type of a physician, was sparing of words: Galen was a man of silver speech, copious to diffuseness. Le Clerk enumerates about two hundred treatises of his writing, which have been preserved. In fact, he was more of a *savant* than of a practitioner; and his influence is in a considerable measure due to his having written a sort of encyclopædia of medical literature. He was to the medicine of the five centuries which intervened between the age of Hippocrates and his own, what the poet

[1] De Libr. Propt. [2] Le Clerk and Sprengel.

is to his era:—he rang out the old, he completed the record. His positive additions to the practice of the art are incomparably less important than his contributions to its literature; and the innovations of an enduring character which he introduced were rather the result of thought than observation. He was the first to make the important division, familiar to us now, of the causes of disease into "remote" and "proximate," and to divide the former into the "predisposing" and "exciting;" meaning, by *predisposing*, those which produced some change in the condition of a person which made him liable to noxious influence, as, for example, exhaustion or debility; by *exciting*, these noxious influences themselves—as pestilent vapours; while, by the *proximate* causes, or those in immediate connection with the disease itself, he meant the unnatural actions which were thus induced, and which gave rise to pain and general disturbance. Although essentially eclectic, and grievously displeased at the rampant hostilities of the prevailing sects of Dogmatists, Methodists, &c., he was evidently deeply imbued with the doctrines of the school called *Pneumatic*, (from *pneuma*,) which we have already largely discussed as a physiological speculation, but which has also had a lasting and powerful influence in pathology. With him the pneuma was different from the soul, but instrumental as a medium for the action and reaction of soul and body. The soul resided in the brain, to which the spirit, or pneuma, had access by means of the foramina, which he believed to communicate between the nostrils and the interior of the skull.[1] Hence the use of sternutatories: the sneezing was supposed to clear the ventricules of the brain, and allow the soul to be refreshed with pneuma, or spirit, of a better kind. How very material his notions of the spirit were, may be gathered from his description of the sense of sight,[2] in which he speaks of the

[1] De Usu Partium. Lib. VII. [2] Ibid. Lib. X.

pneuma as actually retained in its place by the mechanical distribution of the parts, and as receiving the rays of light and passing them on to the optic nerve.[1] How far Galen concurred with the Pneumatic sect in regarding this spirit as itself liable to derangement, so as to act on the whole system like a poison, it is not easy to make out. This view is thus expressed by Aretæus, a writer supposed to have lived about the same time, and whose admirable descriptions of disease, from their refreshing conciseness and graphic power, present a strong contrast to the vicious elaboration of style common at his time:—"My opinion," he says, when speaking of Cynanche, "is, that it is merely a disease of the breath (*pneuma, spirit*), from its being converted by some action into a very hot and acrid state, without any inflammation of the body; and there is nothing so very extraordinary in this notion, for the suffocation from mephitic caves is exceedingly severe, without there being any bodily disease, and persons die merely from a single inspiration before the body can be in any way affected; and again, a person becomes rabid from the tongue of a dog merely breathing on him in expiration, without his being bitten at all."[2]

According to this theory, an exciting cause, such as the poison of hydrophobia, might act primarily upon the pneuma, or spirit; this, in its turn, upon the brain or other organs, so as to cause death without any disturbance or alteration of the body itself. Against such spiritual disease, it is plain that the ordinary material remedies would be powerless. One cannot physic a ghost.

Whether Galen coincided with this notion or not, he was certainly not a bit less fanciful in his pathology. Thus, he divides inflammation into the following kinds:—1st. The simple, which is caused by excess of blood alone in any part. 2nd. When pneuma enters along with the blood

[1] Sprengel. Vol. II. p. 155. [2] Aretæus, p. 9.

3rd. When yellow bile gains admission, it is erysipelatous. 4th. When phlegm, it is scirrhous or cancerous.

Galen's greatest innovation was the introduction of the indications afforded by the pulse; and his chapters, or rather treatises, upon the pulse, are wonderful examples of perverse ingenuity. He gives tables of the various kinds of pulse, as, for example,—

1. Long, broad, high, large;
2. Long, broad, moderate;
3. Long, broad, low (humilis);
4. Long, moderate, high;
5. Long, moderate, moderate, slender;—

and so on, enumerating twenty-seven varieties of this *quality* alone—that is, of the sensation of the movement in respect to its fulness.

Then we have another table—

1. Quick, quick, slow;
2. Quick, quick, quick;
3. Quick, quick, moderate, &c.,—

also extending to twenty-seven varieties in respect to the rapidity of its beat. Besides the fulness, strength, and rate, there are a multitude of other distinctions which it has been found almost impossible to translate, such as *caprizans*, or jumping like a goat.[1] Of the reality of these nominal differences there is no doubt; but the objection to this attempt to tabulate them in the way Galen has done, is, that no two physicians would agree whether to call a pulse "long, broad, large," or "long, broad, moderate." If these qualities were fixed by a dynamometer, then such tables would have at least an objective and positive foundation to begin with, instead of a merely-arbitrary one. The pulse is, undoubtedly, a most important index of the state of the health; but it requires the cultivated tact of long experience to interpret its signification. It cannot be

[1] De Different. Puls. Lib. I.

read off like a gasometer. Galen used to vaunt that he never was mistaken in his prognosis. If this be true, it was owing to his extensive practice, not to such compilations of dubious indications as he presents us with in these chapters. Were it so, there would have been reason in the question of Martial, possibly put ironically, but reported as a compliment, "How does it happen that my prognostications are not so good as yours? for I have read the prognostics of Hippocrates as well as you." Whether or not Galen possessed the wonderful gift of infallibility which he claims—"never having found himself wrong, with the help of God, in his prediction,"[1]—(he seems to have been a Monotheist, though not a Christian)—it is quite certain that his practice of medicine had all the fatal faults of his idol Hippocrates, besides a large contingent due to himself. He arranged medicines according to what he called their "qualities," by which term he did not mean their action upon the body, but their inherent heat or coldness, dryness or moisture. Thus, a medicine was warm in the first, second, or third degree; and moist or dry in a similar ratio: so a medicine might be hot in the first and moist in the second degree, and if we met with a disease which was cold in the first and dry in the second degree, then we should administer to the subject of it this remedy.[2] We shall best illustrate the working of this folly by a few quotations from Paulus Ægineta, who follows Galen and his school, and has left a volume on *Materia Medica*, from which we extract the following:—

"*Cistus* (rock-rose).—It is an astringent shrub of gently-cooling powers. Its leaves and shoots are so desiccative as to agglutinate wounds; but the flowers are of a more drying nature, being about the second degree; and *hence*, when drunk, they cure dysenteries and all kinds of fluxes."[3]

[1] Comment. 2, in Lib. I. Quoted by Sprengel, Vol. II. p. 169.

[2] De Facult. Simpl. Lib. V.

[3] Paulus Ægineta. Vol. III. p. 74.

"*Lapides* (stones).—All kinds are desiccative, like earth, but the Hœmatitis, or blood-stone, is astringent and desiccative to a considerable degree, so that it agrees with trachoma of the eyelids," &c.[1]

What an extensive generalization!—All stones—that is, all mineral substances—are disposed of as dry, and may be used in moist diseases! Lead, antimony, arsenic, mercury, are interchangeable quantities, or what Galen would call "succedanea."

"*Fœniculum* (fennel) is heating in the third degree, and desiccative in the first; it *therefore* forms milk, and relieves suffusions of the eye." [2]

"*Ferrum* (iron).—When frequently extinguished in water, it imparts a considerable desiccative power to it. When drunk, therefore, it agrees with affections of the spleen." [3] And so on.

Given a disease, determine its character as hot or cold, moist or dry, by an effort of imagination; having done so, select a remedy which has been catalogued as possessing opposite qualities. This is the famous principle of Galen—"*contraria contrariis curantur*"—held in reverence among us to the present day. But Galen, besides treating diseases in this methodic way, was fond of nostrums, and used to purchase them for large sums. Indeed, his prescriptions bear a strong resemblance to those of itinerant quacks. For example, under the head of "dysentery," he gives for indiscriminate selection, according to taste, nine recipes, most of which are incorporated in the formulæ of Paulus Ægineta, of which the following are specimens:—

"Of the ashes of snails, p. iv.; of galls, p. ii.; of pepper, p. i. Reduce to a fine powder, and sprinkle upon the condiments, or give to drink in water, or a white, watery wine."

[1] Paulus Ægineta. Vol. III. p. 220.
[2] Ibid. Vol. III. p. 242.
[3] Ibid. Vol. III. p. 331.

These are compound remedies :—

"The trochisk from Egyptian thorn, that of Philip, that from hartshorn, that from . . . . and the trigonis."

The pills from Macer are excellent remedies. The following is an admirable one :—

"Of opium, of saffron, of Indian lycum, of acacia, of shumach, of frankincense, of galls, of hypocystis, of pomegranate-rind, of myrrh, of aloes, equal parts, give in water to the amount of three oboli." [1]

So we enter the region of polypharmacy, which, although begun by Galen, did not reach its full extravagance till a later age.

[1] Paulus Ægineta. Vol. I. p. 526.



DIOSCORIDES.

CHAPTER IV.

AVICENNA.—DIOSCORIDES.

Church Miracles—Charms and Amulets—Monks and Medicine—The Hospital—Roman Influence—The Decline of the Empire—Julian the Apostate—Saracen Conquests—Rhazes taken at his word—Michael Scott—Joseph Wolff—Modern Persian Physicians—Selling Price of Lawyers and Physicians—Clovis, his Idea of Christian Duty—Punishment Physicians were liable to—Theriacum—Orthodox Medicine.

THE History of the Art of Medicine has hitherto flowed along a single channel. We have traced it from its source in cloud-capped Olympus, the habitation of the gods of Greece; we have watched it loitering in primitive purity about the temples of Æsculapius, till it found its westward way to Rome; where, polluted by the filth of that vicious metropolis, we have seen it converted into a stagnant pool. Here it loses its simple character; like the rest of human history, it becomes broken up; it is no longer a continuity, but a succession of complications—for it enters the revolution of a thousand years' duration, a millennium of troubles and sorrows such as the world never before endured. The whole period was one of gestation, with premature efforts at production; until, after incredible throes

and pangs, it ended in the birth of modern Europe—the Hercules of these days, or rather the Vulcan, who, with his incessant steam-hammer, goes on his irresistible path of conquest, subduing the whole earth and binding it in iron fetters.

Of the multitude of complex forces which resulted in modern art and science, there were four which especially affected medicine :—

1st. The Church.

2nd. The prolongation of the Roman Empire.

3rd. The Arabian or Mahommedan conquests.

4th. The rise and growth of the great northern Powers.

I. By the word *Church*, we understand not only a new form of thought and emotion, but a political organization of enormous power. It presents itself to us in several aspects, in some of which it aided, while in others it impeded, the legitimate and healthy development of medicine. We have already adverted, in the preceding chapter, to the inconveniences which a physician must have experienced when living and practising in an age of miracles. So far from abating after the times of the original apostles, this evil increased with the diffusion of Christianity to an enormous extent. We cannot see that it is such an easy thing as some would make it, to decide, at this distance, between true and false miracles. For example, what shall we make of the following? "About this time two great miracles were wrought at Hippo, in the presence of *St. Augustin*, in the persons of a brother and sister, named Paula and Pallida, natives of Cæsarea in Cappadocia, who were afflicted with excessive trembling in all their limbs. After long wanderings, which had spread the report of their misery in various places, they came at last to Hippo, about fifteen days before Easter, and as is supposed in the year 425. They daily visited the church, and in the place where St. Stephen's relics (some blood and bones) had been deposited, which had been brought there about a year

before. These two unhappy creatures drew the eyes of all upon them wherever they went; and those who had seen them in other places, and knew the cause of their tremors (a mother's curse), related it to others. On the morning of Easter Sunday, a considerable number of people being already assembled in the church, Paula was praying before the place where the relics had been deposited, and holding the rails which surrounded it; when, on a sudden, he lay down on the ground, and so remained as if asleep, but without trembling, as he had been used to do even in his sleep. The spectators were astonished; some were seized with fear, others with sorrow (thinking him dead), some wished to raise him, but others prevented them, and said they ought rather to stay and see the event. Paula rose up, returned the gaze of those who were looking at him, no longer trembling, and perfectly healed; upon which the whole congregation began to praise God, and filled the church with shouts of joy." [1]

What are we to make of this? Here was a cure of shaking palsy effected in the presence of a number of persons, and authenticated by an eye-witness, St. Augustin, who delivered a sermon on the occasion, which is still extant, and who was one of the most learned and influential men of his day. There is nothing incredible to us in a nervous trembling being cured by a powerful influence on the mind of the sufferer. Certainly, at the time, with the established facts of miracles recently preached as a part of Christianity, it would have been the height of presumption for any Christian physician to have treated such a statement as a popular superstition. In that age it would have been simply impossible for him to have done so. This is a fair sample of the kind of competition to which the successors of Hippocrates and Galen were exposed.

[1] Fleury's Ecclesiast. History, Vol. XXIV. Book iv.

But the fourth century was but the evening of the dark ages; and as the night advanced, miracles of this kind, wrought by bones of saints, increased in proportion as the number of priests, whose cupidity was insatiable, multiplied, and as the superstition and credulity of the multitude grew greater. Against such a tide it would have been in vain, even for the learned, sagacious, and eloquent Greek fathers of medicine, to have contended with the faintest hope of success; and when, instead of these great masters of art, there were none but their degenerate successors, whose ignorance[1] and presumption had become a bye-word, we may imagine the hopeless plight into which physic had fallen. While a belief in miracles injured medicine by displacing the practitioners of the art from their legitimate sphere of human activity, the introduction of cabalistic signs, amulets, and charms, acted still more perniciously, by inoculating the art with a vicious element which corrupted its very essence. The fundamental idea of medicine is, that there exists a constant and natural relation between curative substances and curable maladies. A knowledge of this relationship is supposed to be arrived at by experiment and observation. For example, suppose a person to be affected with an ague, it is an ascertained fact that certain drugs will cure it. The belief in this fact rests on the assumption that the remedy possesses both constant and ascertainable properties. But if instead of being a constant quantity, it were to become endowed with a new set of powers by having certain words pronounced over it, or by being prepared on a special day of the week, or during some particular phase of the moon; then it would be manifestly impossible to discover how much of the subsequent effect, that is, of the cure of the ague, was due to

[1] "The ignorance of the Greeks, now most notorious"— "Notissimam nunc Grecorum ignorantiam" are the words of Petrarch.—Rerum Similium, Lib. V. Epist. 7, p. 805. Edit. Basil.

the remedy in its natural state, and how much to the method of its preparation. Suppose one grain of sulphate of quinine, along with nine cabalistic letters, was the recognized cure of a fever, how is it possible we could tell the effect of a similar dose without the addition of this mysterious and incalculable ingredient?

The belief in the efficacy of charms in giving power even to inert remedies, was almost universal during the whole of the first fifteen centuries of the Christian era. Galen, although he bravely opposed this degrading superstition, was himself not altogether free of it; for he says, "I once knew a boy who was never seized with epilepsy after he carried a large piece of fresh peony appended from his neck."[1] And one of the most distinguished physicians of his age, Alexander of Tralles, gives minute details in regard to the use of amulets. Yet this Alexander is spoken of by Sprengel,[2] as a practitioner who displayed more practical insight than any of the other later Greek physicians. He had the advantage, too, of belonging to a family distinguished for its ability and cultivation, being one of four brothers, all of whom have acquired a place in universal history,—the two elder, as physicians; the two younger, the one as a lawyer, the other as an orator and engineer.[3] Besides, he was a man of travel, and of general attainment in literature and science. This great and learned physician, who lived in the fifth century, recommends as one of the most efficacious remedies for epilepsy, "the nail taken from the arm of a malefactor who had been crucified."[4] For the cure of colic, he recommends "the use of a stone on which the figure of Hercules killing a Lion is engraved;[5] besides a verse of Homer and a gold plate, on which certain Greek words of no meaning were to be written, *when the moon was waning.*

[1] Paulus Ægineta. Vol. I. p. 379.
[2] Sprengel. Vol. II. p. 288.
[3] Gibbon. Vol. VII. p. 114.
[4] Paulus Ægineta. Vol. I. p. 381.
[5] Sprengel. Vol. II. p. 297.

As a cure for the gout, the remedy was a plant over which the following words were to be pronounced :—

"Jao, Sabaoth, Adonai, Eloi."

He prescribes for a quotidian ague, an amulet consisting of an olive leaf, on which were written in ink the following letters :—

"K A. P O J. A."

Such being the practice of one of the foremost men of his age, and that not by any means the worst age, we might almost leave to the imagination the proceedings of the ignorant and vulgar practitioners of medicine.

Facts, however, here as elsewhere, exceed the powers of fiction to invent. For example, when a man got a splinter in his eye, he was to lay his hand on the injured organ, and repeat three times, "*Tetuno resonco bregan gresso,*" and after each time to spit on the ground. If a bone stuck in a person's throat three times, nine times "*Os gorgonis basio*" was to be repeated, and *then* the bone was to be plucked out. To cure a stye on the eyelids, the points of nine barleycorns were to be rubbed upon the part, and on each application the words "*Fuge, fuge, krithe se diokei,*" were to be ejaculated. When the stye was on the right eye, it was to be rubbed with the three fingers of the left hand ; three times the patient was to spit, and three times he was to utter "*Nec mula parit, nec lapis lanam fert : nec huic morbo caput crescat, aut si creveret tabescat.*" For the cure of enlarged uvula, a grape was to be given, with the following sentence thrice uttered, "*Uva uvam emendat.*" As an efficacious cure of the colic, a gold plate was to be worn, with the following characters inscribed upon it :—

"L * M θ R J A
L * M θ R J A
L * M θ R J A"[1]

[1] Sprengel. Vol. II. p. 252.

The unavoidable result of once admitting the unknown and unknowable power of preternatural forces into the practice of medicine is irrationality and extravagance; and, even in the present day, a special reference to the inevitable evil of such a proceeding is not altogether out of place.

The Church, considered as an embodiment of belief in the preternatural, was in its operation purely antagonistic to the development of the science as well as the art of medicine. It made the accumulation of data for scientific purposes difficult, if not impossible, and it superseded the necessity of the practice of the art. We must use other words when we regard the Church as a great organization. In this aspect it afforded essential aid, both to medical art and science. The monk is so out of place in the present day, that it is difficult for us to realize a state of matters in which he could be anything else. But when we reflect upon the condition of Europe during the first ten centuries of the Christian era; when we read its history and find a battle in every page—and such battles!—not fought for victory and the restoration of the balance of power, but in which nation encounters nation for the purpose of mutual extermination, the frequent issue being the extinction of the vanquished, which disappears like a ship sunk at sea, never to be seen again; when we contemplate this succession of sanguinary conflicts, literally occupying the whole theatre of history, we cannot be surprised that it should have occurred to men of sane mind that there was no chance of living a holy life in such a world; and that to do so they must withdraw from the tumult into strict seclusion, and dedicate their time to meditation, prayer, and acts of charity and benevolence. For, at this period, mercy in the battle-field was almost unknown. Slaughter or slavery were the only alternatives left to the conquered. Here the office of the holy man, who was known not to

be a fighting man, came into play: respected by both sides, he could administer consolation and alleviation to all.

Although it was not until the middle of the dark ages that monasticism assumed its full proportion, yet we find it in existence at the beginning of our era. The first monks who find a place in history were Jews, and went by the name of Essenes. Josephus[1] tells us that they lived a life of self-denial, despising all bodily gratification, and absolutely refraining from the accumulation of wealth; that they had all their possessions in common, managed by curators or trustees; and he then adds, "Only these two things are done among them at every one's own free will, which are, to assist those who want it, and to show mercy—for they are permitted of their own accord to afford succour to such as deserve it, when they stand in need of it, and to bestow food on those that are in distress; but they cannot give anything to their kindred without the curators. . . . . They are eminent for fidelity, and are the ministers of peace; whatsoever they say, also, is firmer than an oath. . . . . They also take great pains in studying the writings of the ancients, and choose out of them what is most for the advantage of their soul and body, *and they inquire after such roots and medicinal stones as may cure their distempers*,"—and, we may add, not their own distempers only, but also those of all to whom they had access; hence they got the name of Therapeutæ, or healers.

This honourable appellation, given to the members of the earliest monastic institution, was equally merited by their Christian successors during a period of some centuries at least; for we find that Theodore, Archbishop of Canterbury, who died A.D. 690, issued practical directions to the monks as to how they should treat their patients. This prelate's manual of medicine contained, among other rules, an injunction against blood-letting "while the moon was

[1] Wars of the Jews. Book II. Chap. 8.

waxing."[1] If he had added "and when it was waning," there is little doubt that he would have contributed greatly to the saving of human life. Carrying out the original conception of a "Holy Life," the cloistered fraternities were, in the main, devoted to *doing* good, especially to curing the sick: in a comparatively short period, notwithstanding the faith of a few, and the fanaticism of many, the monkish substitute for genuine vitality began to degenerate and decay, while the monks themselves sank into the grossest pollution. "Nothing is more incontrovertible than that the sacred order, both in the west and the east, was composed principally of men who were illiterate, stupid, ignorant of everything pertaining to religion, libidinous, superstitious, and flagitious. Nor can any one doubt that those who wish to be regarded as the fathers of the Universal Church, were the principal causes of these evils. Nothing, certainly, can be thought of, so filthy, criminal, and wicked, as to be deemed incompatible with their characters by the supreme directors of religion and its rites; nor was any government ever so loaded with vices of every kind, as that which passed for the most holy." These are the words of Mosheim,[2] who is distinguished for the temperance of his language, as much as by his general trustworthiness. He is speaking of the tenth century, and we see how the gold has become dross. It is interesting to observe, that, coincidentally with the corruption of morals, these Therapeutæ, or healers, lost their credit as medical men, and brought such disgrace upon the Church by their mistreatment—their *mala praxis*—that, by the council held at Montpelier in 1162, medicine was formally divorced from theology, and the practice of the healing art from that time forbidden to a priest.[3]

[1] Beda, Ecclesiast. Hist. V. iii. p. 374. Quoted by Sprengel, Vol. II. p. 477.

[2] Mosheim, Ecclesiast. Hist. p. 259. Gibbon always calls him the "candid and judicious."

[3] Comment. Rer. Francor. II. p. 980. Quoted by Sprengel. Vol. II. p. 480.

Of the practical benefits which flowed from the religious or superstitious sentiments of the dark ages, perhaps the greatest was the institution of hospitals for the sick poor. We may call these establishments a direct outcome from Christianity. The idea that all men were brethren, and, as such, to be treated with brotherly love, did not exist in Pagan times, and could not find such an exponent as an edifice for the shelter and healing of the poor in the name of God. That it was a state duty to attend to the care of those who could not afford to pay for medical service, was, as we shall presently show, a Roman, not a Christian maxim. And if we wish to see how Christianity has transfigured the thorn into the rose, we should pass from an English workhouse, where the pauper inmates, when ill, are treated with the coarsest physic and most perfunctory attendance, to an hospital of the Sisters of Charity, where poverty and sickness become claims to the most tender nursing, the most delicate fare, and the most skilful medication of the age. The hospital was at first an appendage to the monastery, and most of the great free hospitals in Europe attest, by the names they bear, their religious origin.

Besides its hospital, the monastery had also its garden, where plants believed to possess healing virtues were assiduously cultivated; and this source of medicines was so important, that Charlemagne issued an edict requiring the monks to grow squills and other medicinal plants for the benefit of the district in which they held their possessions. The church of the dark ages was the depository of all the learning that existed. We are, perhaps, too prone to undervalue what it has done for us, to cry out upon its ignorance, forgetting that it was less ignorant than its surrounding multitudes.

The church, we may observe, was at once centralizing and centrifugal. It centred in the bishops of Rome, among

whom were many devoted to science and literature, and it was owing to the zeal of the higher clergy, that, in the twelfth century, in various parts of Europe, schools were opened, which afterwards enlarged into universities. At first, all learning was embraced under the heads of the Seven Liberal Arts, three of which constituted what was called the Trivium, and the remainder the Quadrivium; to the former belonged grammar, rhetoric, and dialectics; to the latter, arithmetic, music, geometry, and astronomy: to these were afterwards added, theology, jurisprudence, and medicine. The seven first constituted the *faculty* of philosophy, and the remaining three completed the four "faculties." Hence came the degrees or doctorships.[1] It was by no means uncommon for ecclesiastics to study medicine theoretically without any intention of practising it.[2] Medicine *then* implied a liberal education. It was reserved for modern times and this country to discover that the doctor in medicine was to be regarded as little above an artizan, and the university education he had gone through to be stigmatized as *professional!* It seems not to be considered at the present day that there are some professions—and medicine one of them—for which a man is really unfitted without such an amount of general culture as to deprive the epithet *professional* of all its reducing signification.

Without its centralization, the church could not have been so powerful a guardian and promoter of learning. We may call this its episcopal aspect: its centrifugal or diffusive power was the monastic. The monkish impulse was to seek out the inaccessible, remote, and repulsive, in order to find an appropriate abode for the cultivation of the ascetic forms of self-denial and sacrifice. Into regions

[1] Mosheim. Vol. II. p. 410.

[2] Pope Sylvester II. says:—"Nec me auctore quæ medicorum sunt, tractare velis, presertim cum scientiam eorum tantum adfectaverim officium semper fugerim."—Du Chesne, Hist. Franc. Script. Vol. II. Sprengel, Vol. II. p. 481.

shunned by the most adventurous trader, or the most ambitious conqueror, the monk made his lonely way, and carried with him his torch of knowledge. What but religious enthusiasm could have impelled men of learning, twelve hundred years before the invention of steam-ships, to the remote shores of the Scottish Iona, an island one mile broad by two miles long! Yet, here were to be found a library of classical authors, and men of the greatest erudition of the age.[1] But for the monasteries, it is very doubtful if we should now possess a copy of Galen, or Livy, or Cicero. With an infinite superfluity of rubbish, the monks of old preserved a very large proportion of all that was precious in literature for our use. It is but fair, when we execrate their misdeeds, to commemorate their merits.[2]

II. By the expression "prolongation of the Roman empire," we mean to indicate the influences which have survived the extinction of that great power. The Roman empire may be likened to one of those animals which consist of a central stomach and heart, and a multitude of tubes going out to the circumference where they terminate in open mouths. Into these mouths their nourishment is continually sucked and so carried inwards to their stomachs, to be digested and propelled outward again in the form of blood. The circumference of the Roman empire was surrounded by barbarians, and the greatness of Rome depended upon its power of imbibing these tribes and nations, drawing them to its centre, and converting them into its own people. They were absorbed as Gauls, or Germans, or Scythians, and returned as Romans. So long as it possessed this capacity of assimilation, it grew in vigour and strength, as in

[1] Buchanan, Rer. Scot. Quoted by Gibbon, Vol. VI. p. 246.

[2] The vices *taught* by the writers of high reputation in the dark ages are not to be named here. Those who desire further information on this disgusting topic we refer to the writings of Platerius, who lived in the twelfth century.

magnitude; but when the quantity to be thus disposed of became excessive, then the decline began. The decay was from within, and the nourishment of the system failed; it became a consumptive giant, huge and feeble, certain to fall before its own faintest effort, or an enemy's slightest blow. Still, the Empire survives in its institutions.

Rome has inscribed its name over Europe, to the present day, in roads, language, and laws. In England, the Roman roads, running with military directness, present a suggestive contrast to the parish, or peace roads, which wind in and out in graceful recognition of the rights of the possessors of the soil. It is the straight line of force beside the curves of freedom. Rome lives still in its language; for, besides being the source of so many modern tongues, Latin was till within a century the general vehicle of learning and science. To the present day it is used in teaching medicine in various parts of Europe, and most of the celebrated medical works of the generation immediately preceding our own were written in Latin.[1]

Among the laws which have an especial bearing upon our immediate task, are those which regulated the practice and profession of medicine. It was not till the time of Nero that we find mention made of the Archiater, or Physician-in-Chief; and at a later period of the empire, when the grades of precedence were fixed with the most scrupulous precision, we discover the social rank occupied by these medical dignitaries. All the magistrates of the empire were divided into three classes — first, the Illustrious; second, the Respectable; third, the Honourable. The appellation Illustrious was confined to men of the highest rank, such as the seven ministers who exercised their ascred functions about the person of the Emperor. The term Honourable was shared by all members of the senate and governors of provinces. A little lower than the first, and higher than the last, were the *spectabiles*—correspond-

[1] Gregory's Conspectus, for example.

ing, perhaps, to our right honourable. This was the title of the Archiater; and, in point of rank, he was equal to the duke of those days—that is, to the general of an independent army.[1] Besides these physicians-in-chief, who were, as we should say, appointed by the Crown, there was in every town and province a certain number of medical officers elected by the people. Out of this combination a college was formed, and when a physician was chosen by the popular voice, he had to pass an examination before this medical board, previous to entering upon his duties. After being duly appointed, he received a fixed salary from the State, in consideration of which he had to render gratuitous service to the poor.[2] In addition to his salary he enjoyed many privileges, such as immunity from conscription, certain advantages in actions at law, &c. He was, however, in immediate subjection to the medical college of his district, which had the power to punish him for improper practice; and when we remember what the recognized canons of medicine then were, and the unscrupulous character of the age, we can have no doubt that this power was often exercised with malicious severity in order to get rid of a dangerous rival. The following edict is a proof that the morality of the medical profession did not stand very high; and is likewise a curious anticipation of the statute of mortmain afterwards passed, to curb the avarice of the priests. "What is stipulated for as a remuneration during health, may be accepted by the physician; but not what those in danger of death promised for their recovery.[3]

Of the physicians of renown who graced the decline of the empire, the most celebrated are Oribasius (A.D. 350),

[1] See Gibbon, Vol. III.

[2] It is, I believe, an anomaly in legislation, that in Britain the physician is required to do certain state-service in the way of writing certificates for the public registrar, without any remuneration for his trouble and loss of time. Such gratuitous service is exacted neither from the clergy nor the lawyers. The former have their burial fees—what have the latter *not*?

[3] Cod. Theodos. Lib. 8. Quoted by Sprengel, Vol. II. p. 232.

Alexander of Tralles (A.D. 360), Ætius (A.D. 400), and Paulus Ægineta (A.D. 420). These were all compilers, rather than original authors. Oribasius wrote no less than seventy books, of which seventeen are still extant. We cannot have a better proof of the servility of the scientific mind of this period, than is afforded by the statement of Dr. Freind, who has bestowed more attention on this stage of the history of medicine than any other writer: that in all these volumes he found but one instance of the slightest deviation from the descriptive anatomy of Galen, which, be it observed, was taken chiefly from the dissection of apes. The exception referred to, occurs in a description of the salivary glands.[1] Oribasius was the first to describe a curious form of madness called Lycanthropia. "Those labouring under Lycanthropia go out during the night, imitating wolves in all things, and lingering about sepulchres until morning. You may recognize such persons by these marks,—they are pale, their visions feeble, their eyes dry, tongues very dry, and the flow of the saliva stopped; but they are thirsty, and their legs have incurable ulceration, from frequent falls. Lycanthhropia is a species of melancholy." It was probably a man afflicted with this form of insanity, who is described by St. Luke in the following passage:—"And when he went forth to land, there met him out of the city a certain man which had devils long time, and ware no clothes, neither abode in any house, but in the tombs."[2] We need hardly observe that the term "having devils" refers strictly to the supposed, or alleged, cause of an affection; and that it is for science to decide, from the reported symptoms, concerning the disease itself. Forrestus, who lived in the sixteenth century, seems to have been the last to describe, as an eye-witness, this dreadful affection, in the person of "a poor husbandman that still haunted about graves, and kept

[1] Oribasius, Lib. XXIV. Quoted by Freind, "History of Physic." See p. 6 of French translation in 4to.

[2] Chap. viii. ver. 27.

in church-yards, of a pale, black, ugly, and fearful look."[1] As this form of insanity is described likewise by Avicenna, it was probably known to the Arabians, and may have given rise to the Ghoul of the "Arabian Nights."

Although the positive contributions of the physicians of this period to medical science and art, were altogether insignificant, yet the personal influence of some of them was very great, and of none greater than that of Oribasius. His life would form the plot of a most interesting romance. He was born at Pergamus, or Sardis, and studied under the philosopher Zeno. He was from his youth an intimate friend of Julian, who afterwards became emperor, and has had the dreadful stigma of *apostate* affixed to his name. Oribasius is said to have assisted Julian to the throne. This statement, however, is a most questionable one; for Julian, as Emperor, heaped all manner of honours and favours upon him. Now, supposing Julian to have been really indebted to Oribasius, would not the alleged treatment of the physician be an example of magnanimity and gratitude rare in any rank, but incredible in an emperor and apostate? Among the services in which Julian employed him was one which has remained famous to the present day. The apostate to Paganism was anxious to restore the altars of the old gods, and among the most celebrated of these was Daphne, situated five miles from Antioch. Thither he despatched Oribasius to inquire of the oracle the issue of an expedition he was about to undertake. But other pilgrims had been at Antioch, telling of one Stephen, a martyr; and when Oribasius questioned the oracle in the name of the Emperor, the answer he got was, that the oracles were now all silent. Nay, more, when Julian himself, on the day of the annual festival, hastened to adore the Apollo of Daphne, instead of the grateful pomp of victims, libations, incense, and hecatombs of fat oxen, supplied by the wealth of Antioch, the Emperor complains that he found only a single goose

[1] De Morbis Cerebri, c. 15. Quoted in Burton's Anatomy of Melancholy, p. 89.

provided, at the expense of a priest, the pale and solitary inhabitant of this decayed temple.[1]

That the Emperor Julian was on the most intimate footing with the physician Oribasius is manifest from the correspondence which passed between them; and that the two were on a par in point of credulity is pretty certain, from a letter of Julian to Oribasius, which has been preserved. It is entitled "Julian to Oribasius, of Pergamus." After a reference to Homer, the Emperor proceeds:—"Methought that, growing in a vast saloon, I saw a noble tree; it was aged, and leaned ominously towards the earth; from its roots there seemed to spring a lusty young tree. I was afraid it would be uprooted, involved in the impending ruin of the parent trunk. I drew near, and found the old tree fallen prostrate to the ground, while the sucker was still erect, though loosened in its earth. This sight seemed to add to my concern. 'What a stately tree this has been!' I cried; 'but this, its offshoot, is it not to perish with it?' On this an unknown personage came forward and said, 'Fear not for the young tree; see, the earth yet clings about the old roots; this sucker from them is unharmed, and will grow up strong.' Such was my dream! what will come of it God knows. But I am most desirous to learn at what period that wretched eunuch set on foot the vile reports of me; let me have explicit information."[2] Thus we see two philosophers who were too wary to believe the evidences of Christianity intensely occupied with the interpretation of a dream! We have quoted this letter, mainly, to show that, although the superstitions of the Christian undoubtedly acted most injuriously upon medicine, it would have been as bad for the science, and much worse for the art, had there been a restoration of Paganism. Indeed, Julian

[1] Gibbon, Vol. IV. p. 221.

[2] Julian's Epistles. I am indebted to my friend Dr. Irvine for this elegant translation, not having had access to the work whence it is derived.

himself was so impressed by the practical benefits of Christianity, that he exhorts his Pagan adherents to imitate the Christians, whom he contemptuously calls Galileans, in their hospitals and other works of charity.

As Oribasius had mounted with Julian, so he fell at his death. He was banished to a barbarous district, where, however, he gained so great a repute by his medical skill as to be had in the highest respect, and at length, despite his Paganism, he was recalled to the Court, in the reign of Valentinian III. Oribasius died at Constantinople, full of years and honours, about the middle of the fifth century.

As the other writers we have named contributed nothing either to the facts or theories of medicine, but were only useful in saving the accumulations of former centuries from dispersion and waste, it would not suit our space to make further acknowledgment of their service.

III. We now come to that stage in our art in which the Arabians play their part. They were the first religious conquerors in the west. Mahomet, the founder of an empire, which, in one form or other, swayed Europe for 600 years, urged his followers by the promise of an eternal paradise to the destruction of the enemies of truth. He fought, not for territorial agrandisement, like the Romans, but for the advancement of a Faith. His language was, "The sword is the key of heaven and of hell; a drop of blood shed in the cause of God, a night spent in arms, is of more avail than two months of fasting and prayer: whosoever falls in battle, his sins are forgiven; at the day of judgment his wounds shall be as resplendent as vermillion, and as odoriferous as musk, and the loss of his limbs shall be supplied by the wings of angels and cherubims."[1] Against the primitive tribes reared in the desert, inured to all its hardships, and animated by ferocious zeal, the effete governments of the

[1] Abulfeda in Vita Mahom. Quoted by Gibbon, Vol. IX. p. 296.

time had no chance. They were trampled down by the Arabs, who rushed like a torrent, scorching (*torrens*) as they went, from one end of Europe to the other. From such a race of fanatical warriors we should hardly expect much regard for science, learning, or art; and yet we find they have done them essential service. The Arabian, or Saracen epoch, coincides with the darkest period of western history, extending from the seventh to the thirteenth century; and, although the first "Commanders of the faithful" were too much absorbed in the propagation of their religion by the sword, to attend to the claims of civilization, yet very soon there arose a race of Kalifs, who recognized the importance of learning, and advanced it with all their power. The famed historian, Abulpharagius, speaking of Almamon, who lived about the end of the eighth and beginning of the ninth century, says, "he was not ignorant that *they* are the elect of God, his best and most useful servants, whose lives are devoted to the improvement of their rational faculties." . . . "The teachers of wisdom are the true luminaries and legislators of a world which, without their aid, would again sink into ignorance and barbarism."[1] Acting on this belief, the wise ruler used his influence in founding schools and collecting libraries over the whole of his dominions from Bagdad to Cordova. At the former place, no fewer than 6000 students received instruction, and there were 70 public libraries opened in Andalusia alone. How many are there in the Spain of to-day? When we enquire what was taught at these schools, we return, again, to the great source of thought—the old philosophers of Greece. After the land of their birth had been converted into a province of Rome, after the Roman had given way to the Goth, and the Goth to the Saracen, still erect and kingly stand the noble Greeks, acknowledged by these wild con-

[1] Quoted by Gibbon, Vol. X., p. 42.

querors as the legitimate legislators of the world. The works of Aristotle, Plato, Euclid, Hippocrates, and Galen, were translated into Arabic by Honain, a Nestorian physician, who flourished at the Court of Bagdad, A.D. 876.[1]

Besides the inestimable service of preserving the writings of the great ancient teachers from destruction, by translating them into various oriental languages, and so perpetuating the vital chain which links age to age and nation to nation, the Arabians made many additions to the practice of the art, which are recognizable to the present day. Hippocrates, as we have seen, when he wanted to evacuate the mischievous humours, was obliged to employ the terrible hellebore, at the risk of producing deadly convulsions: instead of these drastic measures, the Arabians introduced mild aperients, such as senna and rhubarb, and many condiments from "the spicy shores of Araby the blest." In addition to contributing to the *materia medica* native plants and animal products, such as musk, they were, as alchemists, the first to employ distillation by an *alembic*, an Arabic name for the still; and therefore may be called the fathers of modern chemistry; for they set the example of the artificial decomposition of substances, which is chemical analysis,—and if they did so in the pursuit of a chimæra, yet the chase had its use, although the object pursued was unattainable.

One of the greatest of the Arabian physicians—Rhazes—wrote twelve books on chemistry, one of which got him into a sad scrape. *Jbn Juljul* relates, that "Rhazes composed for the same Al Munsúr, to whom he dedicated his '*Liber ad Almonsorem*,' a treatise in which he endeavoured to establish the certainty of alchemy, and that he set out from Bagdad in order to present it to him. Al Munsúr testified great satisfaction in examining the work, and having rewarded the author with a thousand *diners* (about

[1] Abulphar.. Dynast. Quoted by Gibbon, Vol. X., p. 45.

£500), he said to him, '*I wish you to put in practice what you have laid down in this book.*' 'That is a task,' replied Rhazes, 'for the execution of which ample funds are necessary, as also various implements and aromatics of genuine quality; and all this must be done according to the rules of art, so that the operation is one of great difficulty.' 'All the implements that you require,' said Al Munsúr, 'shall be furnished to you, with every object necessary for the operation, so that you may put in practice the rules contained in your book.' Perceiving the prince to be in earnest, Rhazes hesitated to undertake the task, and declared his inability to perform it; upon which Al Munsúr said, 'I should never have thought a philosopher capable of deliberate falsehood in a work represented by him as a scientific treatise, and one which will engage people's hearts in a labour from which they can derive no advantage. I have given you a thousand diners as a reward for this visit and the trouble you have taken, but I shall assuredly punish you for committing a deliberate falsehood.' He then struck him on the head with a whip."[1] The moral of this curious story may be not altogether inapplicable in our own day. If those who delude the public were, in addition to their knavish dividends, to get a sound whipping for their unfulfilled promises, it might lessen the number of delinquents.

It would be unjust to Rhazes to judge him by this ill-natured though characteristic anecdote; for the universal testimony of his contemporaries is in favour of his being a learned, liberal, and accomplished physician, who, with a reputation which secured him an immense and lucrative practice, devoted his time largely to the care of the poor, so that, instead of amassing a fortune, he died in penury. We are disposed to believe this testimony, from the high tone of his

[1] A Treatise on the Small-Pox and Measles, by Rhazes, translated from the Arabic by W. A. Greenhill, M.D., p. 138.

writings. His preference of a physician of learning to one of mere practical skill is so remarkable as to be worth giving in his own words. In a letter to this same Al Munsúr entitled, "What kind of physician is to be made choice of and approved," he says:—"If he has been very industrious in a diligent perusal and examination of the books of the ancient physicians, and has carefully read and compared their writings, we may justly form to ourselves a good opinion of him. . . . We ought to be satisfied as to whether he has practised in populous cities, where there were great numbers of patients, as well as of physicians; . . . but if it were found he were failing in one of these qualifications, it were rather to be wished he were wanting in the practical part (I do not mean to be utterly unacquainted with, at least, some part of it), than to know nothing at all of the learning of the ancients. *For he that is well versed in, and hath well digested the writings of the ancient physicians, will, with a little help of practice, easily attain to what others, who are wholly strangers to this branch of learning, can never be able to compass.*"[1]

Rhazes' most important contribution to modern science is his account of the small-pox, a disease which he was the first to describe. His pathology is painfully Galenic:—"Every man, from the time of his birth till he arrives at old age, is continually tending to dryness; and for this reason the blood of infants and children is much moister than the blood of young men, and still more so than that of old men. And besides, it is much hotter, as Galen testifies in his commentaries on the Aphorisms. . . . Now, the small-pox arises when the blood putrefies and ferments, so that the superfluous vapours are thrown out of it, and it is changed from the blood of infants, which is like must, into the blood of young men perfectly ripened; and the

[1] Liber ad Almansorem. Op. cit., p. 78.

small-pox may be compared to the fermentations and the hissing noise which take place in must at that time." We have here the doctrine of the dry and the moist, the hot and the cold, &c.; and the treatment was, both by Rhazes and the other Arabian physicians, directed in accordance with this purely visionary hypothesis.

Greater even than Rhazes, in his influence upon medicine, over which, through his writings, he exercised a sort of despotic authority for about six hundred years, was Avicenna, called Scheikh Reyes, or the prince of physicians. He was born in Bokhara, whither his father had gone with a son of the same Al Munsúr, to whom Rhazes wrote the epistle we have quoted. Avicenna became celebrated, at a very early age, for the extent of his acquirements in all branches of knowledge, including dialectics, geometry, and astronomy. He relates himself, that he frequently spent the whole night in study, and drank wine to keep himself awake—without, however, entirely succeeding; for he occasionally lapsed into slumber, and found the problems solved in his dreams that had exhausted his waking efforts to overcome. His career was a chequered one; he rose to the rank of vizier, and was then thrown into prison; was again reinstated in his rank and honours, and anon a fugitive from, we may hope, injustice, he escaped, disguised as a monk, to Ispahan, where he acquired great renown. He died at the age of fifty-eight, in the year 1036. His enormous influence is almost entirely due to his literary talents. He translated into Arabic the works of Aristotle, and from this Arabic translation they were rendered into Latin, by Michael Scott, in the twelfth century. This is the same Michael Scott[1] whose tomb is shown in Melrose Abbey, and whose memory has been perpetuated by his great namesake—Walter Scott—in the "Lay of the Last Minstrel." It is interesting to observe how the torch of

[1] Cyclopædia of Biography: Art. "M. Scott."

knowledge is transmitted from land to land in successive ages. Who would imagine, that in remote, inaccessible Bokhara,—known to us chiefly as the scene of the murder of two British officers by the king of that country, and as having called forth the intrepid adventure of the missionary, Joseph Wolff, to make inquisition into the slaughter,—that in such a spot the sacred fire of learning should be cherished, and that from it a ray of light should be sent to flash over the darkness of Europe!

The medical system of Avicenna is in no way different from that of Galen. Diseases and medicines were both classified as moist and dry, hot and cold, in certain arbitrary degrees; we even find, in some of the writings of Avicenna's school, if not in his own, a numerical specification of the exact degree of heat, cold, dryness, and moisture in different substances. For example:—

		Warm.	Cold.	Moist.	Dry.
Cardamom. . .	3i.	1	½	½	1
Sugar	3ij.	2	1	1	2
Indigo	3i.	½	1	½	1
Emblicus . . .	3ij.	1	2	1	2
		4½	4½	3	6

This prescription has an equality of coldness and warmth; but as the quantity of the dry doubles that of the moist, the whole is dry in the first degree![1]

We feel inclined to smile at this as a piece of antiquated nonsense; but it affects the practice in Persia to the present day. Sir John Malcolm, speaking of the Persian physicians, says[2]:—"They class both their diseases and their remedies under four heads—hot, cold, moist, and dry: each may contain one or two of these qualities; and the great principle they maintain is, that a disease must be cured by a remedy of an opposite quality (*contraria contrariis*). He adds in a note: "Mr. Jukes, in a MS. on this subject, observes,

[1] Sprengel, Vol. II., p. 386.

[2] History of Persia, by Sir John Malcolm, Vol. II., p. 531.

that when he was at Ispahan in 1804, ulcerated sore throats were very common, and that he apprehended many patients died because the physicians decided it was a 'hot disease,' and therefore was to be cured by bleeding, and all other cooling remedies. He mentions also some cases of dysentery, in which he in vain recommended mercury. It was a *hot* remedy, the Persian physicians said, and could never be proper when the disease was also hot." Such are the fruits borne by that famous theory of Galen's, expressed by the maxim *contraria contrariis curantur!* and yet we hear our medical philosophers of the present day propounding the strange doctrine, that it is of no great consequence whether medical theories be true or false, that all that concerns us is the accumulation and arrangement of facts.[1] There can be no greater mistake than to suppose, that the avoidance of speculation secures a practitioner from error. Men of mind must speculate, because speculation is a name for thought: men of no mind follow the speculations of others, as the Persians did those of the Greeks; and the less they speculate, the more likely are they to become enthralled by a superannuated theory, which a keener intelligence would have exploded, when it was found to be useless. After the practical commentary afforded by our quotation from Malcolm, we shall have no scruple in agreeing with Sprengel, that if we abstract the additions made by the Arabians to the *Materia Medica*, we shall find that all else they did for the Art of Medicine, consisted in preventing the knowledge and wisdom of the Greeks—to which they had succeeded by right of conquest—from perishing in the great catastrophe of history, the breaking up of the Roman Empire by the Northern nations, whose influence upon medicine we have now to consider.[2]

[1] "The days are long past in Medicine when anything merely theoretical could claim prolonged attention."—Sir John Forbes: British and Foreign Medical Review, 1846, p. 239.

[2] Sprengel, Vol. II., p. 471.

While the remote and predisposing cause of the downfall of the empire of Rome was the failure of its own vitality, the immediate cause of its destruction was the displacement of the nations that inhabited the north of Asia. It was this dislocation that set in motion a tide of barbarians, which, rolling in a south-west direction, broke in a succession of waves upon the first great resistance they encountered. The Roman empire, still powerful in its organization, threw back for a time the assaults of this moving sea; but as billow succeeded billow, its strength proved inadequate to sustain a contest ever renewed by a fresh aggressor; and after a long and manful resistance, the huge old ship was breached and the waters of the north rushed into it. Then the old world began to end, and a new world to begin. This new one consisted of men accustomed to a life of privation and exertion—bred in the forest, where they reared their flocks and herds, and attained the primitive ideas of manhood, holding the simple social maxims, that each one was free to come and go, to resist injury, and to avenge wrong. For the most part, they were distinguished for strength and bravery; and were the natural antagonists of Rome. Rome depended upon the discipline of its troops, the superiority of their arms, and the skill of their generals: the Goths and other northern nations were almost entirely ignorant of military tactics; they had no iron out of which to make steel weapons of war, and their sense of obedience due to the commander was in direct proportion to his success as a leader. They were as the raw material to the manufactured article. The result of the collision between these opposite forces was the triumph of skill over ignorance until ignorance became instructed by defeat, and the raw material was gradually worked up into a state of cohesion. Then they were irresistible; for they were superior in physical strength. We cannot wonder that they worshipped might. It was their *right*. They valued men according to their

ability to do work. When they made captives—which they did by the thousand—the price they put upon the slave depended upon his strength and skill in mechanics. A smith sold high, a lawyer very low. It is rather remarkable, however, that a physician brought a handsome sum. These barbarians, in their ignorance, rated the usefulness of the medical men of the civilized States they overran at a much higher rate than has been common since, or probably than was deserved. "The barbarians, who despised death, might be apprehensive of disease; and the haughty conqueror trembled in the presence of his captive, to whom he ascribed, perhaps, an imaginary power of prolonging or preserving his life."[1] This recalls the incident in the history of Darius which we recounted, on the authority of Herodotus, in the first chapter.

Although, in their ignorant credulity, the Goths, the Vandals, the Huns, the Visigoths, the Franks, the Lombards, and the other tribes and nations which successively occupied the fragments of the Roman world which they broke in pieces, might occasionally, and with the uncertainty and caprice of barbarians, lavish rewards upon their medical captives; yet it is plain that medicine, as an art and science, must have been simply non-existent among them; for they had for its cultivation neither time, taste, nor opportunity. So long as they were an army of invasion, they were held together by common danger; but when they became an army of occupation, then the feeble bond of military allegiance was dissolved, and society was reduced to its primitive elements, every man defending himself and not recognizing any obligation to the public welfare. In speaking of the Franks after they had settled in France, Gregory of Tours[2] says:—"No one any longer respects his king, his duke, or his count; each man loves to do evil, and freely indulges

[1] Gibbon, Vol. VI., p. 59.

[2] L. VIII., c. 30, in Tom. II., pp. 325, 326. Quoted by Gibbon, Vol. VI., p. 374.

his criminal inclinations. The most gentle correction provokes an immediate tumult, and the rash magistrate who presumes to censure or restrain his seditious subjects, seldom escapes alive from their revenge." This was the condition of things about 540. No doubt, for a time, under the vigorous administration of Charlemagne, there was much more central authority and restraint; but how completely this depended upon the action of his own great mind in reducing to order the elementary confusion of the times into which he was thrown, is illustrated by the rapid dissolution of his empire within half a century after his death. From that period till the final settlement of the German Empire under Otho I., about the middle of the tenth century, there was little else than anarchy discernible in Europe. No wonder that the arts of peace should have sought a refuge from the perpetual strife that characterized these ages, far away in the remote kingdom of Bokhara, or in the cloisters of the monastery, which the religious feeling of the age protected from the invasion of the soldier.

When there was no law of sufficient force to protect the weak and restrain the strong, the feudal system arose. This is the first step out of absolute anarchy. It divides a kingdom into an infinite number of minute States—what we might call state-molecules—each consisting of a castle occupied by a successful warrior, who secures the service of his retainers to fight with him against his neighbours, at the price of protecting them in their turn from all violence, except his own. It is fundamentally opposed to the idea of law as a power from above, in whose eyes the great and the small are on a level of absolute equality. By the universal conscience of humanity, the murder of a fellow-creature is a crime of the greatest enormity. The Sixth Commandment is the one of all most readily admitted to be of Divine authority. Let us see how the

Christian Franks interpreted this ordinance. We call them Christian, because they had embraced Christianity; but if the anecdote told of the way in which their first leader, Clovis, was converted, be true, and if his notions of Christian duty were shared by his followers, the appellation is hardly merited. Clovis was married to Clotilda, niece of the King of Burgundy. In the distress of the battle of Tolbiac, he invoked to his aid the God of Clotilda and the Christians; and having gained the day, he made a public profession of Christianity, and had its doctrines explained to him. When the priest entrusted with the duty dwelt with pathetic earnestness upon the death and sufferings of Christ, the royal neophyte exclaimed, "Had I been present at the head of my valiant Franks, I would have revenged his injuries!"[1] His zeal against heresy was so strong, that before he marched to the conquest of Gaul, he issued the following proclamation:—"It grieves me to see that the Arians still possess the fairest portion of Gaul. Let us march against them with the aid of God! and, having vanquished the heretics, we will possess and divide their fertile provinces."[2] Such is a fair specimen of the kind of Christianity which animated the Franks, and we shall now see how it affected their criminal code.

In the eye of the law, all freemen are equal; it is as great an affront to its majesty to slay the poorest and feeblest, as the most influential of its subjects. The Franks, however, had a graduated scale, according to which different lives had each its particular value apportioned. A man of the highest rank was rated at six hundred pieces of gold; a noble of lesser account might be legally murdered for three hundred; while a common Roman (for to this baseness had that long-dreaded name come down), might be knocked on the head for fifty.[3] What the upset price

[1] Gibbon, Vol. VI., p. 320.

[2] Gregory of Tours, L. II., c. 37, in Tom. II., p. 181. Quoted by Gibbon.

[3] Gibbon, Vol. VI., p. 348.

of a physician was, we are not informed, but we may be sure, that unless these lawless soldiers were restrained by personal fears or superstition, they would think as little of putting their medical attendant to death, as of hanging a cat. Indeed, we have an historical illustration of it. In the year 565, the Queen of Burgundy died of the plague, as most people did at that time. Her most Christian Majesty, to exhibit her perfect acquaintance with the Gospel of the forgiveness of injuries, asked her husband, King Guntrum, as her dying request, to put her physician to death, for not being sufficiently attentive to her. This pious wish the royal widower punctually fulfilled, after the obsequies of the deceased queen had been performed according to the ritual of the Christian Church.[1]

We cannot more effectually delineate the state of medicine at this period, than by quoting one of the laws by which its practice was restrained, and which were in general force over Europe till the eleventh century. "If a physician injure a nobleman by blood-letting, he shall pay a fine of a hundred solidos; but if the nobleman die after the operation, the physician shall be given up to his relatives, *to do with him what they please!*"[2] They might impale, flay, or crucify him, without a word of remonstrance from public law or opinion. From this point there can be no further descent for medicine in the social scale; and before we proceed to inquire into the technical development of the art at this period, we may repeat the observation forced upon our attention in every page of history, that the feudal system was essentially the power of the sword, as opposed to the power of the law; and it is, we may add, the prolongation of this antiquated and unchristian institution into modern civilization, which has displaced the medical art

[1] Gregory of Tours. Quoted by Sprengel, Vol. II., p. 274.

[2] Lindenbrog, Col. Legg. Antiq. Wisogoth, lit. 1., p. 204. Quoted by Sprengel, Vol. II., p. 483.

from the lofty position it held among the refined Athenians, who considered it a disgrace to be seen with weapons on their persons, except on a field of battle.

If we confine the term *technical* in medicine, to the administration of medicine, the whole of the period we are now surveying is represented by one name—DIOSCORIDES. What Galen was to the art as a whole, to its theories and practice, Dioscorides was to its *Materia Medica*. For more than fifteen hundred years his was the only work upon the subject held as an authority; and Dioscorides was no less slavishly copied in his department, than was Galen servilely obeyed in the other branches of the art of medicine. It was the fashion to find everything in Dioscorides. It was a firm belief, as late as the sixteenth century, that not a plant grew in Germany, France, or England, which had not been described by Dioscorides. Even when potatoes were introduced into Europe, the learned found no difficulty in discovering them in Dioscorides. Dioscorides is supposed to have lived in the first century of the Christian era. He was a Cilician by birth, and wrote in corrupt Greek, which had this great advantage over a pure idiom, that it was impossible to fix with certainty the exact meaning of many phrases. This gives a latitude to the interpretation without which the book would have been deficient in the requisite elasticity. The ambiguity of the language was improved by rude delineations of the plants described; and between the two, we can easily understand that there could be no possible difficulty in recognizing the likeness of the potato, tea, tobacco, coffee, or any other plant, from the hyssop of the wall to the cedar of Lebanon. The book is in the form of a dictionary, arranged according to the order of the Greek alphabet; and, under the initial letter, we have first the different names of the plant, then a description of its appearance, and lastly, its medicinal uses. In the last

division, there is a specification of its "qualities," as hot or cold, and its appropriateness, accordingly, for cold or hot disorders. For example, the article *Iris* consists of a list of synonyms, next a description of the sword-like leaf, the variegated flower from which it derives its name, the root and other parts of the plant; then follow directions for its use, derived from its being of a warming character, and therefore fitted to relieve coughs and to attenuate humours difficult to get rid of.[1]

The characteristic features of the Therapeutics of these fifteen centuries were these: medicines were selected in accordance with purely arbitrary assumptions of their being in their nature either hot or cold, or moist or dry, and the confidence in a composition was, for the most part, in direct ratio to the number, variety, and what we may call, the out-of-the-wayness of its ingredients. The more difficult any substance was to get, the more good it was sure to do. Like barbaric kings, the trust of physicians was in the multitude of their forces, however motley, confused, and unknown. One of the most favourite of their preparations, which went by the name of Theriacum, was composed of the following substances:—Squills, hedychroum, cinnamon, common pepper, juice of poppies, dried roses, water-germander, rape seed, Illyrian iris, agaric, liquorice, opobalsam, myrrh, saffron, ginger, rhaponticum, cinquefoil, calamint, horehound, stone-parsley, cassidony costus, white and long pepper, dittany, flowers of sweet rush, male frankincense, turpentine, mastich, black cassia, spikenard, flowers of poley, storax, parsley seed, seseli, shepherd's pouch, bishop's weed, germander, ground pine, juice of hypocistis, Indian leaf, Celtic nard, spignel, gentian, anise, fennel-seed, Lemnian earth, roasted chalcitis, amomum, sweet flag, balsamum, Pontic valeriam, St. John's wort, acacia, gum, cardamom, carrot seed, galbanum, saga-

[1] Pedacii Dioscoridæ Anazarbei de Materiâ Medicâ, Lib. V. Colon. 1529.

pen bitumen, oposonax, castor, centaury, clematis, Attic honey, and Falernian wine. Sixty-six ingredients composed this mixture, and with the exception of the last, we may safely affirm that the physicians who prescribed it, were entirely ignorant of the effects of any one of them, either taken by those in health, or given to the sick. The reputed virtues of this compound were commensurate with its multifariousness.

1st. It was to be taken twice a-day for seven years, by those bitten by venomous animals, or who had taken poison.

2nd. It was to be taken by people in a dangerous state from some obscure cause resembling poisoning.

3rd. For coughs and pains in the chest.

4th. In Hæmoptysis.

5th. For flatulence, tormina, and celiac affections.

6th. It removes rigors, coldness, and vomiting of bile.

7th. It promotes menstruation.

8th. For loss of voice.

9th. For diseases of the liver.

10th. For diseases of the spleen.

11th. For cancerous affections of these organs.

12th. For nephritic complaints.

13th. For dysenteric attacks.

14th. For dimness of vision.

15th. It is also used as a dentifrice, and many take it at new moon after digestion, for the sake of prophylaxis.[1]

This is a fair specimen of the compound remedies in ordinary use at the time of which we speak; and in proportion as physicians confided in these, did they distrust the simple powerful substances which may be said to form the staple of the medicine of to-day. Of mercury, a substance as important in the practice of modern medicine as gunpowder in modern warfare, and as destructive, Paulus

[1] Paul. Ægin. Vol. III., p. 511.

Ægineta says, that "when swallowed, it brings on the same symptoms as litharge, and the same remedies are to be used in this case."[1] Avicenna says, that "Mercury which has been killed (that is, oxidated) or sublimated, (that is to say, attenuated,) produces grave symptoms, such as pain of the bowels, bloody flux, and so forth."[2]

We may sum up the history of this period in a few words: it took its Psychology, Physiology, and Anatomy, from Aristotle as represented by Galen and Avicenna, its theories of the practice of physic from Galen, and its *Materia Medica* from Dioscorides.

Let us remember that this is orthodox medicine. This is the only system which can put forward a claim to be tried by the great rule of Catholic faith, "*Quod semper, quod ubique, et quod ab omnibus traditum est.*" It was *semper*, that is, it endured for fifteen hundred years; it was *ubique*, it extended from the wall of China to the western shores of Spain; it was *ab omnibus traditum*, in so far, that where the greatest of Galen's successors ventures in the mildest way to differ on the most insignificant point from the sovereigns of medicine, this difference is picked out by modern historians as a feat of heroic independence; was, besides, the system of legal authority in the Roman provinces, any controversion of it entailing most serious penalties. The systems which have sprung up since are of mushroom growth. Not one of them has had the slightest pretension to any one of the three requisites of Catholic orthodoxy. So far from having been *always* believed in, a new one has displaced its predecessor before the latter had obtained the prescriptive right of a generation of believers, and this new one has had to give way to its successor, after even a shorter reign. As for the *ubique*, that generally meant one school, or at the most, one country,—*never* the whole civilized world; and the term *omnibus* is more

[1] Paulus Ægineta, Vol. II., p. 238. [2] Ibid., Lib. IV., p. 112.

appropriate to the vehicle that goes by that name, than to any recent system of medicine. If we adhere to orthodoxy, we must accept Galen and his temperaments, Dioscorides and his Theriacs; these are irreconcilable with modern ideas: if, on the other hand, we accept progress, then we must say farewell to Orthodoxy.



JEROME CARDAN.

CHAPTER V.

ROGER BACON.—JEROME CARDAN.

Roger Bacon—His Nationality—The Philosopher's Stone—His relation to the Church—English Sweating Sickness—Jerome Cardan—Philosopher and Quack—His Algebra and Astrology—Visits Scotland and England—Rise of a Middle Class in Italy—Milan—Salerno—General Turbulence—Robber-knights—The Christian Lady—The Chase—The King—His Sacred Majesty—Touching for the King's Evil.

It was in the year of Our Lord, 1162, at a council held at Montpellier, as has been already mentioned, that a decree was passed forbidding the practice of medicine to the monks. This may be looked upon as the first step in the process of the divorce of medicine and the church; which it took many years to consummate; for, till the middle of the fourteenth century, all physicians were ecclesiastics—in so far, at least, that both had the same education, habits of thought, and social position. Indeed, the former had no title to the appellation of physicians or investigators of nature;

they ought rather to have been called the medical clergy, for they cultivated the study of medicine in exactly the same spirit as the ecclesiastics studied theology; and Galen's works were their Scriptures. To the superficial observer from the date of the Montpellier council, till the period of Luther and Paracelsus, the despotism of opinion and tradition must have seemed absolute.

"The noon-day of Papal dominion extends through the thirteenth century. Rome inspired during this age all the terror of her ancient name. She was once more the mistress of the world, and kings were her vassals." [1]

It was now that the canon law was promulgated, which was nothing more than all the acts of Papal usurpation thrown into a systematic form. This code, of course, required canon lawyers, "who, though many of them laymen, would, with the usual bigotry of lawyers, defend every pretension or abuse to which their received standard of authority gave sanction." [2]

These are the words of Hallam, and are not quoted for the sake of a sneer at the profession of law, but to show that at this period there existed apparently no freedom in any corporation. Freedom took refuge in individual minds —in the impregnable human soul. We find the surface of these dark ages dotted over by men of gigantic growth, towering, like palm trees in the desert, alone and unsupported; in their solitary grandeur testifying to the unexhausted richness of the soil, and predicting the general fertility—of which they were the first-fruits—that should cover Europe after the despotism of opinion, already sapped at its foundation by a multitude of unseen forces, had fallen before the sledge-hammer of Luther and the axe of Calvin.

The most remarkable of these solitaries of this period was Roger Bacon. His history may be taken as in every

[1] Hallam's Middle Ages, Vol. II., p. 1. [2] Ibid., Vol. II., p. 4.

respect representative, and is well worthy of our attentive consideration. Roger Bacon, called the wonderful doctor —*Doctor Mirabilis*—was born in the year 1214 in the neighbourhood of Ilchester. His family must have had considerable wealth, for he expended vast sums, equal to £8000 or £10,000 of modern money, upon his experiments, and part at least of his finances was derived from home. He went at a very early age to Oxford, where he soon achieved a great reputation by his acquirements in languages and the learning of the ancients. He made himself familiar with the writings of Aristotle in the original —a most rare feat in those days, when the works of this pioneer of physical philosophy were generally known only through the gross misinterpretations of the Arabian writers. After spending some time at Oxford, he went to the University of Paris, which was then the metropolis of learning. It was here probably that he composed his great works, and made his wonderful discoveries.[1] The learned V. Cousin, with a display of nationality somewhat amusing, labours to show that Bacon was almost a Frenchman. But it is plain that in the thirteenth century the learned class was a nation of itself; its members spoke a common language, were actuated by common sentiments, had common privileges, and kept altogether apart from the rest of the community. What connection, for example, had John Scotus Erigena, John the Irishman, with the barbarians who then inhabited Ireland? or what resemblance is there between John Duns Scotus and the marauding savages of the Scottish marches? These two Scots would both be infinitely more at home in Paris, than in their native bogs and moors. And so it was with Roger Bacon. His nation was the learned; the consanguinity of thought was then far more of a tie than the accident of the place of birth.

Roger Bacon was the earliest inductive philosopher.

[1] Roger Bacon, Journal des Savants, V. Cousin, 1848, p. 129.

Wonderful as his discoveries are, they are not so remarkable as the independence of mind which enabled him to make them. He opens his *Great Work*[1] thus:—"There are four impediments to knowledge; first, too great dependence upon authority; second, allowing too great weight to custom; third, the fear of offending the vulgar; fourth, the affectation of concealing ignorance by the display of a specious appearance of knowledge." Such phrases are truisms now: then they were tremendous protests against an authority which had set its foot on the neck of kings. Even the saints and fathers, he adds, are subject to the common infirmities of human nature. In his boldness, he anticipates some of the recent forms of rationalism; for after describing a kind of bitumen called *malta*, which burned through armour, he suggests that possibly Gideon had this substance in his pitchers when he defeated the Midianites in so miraculous a manner. Nor is this said out of any disrespect to revelation, for he wrote a large book in order to explain his philosophy to the pope (Clement IV.). His words are:—"If it were not for the reverence which I have for the vicar of Jesus Christ, I would not have undertaken what I do."[2]

Such was the spirit in which Roger Bacon worked—one of reverence for the church, and of free inquiry in all directions. His achievements are almost incredible, both in number and importance. He was the first astronomer of his age: he detected the error of the Julian Calendar, and recommended a more complete rectification than that three centuries afterwards effected under Gregory. He describes the spherical form of the earth. He investigated the phenomenon of the tides. In optics he discovered the use of magnifying glasses and of the camera obscura. In chemistry, or alchemy as it was then called, his discoveries were still more wonderful. He describes a mixture of charcoal, nitre, and sulphur, which, when ignited,

[1] Opus Magnum. [2] Letter to Pope Clement IV.

explodes with fiery coruscations, and a noise like thunder. This, no doubt, was a species of gunpowder; that it was a contrivance for propelling projectiles is an error. There are many explosive compounds, but few, or only one, which can be used for this purpose.

It would be folly to expect that his discoveries in chemistry should not be mingled with superstition. He gravely relates how a ploughman in Sicily found a jar full of yellow water, upon drinking which his whole nature was so entirely changed, that from a clown he became a courtier, handsome and clever, and lived eighty years in the service of the court. This was the effect of potable gold, which, he says, does wonders when well prepared and thoroughly drawn out (triturated).

Of course, he believed in the Philosopher's Stone, which he describes as "that medicine which taketh away all the impurities and corruption of a baser metal, so as to make it into purest silver and gold; and is thought by wise men to be able wholly to remove the corruptions of the human body, so as to prolong life for many ages. This is the '*corpus ex elementis temperatum.*'"[1] This passage deserves our attention. It implies not only the notion, expressed more at length in his other works, that the diminished longevity of man, which he assumes from Scripture to have been at one time many hundred years, arises from the corruption of the race, but also that the consequences of the fall can only be overcome by the progressive improvement of successive generations of men. So that, in his eyes, evidently, the philosopher's stone was no vulgar, wonder-working charm, but a substance which improved the constitution—made the generation which partook of it more healthy—to be the progenitors of more healthy children. Thus, instead of a degradation, there should be a gradual elevation of the race.

It is altogether out of the question to go over all Roger Bacon's sugestions and discoveries; those we have adduced

[1] Opus Magnum, p. 472.

are enough to show the originality and boldness of his mind, and his fate shows that this great man was born out of his due time. He was cited to Rome, judged, condemned, and imprisoned for many years. He died in 1292.

Roger Bacon may be compared to Aristotle. It is rather startling when one makes this comparison of the men, to contrast the consideration in which they were held when alive. We are inclined to ask, What is to be made of human advancement, if this is the result of 1600 years of progress? The answer which suggests itself in favour of the Middle Ages is this: the culture of Greece was an exceptional phenomenon; it was like an experiment carried on upon a small scale, with all the conditions under the command of the operator, to ascertain to what perfection an individual plant could be reared. What we may call the Rose of Pericles, was a specimen of unsurpassed, and possibly unsurpassable, perfection of culture; but after this effort, there was no other, and the plant decayed; while, on the other hand, men like Roger Bacon were the premature efforts of a nascent civilization, confined to no particular place or time, but embracing the whole of Europe, and extending onward to the present day. The Church may be said to have done right in condemning Bacon, because the great function which that institution was then performing, was the aggregation of individuals into communities. It claimed dominion over the king, as over the serf; it proclaimed the brotherhood of all mankind; and if any individuals opposed this claim, by promulgating some new opinion, it was necessary there should be a conflict—the Church must either take the light to hang in its own temple, or extinguish it. In the case of Roger Bacon, the lamp turned out to be too big for the church, and so it had to be broken. The breaking of such lamps scattered the sparks, and increased the conflict between independent thinking and submission to authority, which ended—or, at least, halted—at the Reformation. The

great fact, however, remained, that men were no longer to form schools, and think merely for themselves—they were to think for the masses. These masses were to be drawn up, even at the sacrifice of the centres of illumination, and the lesson was imperceptibly communicated, that now isolated progress was impossible; and that, before the great thinkers of the age could assume their proper place, the grand social problem must be solved, of reconciling individual freedom with submission to law.

It may be asked, What has all this to do with the history of medicine? Much, every way. Medicine, as a science, was concerned in it; still more, medicine as a practical art. Medicine moved along the lines of civilization as the electric wire accompanies the railroad. As the civilization of Italy and the South of France differed from that of the North, so did the development of medicine in these respective regions. This we must examine more closely; but before doing so, let us observe that, as members of the University, as a medical clergy, physicians departed to a hopeless distance from the true idea of medical or healing men. They occupied themselves with the questions of the schoolmen, and neglected entirely the practical duties of their profession. We cannot have a more pointed proof of this, than that afforded by Dr. Thomas Linacre (born 1460), the founder of the College of Physicians of London—that depository, or dormitory, of the medical clergy. "In the prime of his youth," says Hecker, "he had been an eye-witness of the events at Oxford, and survived even the second and third eruption of the sweating sickness (an epidemic of which we shall speak more afterwards, but which, we may here observe, spread more consternation, and committed more havoc than any former plague in England); but in none of his writings do we find a single word of this disease, which is of such permanent importance."[1] How

[1] Hecker, p. 185.

this great physician—physician to Henry VII. and Henry VIII.—occupied himself, is told by Erasmus ; who says, that this Greek and Latin scholar, mathematician, and physician, at the age of sixty, omitting the study of other things, (the sweating sickness for example,) had for the last twenty years been torturing himself in grammar, and that he would consider himself happy if it were permitted him to live until he had certainly established how the eight parts of speech were to be distinguished.[1] Nor was Linacre peculiar in this ; for, on the contrary, "the restorers of the medical science of ancient Greece, who were followed by the most enlightened men in Europe, occupied themselves rather with the ancient terms of art, than with actual observation, and in their critical researches overlooked the important events that were passing before their eyes." We cannot suppose the medical clergy had lost their human feelings ; they must have felt the death of their relatives, friends, and neighbours, as keenly as the rude multitude who were driven almost, or altogether, to distraction by the dreadful pestilences which form one of the historical features of these ages. Not from want of feeling or indifference to the calamity, but from a sorrowful conviction "that no physic afforded any cure,"[2] must they have abdicated their office of standing between the people and the plague. And never was there a time when medical aid was more needed. Besides "the black death, or the great mortality which depopulated Europe in the middle of the fourteenth century, paralysing the mental powers, and inducing panics which led to the most frightful atrocities against the supposed authors of the plague—the unfortunate Jews, who were slaughtered or burned by thousands, (in Mayence alone 12,000 are said to have been put to a cruel death,"[3]) —there were no less than five eruptions of the sweating

1 Erasmus. Quoted by Hecker.
2 Baker.
3 Hecker, p. 44.

sickness in the fourteenth and fifteenth centuries. This disease first appeared in England, and hence was called the English disease. The reason for this preference is thus given by Dr. Kay, the founder of Caius College :—"Cause thereof none other there is than the evil diet of these three countries (England, Brabrant, and the coasts), which distroy more meates and drynkkes without al ordre, convenient time, reason, or necessity, than either Scotlande or al other countries under the sunne, to the great annoyance of their own bodies and wittes . . ." So he goes on to say that if Æsculapius himself were to come to life, he could not save men having so much "sweating stuffe, so many evill humours laid up in store, from this displeasant, fearful, and pestilent disease."[1] So fearful, indeed, was it, that it altogether appalled the people, who neglected the great Church festivals of Michaelmas and Christmas, and gave themselves up to despair.

This sweating sickness broke out afterwards in various countries of Europe, and produced similiar results :—"The alarm which prevailed in Germany surpasses all description, and bordered on maniacal despair." Here it was treated, as we may say, *more Germanico*; that is, when one was taken ill, he or she was put to bed, covered with feather beds and furs ; a stove was heated to furnace-pitch, windows and doors were closed, and to prevent untoward movements for relief on the part of the patient, some persons in health got on the top of them ; and so the sufferer generally perished—*stewed to death*, as it is asserted. This folly worked its own cure ; for some of the most strenuous advocates of this coarse Homœopathy having died, there was a revulsion against this plan; and a more rational system was advised *by two artizans*, who had come to Stettin from England, where they had learned that a cooling method had been more helpful than the heating one.[2]

[1] Caius, 306. Quoted by Hecker. [2] Hecker, 267.

Here we arrive at a most important fact in the History of Medicine. The people had come to distrust their physicians, and the physicians to distrust their physic. When piteously implored for aid, they replied that none could be given, because these diseases were the result of the evil conjunction of the stars. "We, the members of the College of Physicians at Paris, having, after mature consideration and consultation on the present mortality, collected the advice of the old masters" (who knew nothing about it), "we are of opinion, that the constellations, with the aid of nature, strive, by virtue of their divine might, to protect and heal the human race." . . . [1]

As there was no help to be got from these medical clergy, and as men will not submit to die like sheep without some effort to save themselves, it naturally happened that there arose a multitude of quacks, who took upon them the office left vacant by the physicians; and thus the medical profession separated itself into two parts, all the learning gathering about the negative pole, while all the active practical humanity appeared at the opposite—a fatal separation for the art as well as for its victims! For, let us repeat, there never was a time when wise medical observation and counsel were more wanted. Besides the dreadful epidemics, that swept like a blast of the destroyer's nostrils over all Europe, other poisons had been generated by the dissolution of morals, of more permanent operation, if not so suddenly destructive—more mischievous from the contamination of the constitution. Against such diseases, men required protection and *antidotes*. Antidotes were offered, but generally not by the hand of the skilful, prudent physician, but by that of the rash, false, greedy Empiric. This was a great evil under the sun, an evil which endures to the present day.

Between the learned imbeciles on the one hand, and the ignorant Empirics on the other, there arose a sort of mixed

[1] Sprengel.

race at this period, very peculiar, and well worthy of attentive study. The most remarkable example of this kind of hybrid between a philosopher and a quack, is Cardan, who was at once one of the most renowned of the mathematicians and of the astrological practitioners of medicine of his age.

He was born, according to his own autobiography,[1] in Pavia, A.D. 1501. His father was a Milanese, of good family, who, according to his son's description, was distinguished by peculiarities which may, in some degree, account for the extravagances of his offspring. He could see as well in the dark as in the light, and had a familiar spirit whose society seems to have superseded that of his wife, the mother of little Jerome. At least, his two parents lived apart, and, by his own account, he was subjected to very rough usage at the hands of his father. However, veracity was by no means Jerome Cardan's forte, and all he says must be taken *cum grano salis*. His boyhood was afflicted with various forms of disease, and till his nineteenth year he attended his father in what is denominated the capacity of a servant; but, possibly, he merely served as a page, which was common enough then, and far from dishonourable. When nineteen, he went to the gymnasium, and devoted himself to Latin, dialectics, and mathematics. His father was carried off by the plague, and the youth was left to struggle on through poverty in his strange career. At twenty-one he gave public lectures on Euclid, and was chosen Rector of the University of Padua—an honour his penury forced him to resign. He took his degree in his twenty-fourth year, and applied himself to the practice of medicine with such success that soon he acquired an immense reputation. In the year 1550, he made a journey all the way to St. Andrew's, in Scotland, at the request of Archbishop Hamilton, whom he calls Amulthon. He is said to have cured him of some affection of the chest, for which

[1] De Vitâ Propriâ.

he received a fee like a royal ransom. He was afterwards invited to Pavia, Milan, and Bologna; yet he never seems to have been what we should call comfortably off, for we hear of his lying in prison for a year for his debts. He died in the year 1576, for the sake, as it was said, of fulfilling his own astrological prediction.

Such is an outline of his career. When we examine it more closely, we find it made up of two aspects so entirely dissimilar, as to be generally considered mutually exclusive. He was, undoubtedly, a great mathematician. On this head, we shall quote the words of Professor Playfair[1]:—"The name of Cardan is famous in the history of Algebra . . . Before this time, very little advance had been made in the solution of any equations higher than the second degree; except that, as we are told, about the year 1508, Scipio Ferrei, Professor of Mathematics at Bologna, had found out a rule for resolving one of the cases of cubic equations—which, however, he concealed, or communicated only to a few of his scholars. One of these, Florido, on the strength of the secret he possessed, agreeable to a practice then common among mathematicians, challenged Tartalea of Brescia, to contend with him in the solution of Algebraic problems. Florido had, at first, the advantage, but Tartalea, being a man of ingenuity, discovered his rule, and also another much more general, in consequence of which he came off at last much more victorious. By the report of this victory, the curiosity of Cardan was strongly excited; for, although he was himself much versed in the mathematics, he had not been able to discover a method of resolving equations higher than the second degree. By the most earnest and importunate solicitations, he wrung from Tartalea the secrets of his rules, but not till he had bound himself by promises and oaths never to divulge them. Tartalea did not communicate the demonstrations,

[1] Preliminary Dissertation to the Encyclopædia Britannica, p. 441.

which, however, Cardan soon found out, and extended in a very ingenious and systematic manner to all cubic equations whatsoever. Thus possessed of an important discovery, which was at least in a great part his own, he soon forgot his promises to Tartalea, and published the whole in 1545, not concealing, however, what he owed to the latter. . . . Thus was first published the rule which still bears the name of Cardan, and which at this day marks a point in the progress of Algebraic investigation which all the efforts of succeeding analysts have hardly been able to go beyond."

Thus high stands Cardan in the history of science: let us now consider the other aspect of his character. He was an out-and-out astrologer; his faith in astral influences was founded on a theory of oriental origin, still holding its ground in the east—that there was one pervading vitality diffused through the whole universe, entwining all the parts in the bonds of sympathy; that the various organs of the human body were related by more near or more distant affinity with the different planets; and hence, that the positions of these stars at the hour of birth influenced the organism of the new-born member of this great circle, and absolutely fixed his inevitable character. Cardan himself, unfortunately, was born when Venus, Mercury, and Jupiter were in a particular conjunction; and hence he was foredoomed to be an unsteady, envious, calumnious man, unable to keep any secret, to forget any injury, or to reverence religion. No prediction is more likely to be the means of its own fulfilment than such an one as this. For any man to believe himself doomed to be bad, will make him bad; and we are only surprised that, notwithstanding such a sentence of death hung round his neck while in the cradle, Cardan contrived to make so much of his life.

He had, besides, an absolute faith in dreams and visions, and had interviews with a demon who foretold coming

events. He said he had four special gifts, for which he was thankful :—

I. He could at pleasure throw himself into an ecstasy or trance.

II. He could see with his eyes, not his fancy, any vision he pleased.

III. All future events were revealed to him in dreams.

IV. It was also given to him to know the future by certain appearances in his nails.

The "gifts" clearly indicate a condition of the nervous system allied to somnambulism; and, doubtless, when he thought his nails told him anything, he had produced a state of hypnotism in himself, by steadily gazing at his finger-tips. In short, he was all his life half mad. Properly speaking, he was not an impostor; he believed in himself, and addressed not the ignorant, but the learned. Still he had a certain unmistakable dash of quackery in him, and employed very questionable methods of getting into practice. His first book was entitled, "*De Malo Medendi Usu*," the fallacies of the faculty, as we now say. The book was clever, gave the profession great offence, was much talked of, and brought the writer into notice and extensive practice. One of his first great patients was the son of a senator, named Spondrato; the child had suffered from convulsions, and was under the care of a well-known physician, Lucca della Croce. When Cardan saw the boy, he pronounced the complaint to be *Opisthotonos*, a word unknown to the other attendants; and on being asked how he would cure it, he replied by a string of quotations from Hippocrates and Galen. The long and short of it was, that he ousted his colleagues, and cured the disease. His fame soon spread, and he became one of the most renowned men of his age. It was not, however, as a physician he was celebrated, but as a magician. Melville, in his memoirs, says that the Archbishop Hamilton fell dangerously ill, with loss of

speech, and was believed to be in a hopeless state, but was rescued by the aid of an Italian magician called Cardan. When he passed through London, he was consulted about the health of Edward VI., not as to his treatment, but that he might cast his horoscope and foretell his fate. Cardan gave him a longish life, and the king died in a few months. Cardan excused his failure by saying that he had not given sufficient attention to the case—hardly likely, when we consider the magnitude of the venture.

His journey to Scotland was the *acmé* of his renown; and, perhaps, with the view of keeping its memory fresh, he procured, when there, a suit of clothes made according to the fashion of that country, which he continued to wear after his return to Rome, where he was seen by the famous De Thou, "dressed as no other mortal." To "the garb of old Gaul," let us add his own account of his gait:—"For a few steps he walked with a slow, measured tread, as if at a funeral; then broke into a run, as if flying from the police." If a gaunt figure in kilts were to conduct himself in such a fashion in the streets of London at the present day, he would undoubtedly attract a mob; and we cannot but think Cardan rather liked a little mobbing, for he was the vainest of men, and preferred any kind of notice to none at all. He boasted himself as the seventh physician from the time of Adam, only one worthy of the name being born in a thousand years.[1]

Such was Cardan, of whom Bayle observes that there is a saying about no genius being without a dash of folly; but that here we have an example of folly with a dash of genius—the quantity of the folly so greatly preponderating. Characters like Cardan exist at the present

[1] For Cardan's life, see his own Autobiography, Vita Propria; Bayle's Dictionary; and Morley's Life of Cardan. Some of his works are translated into English, some into French: they occupy ten folio volumes. Their title is "Hieronymi Cardani Opera Omnia." Lyons, 1663.

day; but his extravagance, absurdity, deceit, and charlatanism, so far from disqualifying him from exercising a powerful influence and holding honourable posts, seemed rather to assist him. His astrology and necromancy advanced instead of retarding his medical career, and he was the forerunner of a man of similar character and even greater renown—Paracelsus.

If we survey the social and political state of Europe from the twelfth to the sixteenth century, in its relation to the development of medical art, our attention is at once arrested by Italy, which at this period was far ahead of the rest of the world. Taking the number of universities as an index of civilization, we find that, before the year 1500, there were sixteen in Italy,—while in France there were but six; in Germany, including Hungary, Bohemia, Bavaria, &c., there were eight; and in Britain, two; making sixteen in all,—the exact number which existed in Italy alone. The Italian Universities were, likewise, no less superior in number than in fame to those of the north.

The earlier civilization of Italy arose from a variety of causes—one of the most important of which was, that there the previous Roman civilization had not been so entirely quenched as in other parts of Europe; the sea of barbarism, which spread its black waves over the surface of the old world, became less and less intense in its obliterating power as it receded from its northern sources; and although Italy was overrun and entirely conquered by various barbarous races, yet it still retained enough of vitality to bloom with fresh verdure when the immediate tumult and desolation had subsided.

The Italians, too, had a great advantage in point of language, for Latin required but a slight alteration to make it pliant for their vernacular use, compared with the great changes it had to undergo before it could be moulded into French or adopted into English. Besides having life and

language, the Italians enjoyed a fertile country, thickly interspersed with populous towns, and a fine climate. Possessed of these advantages, the whole peninsula became covered with republics, whose form of Government, although insecure from inability to combine against external force, was one admirably suited for developing individual talent. The centres of these republics were cities, so the character which feudalism assumed in Italy was different from that which distinguished it in other regions. It did not exhibit itself in the form of a stronghold, such as Warwick Castle, standing in impregnable pride, at once the refuge and dread of the surrounding country, with its baron exercising absolute dominion; but it appeared as a combination of persons —sometimes noble, sometimes plebeian, sometimes of the middle or professional classes—assuming by turns the reins of Government over separate communities. For in Italy, at this period, there was a middle class—the professions both of law and medicine were held in high esteem. The important social position occupied by physicians is illustrated by an event which occurred in 1231.

For three centuries from the invasion of Otho, in 951, the Italian cities had enjoyed municipal freedom, and had far outstripped the rest of the world in intelligence, wealth, and power. The great impediment to their progress was the perpetual faction-fights carried on between the Guelphs and the Ghibelines. The Guelphs, having invited the assistance of the French, were led by Charles of Anjou, brother of St. Louis; while at the head of the Ghibelines was Conradin, the grandson of Frederick II., and nephew of Manfred. Conradin met Charles of Anjou in the plain of Tagliocozzo on the 23rd of August, 1268. After a desperate battle, the French gained a decisive victory, and the young Conradin was captured and beheaded in the market-place of Naples, on the 26th of October, in the same year. This was a fitting ini-

tiation of the French misrule over the kingdoms of Naples and Sicily. The sufferings of the Sicilians under the violence of the French became intolerable, and a revolution was planned by Dr. Giovanni di Proceda.[1] "This nobleman was Lord of the Isle of Proceda, in the Gulf of Naples, also Lord of Framonti and Pistilione. His high birth did not prevent his devotion to medicine, which was then cultivated by the greatest noblemen."[2]

The revolution which he had planned to carry out wisely, with the assistance of the Emperor Paleologus, was effected in a fashion neither he nor any other mortal contemplated. A French soldier made a rude assault on a young Sicilian bride, in the presence of her betrothed. The insulter was instantly stabbed to the heart, and a shout arose, "To arms! Death to the French!" The war-cry was taken up by every native in the city, and in a few hours 4000 Frenchmen were slain in the streets of Palermo. The example thus set was copied to the letter in all the towns of Sicily; and on the 30th of March, 1282, the revolution of Dr. Proceda was anticipated by the celebration of the "Sicilian Vespers."

That a physician should be found taking so prominent a part in a great political movement, would excite no surprise at the time and place of its occurrence. In many of the Italian republics, during the twelfth, thirteenth, and fourteenth centuries, the power was chiefly in the hands of the middle classes; and it is probable that the physicians occupied a high and influential position among them. Galvanis Flamma describes Milan in 1288, as having a population of 200,000, among whom were 600 notaries, 200 physicians, 80 schoolmasters, and 50 transcribers of manuscripts or books. Milan was about this period at a pitch of glory which had not been equalled since the

[1] Sismondi, Vol. III. p. 457.

[2] "Qui était alors cultivée par les plus Grande-Seigneurs."—Ibid., Vol. III.

Greek republics. The magnificence of its buildings and the greatness of its public works attest, even to the present day, the genius and opulence of its inhabitants. The Naviglio Grande, which spreads the waters of the Ticino over the plains of Lombardy, was begun in 1179 ; and, after various interruptions, was completed about the year 1260. "Men who meditated, and applied to the arts the fruits of their study, already practised that scientific agriculture of Lombardy and Tuscany, which became a model to other nations ; and to this day, the districts formerly free and always cultivated with intelligence, are easily distinguished from the half-wild districts which had remained subject to feudal lords."[1]

That the 200 physicians exercised an important influence on this community, we cannot doubt; for besides being, as we have seen, many of them men of good family —a matter of much consequence in Italy at that time —they were likewise of high standing in intelligence and education. This we learn from the statutes of the medical school of Salerno, of date 1140. A candidate could not be admitted to examination, until he had attained twenty-one years of age, and he required to have studied for seven years; and he had to show publicly his proficiency in Galen, Avicenna, or Hippocrates, and in the analytical books of Aristotle. Another statute says :—"Since it is impossible for any one to make progress in medicine without a knowledge of logic, we will and command that no one be admitted to the study of medicine, until he has been for at least three years engaged in the study of logic." [2] After passing the requisite examinations, before he received the privilege of practising the art of medicine, he was required to take an oath, that he would inform the authorities if he discovered any apothecary adulterating any of the drugs he exposed for sale. There was a very strict ordinance against any kind of association or connec-

[1] Sismondi. Op. cit. [2] Sprengel. Op. cit.

tion between physicians and druggists ; nor was a physician himself to dispense his own medicine. From these statutes we learn, that the physician of that period in Italy was well entitled to the position of a cultivated gentleman ; and we know, from other sources, that he associated, on terms of intimacy, with the leading men of his age and country. The fruits of this education and social position are discernible in the early cultivation in Italy of the sciences connected with medicine, and in the assistance derived by them from the fine arts. For example, some of the earliest anatomical plates were executed by Leonardo da Vinci, probably about the end of the fifteenth century. They may be seen in the British Museum.[1] There is no reason to believe, however, that in the actual practice of medicine, any of the early Italian physicians advanced beyond the precepts of Galen and his school ; and we know that many of them devoted themselves to astrology. That alchemy, too, was much in vogue, may be learned from a satire of Petrarch, entitled, "The Remedy for Both Fortunes"—that is, for Good and Bad. It consists of a dialogue between Joy and Reason. The former paints the bright, the latter the dark side, of the various projects started. *Joy* (*loquitur*) : I hope it will go well with alchemy ! *Reason* : Tell me whatever comes of it but smoke, ashes, sweat, sighs, words, deceit, and shame. That is the use of alchemy, through which we never saw one poor man grow rich, but many a rich one brought down to poverty. You would try to be rich, but never would become so ; for this art is nothing but lying and deceit. It will fill your house with strange guests, who will eat up your substance, and laugh at your folly,—and will land you in jail, to keep company with rogues."[2]

[1] Original Designs of the most famous Masters of the Bolognese, Roman, Florentine, and Venetian Schools. By J. Chamberlain. London, 1812.

[2] Francisca Petrarca, Von der Arynei bayder Gluck, 1532, chap. cxxxiii., a German translation of a work of Petrarch's. I have not seen the original of this curious dialogue.

It is impossible to read the details of Italian life at this period—that is, from the year 1200 to 1500—without being amazed at its incongruities. On the one hand, we have productions of genius, by Leonardo da Vinci, Michael Angelo, and others, surpassing everything of the present day; and we naturally figure to ourselves, that men engaged in such laborious and exquisite works of art, performed their tasks in peace and tranquillity. We know that even literature sickens at the sound of the trumpet; much more should we expect painting and sculpture to do so. A poet like Dante *might* write a book by snatches on a journey, or in flight; but an artist such as Michael Angelo could not carry his canvas and paint, his marbles and chisels about with him. When we look at the masterpieces of the Italians, we naturally figure to ourselves that they were produced in homes, secure from strife and violence. But what is the fact? Probably hardly a week passed without some scene of bloodshed occurring in the street where they dwelt. A man could not leave his house without encountering the risk of being attacked by a band of assassins. The feudal lords, when they came to live in cities, retained all the habits of their castles. "Their houses were fortresses —thick walls, high and narrow windows, a massive door of oak, secured with iron bars, promised to resist more than one attack; and if they were at last forced, a high square tower still served as refuge. From these palaces of the nobles, bands of assassins were often seen issuing to rob or murder citizens, who were treated as enemies; chains were prepared to be thrown across the street, and in an instant to form barricades—behind which were seen ranged several hundred warriors."[1] Such were the scenes which daily met the eye of the artist or physician: that the power of refined thought should survive the contact with brutal violence, though against preconceived notions, is borne

[1] Sismondi. Op. cit.

out by historical evidence. While the surrounding savage life did not destroy the powers of thought or prevent the cultivation of the intellect, for we find, occasionally, a high sensitiveness of the imagination associated with grossness of conduct, such a state of things must have blunted the feelings to human sufferings, and have acted more injuriously on medicine in its peculiarly human relations, than in its scientific aspects. Accordingly, it should not surprise us to find that some of the most distinguished cultivators of anatomy were in the habit of acting in a manner which we should feel to be an outrage on humanity. For example, Gabriel Fallopia, born 1523, and justly celebrated, was in the habit of obtaining criminals from the court to dissect. It is but fair to state, that he poisoned them first, as he tells us in the following remarkable passage:—"For the prince ordered a man to be given us, whom we killed in our fashion, and dissected (*quem nostro modo interfecimus et illum anatomizavimus*). I gave him two drachms of opium. He, having a quartan ague, had a paroxysm which prevented the opium taking effect. The man, in great exultation, begged of us to try once more, and if he did not then die, to ask the prince to spare his life. We gave him other two drachms of opium, and he died."[1]

In Italy, the natural savageness of the feudal life was chequered by the genius of art, and modified by the action of a multitude of towns and cities; but in Germany, and in the northern part of France and England, feudalism presented itself simply as one remove from absolute barbarism. The military men who held possession of the lands were hardly better than bands of robbers. "At this epoch, about the twelfth century," says Guizot, "there was war everywhere. . . . Not only were strong castles constructed, but all things were made into fortifications, haunts, and defensive habitation."[2] Com-

[1] G. Fallopii Opera omnia. Frankfort, 1606, p. 532.

[2] Guizot's History of the Civilization of France.

panies of Knights took up their abode in the ruins of the Roman amphitheatres at Arles and Nismes, where they fortified themselves, and whence they sallied forth to rob the passing travellers. They must have lived by plunder, as there was no other means of subsistence in their power. In answer to the inquiry of an archbishop, how he would maintain himself and his household upon a barren rock, he pointed significantly to the meeting at the foot of his fortress of *four roads*[1] (that was his pursuit of *quadrivium*) —and yet, even in the heart of this universal violence and reckless disregard of all the claims of general humanity, there was working the inextinguishable spirit of Christianity. Being in its essence spiritual, its high prerogative was, and is, to operate upon the every-day actions of men, and to mould the existing human life into something purer and better. It differs wholly in this respect from the Paganism it superseded. Belief in the gods did not infuse morality into the Roman empire. What morality there was, came from a different source. But feudalism was affected in its essence by a belief in Christ. Besides inaugurating the great movement of the Crusades, which probably did more to civilize Europe than any other event, —by bringing multitudes under the dominion of an idea or sentiment, the essentially devulgarizing agent in the world, —Christianity found for itself a kind of exponent in chivalry. This, with all its defects, was a religion to these robbers. It was in itself a noble thing; it recognized truth, and reverence for the plighted word, to be of paramount obligation. This is a wonderful step in human progress beyond the Greeks. So also is the high estimate in which women were held. Noble womanhood exercised a great influence on the rude fighting life. Take, as a specimen, the following passage from the autobiography of Guibert de Nogent, who lived in the castle of Beauvaisis,

[1] Hallam's Middle Ages, Vol. II. p. 134.

in the eleventh century :—"I have said, God of mercy and holiness, that I would return thanks to thee for thy goodness. First, I especially return thanks to thee for having given me a chaste and modest mother, and one filled with fear of thee. With regard to her beauty, I should praise it in a worldly and extravagant manner, did I place it anywhere but in a face armed with a severe chastity. The virtuous expression of my mother, her rare speech, her always tranquil countenance, were not made to encourage the levity of those who beheld her . . . and what is very rarely or scarcely ever seen in women of a high rank, she was as jealous of preserving pure the gifts of God, as she was reserved in blaming women who abused them . . . It was far less from experience, than from a kind of awe with which she was inspired from above, that she was accustomed to detect sin. How great were the examples of modesty which she gave! Living in great fear of the Lord, with an equal love for her neighbours, especially those which were poor, she managed us prudently, us and our property ;"[1] for she was a widow. Thus, in the heart of these feudal castles, there bloomed that exquisite flower, the Christian lady, refining its rude inhabitants, and softening them by its heavenly fragrance. What a contrast her life to theirs!

At that period, the men of the higher classes had but two occupations—war and the chase. The two were closely allied ; for war was no longer the science it had been among the Romans ; it was rather the fighting of armed marauders. "A very large proportion of the rural nobility lived by robbery." The chase of a merchant or a boar was much the same ; both involved conflict, for the merchant, in place of tusks, had a convoy of "lances ;" both were for the sake of booty ; and both were regulated by a code of honour. Indeed, we have an instance of a nobleman, one of the family of the Visconti, in the fifteenth century, who so entirely assi-

[1] Guizot's History of the Civilization of France.

milated the human and the bestial chase, that he caused all the criminals to be given up to him, started them in the woods, and hunted them with dogs. When legitimate game —ordinary convicts—ran short, he obtained a supply by denouncing his companions.[1] This passion for the excitement of war and the chase, was a characteristic feature of the age. It supplied the want of scope which otherwise must have made their castles intolerable from *ennui*, and engendered a satisfaction in a merely animal existence, that entirely disqualified the male inmates for all intellectual pursuits.

The chase may be said to have had its beginning at this period; and it has continued a power in Europe ever since. In the habits it has created and the influence it has exercised in modern social life, is presented a great contrast to the civilized life of Rome. It deserves to be recorded, like chivalry, as a new exhibition of human nature,—not, of course, the mere hunting and killing of wild animals, which is as old as Nimrod; but in the recognition of this occupation as characteristic of the noble. Hence comes the expression, *the noble sport of fox-hunting*, —not that the thing was noble, but that it was the pursuit of nobles. This idea would have been hardly intelligible to a Roman. In a letter from Pliny to Tacitus we have the description of a boar-hunt. "You will laugh, as well you may. Your friend, your Pliny, the man you know so well, even I, have taken three swinging boars. Pliny, say you? Yes, Pliny, the individual Pliny; without any great interruption of my indolence or studies. The nets were spread, and I sat down close to them; but instead of boar-spear or javelin, I was armed with my pencil and my pocket-book." "If a thorough-bred fox-hunter," breaks out the indignant translator, Lord Orrery, "were to read the curious narrative contained in this epistle, he would

[1] Sismondi. Op. cit.

immediately conclude that our author had not the least spirit or taste in field diversions. . . . The sages of antiquity were rather poachers than sportsmen. . . . It is observable that the ancients knew nothing of the proper dress for hunting. They were *entirely ignorant* of the velvet cap, the jockey-boots, the snaffle-bridle, the black cravat, the green coat, and those other ornaments which set off and distinguish a true sportsman."[1] This is not written in burlesque, but in perfect seriousness; and we could not have a better illustration of the difference between the Roman and German view of the chase. It is not for us happily to decide which is the wiser; but we may observe, that whenever a pastime (*pass-time*) becomes the occupation of a man's life, it shows a more curious estimate of the value of Time and Life, than Pliny's entire ignorance of velvet cap, jockey-boots, snaffle-bridle, green coat and black cravat.

In such a community, nothing could be more out of place than a physician; and, accordingly, we are not surprised to find that there were then very few physicians in Germany—probably not so many as in Milan. Barber-surgeons were the rude representatives of medicine among this rude race.

Of the many rich legacies left to its successors by the Middle Ages, the greatest was THE KING. The king of that period was as different from the despot, as he was from the patriarch, or head of the clan. He alone represented law, as above mere individual will and force. He was thus the counterpoise of the domineering nobles, the sanctuary of the oppressed, the great JUSTICE OF PEACE; making a people and a kingdom, notwithstanding the existence of an exacting church, and a multitude of turbulent independent barons. All whose interest did not coincide with that of the feudal lord or the arrogant churchman, clustered about the king. For his security and their defence, he did his best to amalgamate into a

[1] Pliny's Letters, translated by Lord Orrery.

national unity the different tribes and languages spread over the country which he ruled. The more perfect this fusion the more glorious has been the result. France affords a splendid example of the early development of nationality; and, owing to this instinct of self-preservation, France has withstood all the convulsions she has undergone.

In gathering round him all the lay and unfeudal forces, it was natural for the king to cultivate the learned classes. He secured them to himself, as he did the boroughs, by granting them certain privileges by charter. The university of Paris enjoyed many immunities by royal favour, and the degrees it conferred gave political rights as well as social advantages. To be a member of any royal college was then a great benefit, and one partaken of largely by members of the medical faculty. Besides this general favour shown to physicians in virtue of their learning, they often exercised a powerful influence by their personal attendance upon royalty. It has been the policy of kings, for the most part, to select as their medical advisers, men of general eminence in their profession, and to confer on them marks of honour by which they have been elevated into the class of lesser nobility; and, on the whole, when we look over the list of physicians to royalty, there is no reason to be ashamed of such representatives at Court. There have, however, been some notorious exceptions to this rule. We have an example of the danger a king incurs by employing a greedy adventurer, in the end of the wily, cruel, superstitious, powerful monarch, Louis the XIth. When he was getting old, he feared to lose his power and his life, and clung to both with convulsive tenacity. Having dismissed his ordinary physicians, he called to his aid one of the name of Coltier de Poligny, who is said to have ordered him to bathe in the blood of young children, and to drink it to renew his youth. Philip de Comines, the great contemporary autho-

rity, tells us:—"He had about him his physician, Dr. James Coltier, to whom in five months he gave 54,000 crowns ready money, besides the Bishoprick of Amiens for his nephew, and other good offices for him and his friends. Yet this doctor used him so rudely, one would not have given his servant such language as he gave the king—who stood in such awe of him, he durst not command him to be gone. It is true he complained of him after, but he durst not change him as he had done all the rest of his servants, because he had told him most imprudently"—rather most prudently—"one day, 'I know some time or other you will turn me away, as you have done the rest; but be sure (with an oath) you shall not live eight days after it:' with which expression he was so frightened, that ever after he did nothing but flatter and present him, which must needs be a great torment to a man who had been obeyed all along by so many brave men much above the doctor's quality"[1] Our author goes on to describe the king's death; and tells us that, feeling his end approaching, he sent for his confessor, but made a short shrift, because, having touched for the king's evil only the previous week, he had, before proceeding to this exercise of royal power, made his confession according to the custom. Here we observe, that in the Middle Ages, when modern kingship took its rise, the king, besides being the personification of law, was endowed in the estimation of his subjects with a sacred function derived from the Jewish kings, and which (attached to the possession of the throne, not to the family), enabled him to cure scrofulous swellings.

This belief seems to have prevailed, both in England and France, for many centuries—almost without question even from the more enlightened men of the age—extending to a period long after the Reformation. We may take it, as a tacit evidence of the natural tendency of the

[1] Memoirs of Philip de Comines.

human mind to associate something mysterious or sacred with disease; which, being a modification of life, has been, and will continue to be, the one great mystery holding by the hand the other mystery of the soul, with its relations to the unseen and eternal world, and thus ever tending to reunite the offices of physician and priest. It was in virtue of his priesthood that the king exercised this divine prerogative of healing. The term, Most Sacred, as applied to majesty, has thus a wholly different signification from any ordinary title of courtesy.

We are apt to cry out on the credulity of those ages in which men universally believed much that we now know to be false, and think absurd; but we are apt to forget that then there existed no standard of scientific credibility. Can we wonder that nothing seemed impossible to an age which had seen the invention of gunpowder, and the discovery of America? The printing-press, too, had begun its marvellous work; and, as production always precedes criticism, it supplied the wondering time with food for which it had an intense, but wholly indiscriminating appetite. When, towards the end of the fifteenth century, the sweating sickness broke out in Germany, it called forth a multitude of pamphlets; and these new "unfounded little books," as Dr. Bayer[1] calls them, were addressed not to the medical clergy, as all such writings had been, but to the vulgar. Here was the inauguration of a new era in human progress—the appeal to the people. The consequence, in the religious world, was the Reformation of Luther; how it affected the history of medicine, we shall learn by examining the influence exerted upon that art by Theophrastus Bombastes Paracelsus.

[1] Hecker.



PARACELSUS.

CHAPTER VI.

His Sex—His Name—His Wanderings—His famous Sword—His Conformity to his Age—His Style.—His Notions of Trinity in Unity—His Alchemy and Heroic Treatment—Epilepsy and Apoplexy—His Arcanum.

THE opinions expressed by persons to all appearance equally capable of forming a just estimate of Paracelsus, are so conflicting, that it is an unusually difficult task for the historian to form an impartial and satisfactory judgment in regard to a man whose fate it was to live a considerable portion of his life in a blaze of notoriety, and to sink before his death into obscurity.

According to Von Helmont, he "was the forerunner of true medicine, God-sent and armed with knowledge to decompose bodies by fire, and his excellent cures put all Germany into commotion."[1] Again the same author

[1] Ortus Medicinæ, Pref.

declares, that he was "the jewel of all Germany, and the abuse directed against him was not worth a deaf nut;"[1] while, on the other hand, his countryman, the no less celebrated Zimmermann, thus delineates his character and appearance:—"He lived like a hog, looked like a carter, found his chief pleasure in the society of the lowest and most debauched of the rabble, was drunk the greatest part of his life, and seemed to have composed all he wrote in this condition."[2] Since Sprengel wrote his History of Medicine, from which the biographies of Paracelsus in the various encyclopædias and biographical dictionaries are for the most part derived, there have appeared three treatises in Germany, all distinguished by a more careful research into the facts of his life and the scope of his doctrines than shows itself in the severe and superficial narrative given by Sprengel. The first of these is by Professor Schultz[3] of Berlin, published in 1831; the second by Dr. Lessing,[4] the third, and most remarkable, is contained in the first volume of Dr. Rademacher's work.[5] The name of Rademacher is now well known over Germany as the promulgator of a new system of medicine based on that of Paracelsus. So that the man who looked like a carter, and lived like a hog, and wrote only when drunk, is not a mere phantom of the Middle Ages, but an actual present force affecting the medicine of to-day.

One of the very few incontestible facts, or at least uncontested statements, about Paracelsus, is, that he was born in the year 1493. Beyond this point all is confusion and debate; his name, his lineage, his birthplace, his very

[1] Magnet-wundercur, Cap. li.

[2] Lessing, Leben Paracelsus.

[3] Die Homœobiotische Medizin des T. Paracelsus dargestelt von C. H. Schulz, Doct. and Prof. &c., Berlin, 1831.

[4] Paracelsus sein Leben und Denken, von Dr. M. B. Lessing, Berlin, 1839.

[5] Rechtfertigung der von der gelehrten misskannten verstandisrechten Erfahrungs-heillehre der alten scheide-Künstiger Geheimœrzte, von J. G. Rademacher, Berlin, 1848.

sex,[1] are matters of dispute. He styled himself Philippus Aureolus Theophrastus Bombast von Hohenheim; and the name by which he is now known has been supposed to have been adopted, with his usual presumption, for the sake of distinguishing himself as the arch-reformer of medicine —the superior and displacer of Celsus. A much more probable derivation, however, is now the received one; representing the word Paracelsus to be a rude rendering into Greek and Latin of his patronymic Von Hohenheim. As to his lineage and birthplace, his opponents, Haller, Erastus,[2] and others, affirm that he sprung from the dregs of the people, and that he was born in Gais, in the canton of Appenzal; while he himself and his upholders maintain that he was descended from a good family of the name of Bombast von Hohenheim, in Einsedelm, two German miles from Zurich.

Of the miscellaneous career of this singular man, I have attempted, in the following narrative, to put together the most credible facts, in the order of their occurrence.

In the village or small town of Einsedelm, or Hohenheim,—or in Latin, Eremus,—there lived, by the practice of the medical art, a certain William Bombast von Hohenheim, a relation of the high family which bore that patronymic. This William was married to the Lady

[1] "Paracelsus was bald, and had no beard. Why no beard? Because—say his opponents—he was not a man. Because—say his friends—he shaved it off. In favour of the former presumption, we are told he hated women; while in defence of his manhood, his own words are quoted—'My beard has more experience than all your schools' (Fragment. Med. p. 144, Vorrede uber das Buch. Paragramm. s. 203). And it is triumphantly asked, Would not a man, conscious of having been deprived of the power of growing a beard, be too much alive to the degradation he had suffered, not to avoid all allusion to the subject? As to his aversion to women, it was not all women, but only some he disliked; and there is nothing so very extraordinary in this. Moreover, his likeness, painted by Tintoretto a year before his death, represents him with a well-grown beard."—Browning's Paracelsus. Note, p. 204.

[2] Of the credibility of Erastus as a witness against Paracelsus, we may judge by the following sentence: Helvitium fuisse vix credo, vix enim ea regio tale monstrum ediderit."—De Medic. Nov.

Superintendent of the hospital attached to the convent of Einsedelm. In the year 1493, they had a son, whom they called Philip Aureolus Theophrastus. He was their only child, and received from his father, at home, the rudiments of Latin, and whatever else he could teach. It seems doubtful if he ever attended any regular school or university; and, perhaps, considering the instruction then given at such places, he did not incur a great loss. Certain it is that he soon took to roaming over the world; that he visited Italy, Germany, and Sweden, where he served in the army;[1] nay, that after exhausting Europe, he pursued his travels into Asia and Egypt. How he maintained himself during this vagabond pilgrimage is a matter of conjecture—probably by necromancy, and performing quack cures—that is, by proclaiming that he had discovered certain specifics, and making a bargain with those who employed him as to the amount he was to receive if he divulged his secret, or effected a cure. He was also a diligent chemist, investigating at the various mines the processes of the preparation of the metals, and making numerous experiments in regard to their medicinal virtues, as well as in order to discover the grand secret—the philosopher's stone. It was as a chemist that he lived with Sigismond Fugger,[2] a member of a most influential and wealthy family of that name, which was celebrated in Germany almost as the Medici in Italy, for its patronage of art and of such science, as there was. His cures, real or pretended, became noised abroad, and he was sent for, from far and near, to prescribe for all the great men of his day; among his patients was Erasmus, who addresses him, *Paracelsus Eremitus* or *of Eremus*. We read in one of his works, that at the age of thirty-three he could boast of having cured thirteen princes, whose cases had been declared hope-

[1] Vorrede zum Spittalbuch.

[2] Ersch and Grüber's Encyclopædia. Art. Fugger.

less by the Galenic physicians of the time.[1] At this period he seems to have reached his zenith, and at the recommendation of Œcolampadius,[2] an enthusiastic reformer of the church, he was appointed Professor of Physic and Surgery in the University of Basle, in the year 1526.

Paracelsus commenced his career of academic teaching by committing publicly to the flames the works of Galen and Rhazes, exclaiming that they did not know so much as *his* shoe latchets. "A physician," he says, "must be a traveller. Diseases wander hither and thither, world-wide, and remain not stationary at one place. If a man wishes to learn much of disease, let him travel far; if he do so, he will acquire great experience. Countries are the leaves of Nature's code of law, patients the only books of the true physician. Reading never made a physician—only practice."[3] This kind of discourse he delivered, not as was then the universal custom, in the Latin tongue, but in the vernacular German, a language at that time raw and unsuited for scientific discourse; for to the labours of Luther and the other Reformers, German owes, in a great measure, its present form, and admirable adaptation to all the purposes of literature. Such rhodomontade, uttered with all the uncouth extravagances of a mountebank, although for a time it might excite the wonder of the multitude, could not sustain the interest and attention of earnest students; and the consequence was, that his class-room, at first filled to overflowing, was soon deserted. Indeed, it would appear that by this time he had fallen into habits of excessive intemperance. Rademacher, who excuses and defends his idol to the utmost of his ability, observes upon this point, that Paracelsus only stimulated his energies by a rational indul-

[1] Vorrede zum Spittalbuch.

[2] "About this time arose out of Luther's school one Œcolampadius, like a mighty and fierce giant: who, as his master had gone beyond the church, went beyond his master."—Life of Bishop Fisher, quoted by Browning.

[3] Rademacher, p. 41.

gence in wine; and his apologist asks, whether in the writings said to have been composed in this state of inebriation, we can discover any proofs which justify such a serious accusation. The answer is, that direct testimony in regard to a fact is of more weight than any presumptive reasoning about its possibility; and Oporinus, a man of great natural talent, who lived with him for a long time as his secretary or famulus, and distinguished himself, after leaving Paracelsus, by his acquirements in Greek, says, in a letter preserved by Brucker, that during two years Paracelsus was drunk every day, never undressed himself, and went to bed with his famous sword by his side, which he used occasionally to draw and flourish about the room, to the infinite alarm of the much-enduring Oporinus.[1] This sword, which caused so much dismay to his poor secretary, became the popular attribute of Paracelsus, and is thus described in Hudibras:—

> "Bombastes kept a devil's bird,
> Shut in the pummel of his sword,
> That taught him all the cunning pranks
> Of past and future mountebanks."

The reason of his final departure from Basle was not, however, the empty class-room, but a circumstance highly characteristic of the man and his times. There was a certain ecclesiastical dignitary, Cornelius von Lichtenfels, who was a martyr to the gout. In his agony and despair he sent for Paracelsus, and agreed to give him 100 florins if he eased him of his sufferings. Paracelsus administered three pills of his *laudanum*, and as the canon soon felt himself well and comfortable, the doctor claimed his stipulated fee; but—

> "When the devil was ill, the devil a saint would be;
> When the devil got well, the devil a saint was he;"

and the churchman refused to pay more than the usual sum for a doctor's visit. Upon this, Paracelsus took him

[1] Vita Oporini. Argent. 1569.

into court; but the judge decided against the professor, who, losing command of his temper, expressed his indignation and astonishment in such violent abuse of the legal functionary, that the matter had to be taken up by the town council, and ended in the expulsion of Paracelsus from Basle.[1]

This incident reveals the ignoble side of the character of Paracelsus. He may have been a man of great genius; he may have really possessed invaluable specifics; but from this anecdote, which is not denied by his warmest admirers, we must pronounce him a quack. It is against both law and usage to bargain with a patient suffering pain, or in fear of death, as to the remuneration the physician is to receive in the event of giving relief or of saving life. The transaction establishes, beyond a doubt, that it was the habit of Paracelsus to pursue this illegal and disreputable course; otherwise, while holding a position of so much importance and respectability as a Professorship in the University of Basle, he would not have incurred the odium of so disreputable a compact. We again repeat that Paracelsus was a quack.

Once more let loose upon the world, he recommenced his wanderings, which were brought to a premature termination in 1541. Wherever he went, he excited the regular faculty to a state of violent hatred by his real or pretended cures, and his unmitigated contempt of the doctors and their systems—not wholly undeserved. At Salzburg, he had given offence in his usual way; and the result was, that "he was pitched out of a window at an inn by the doctor's servants, and had his neck broken by the fall." In confirmation of this story of his melancholy end, we know that the great anatomist, Soemmering, found a fracture, which must have taken place before his death, extending through the base of Paracelsus' skull.

[1] Sprengel, Vol. III., s. 445.

That a man, whose life was such a disreputable and incoherent medley, should not only excite a powerful sensation in his day, but exert an influence over human thought and action for centuries after his death, may well be a matter of surprise. The explanation may be, that the man and the age were fitted for each other. He appeared with the sixteenth century. By a slow and steady accumulation of causes, the system of thought received by tradition from the ancient philosophers, had come to be felt insufficient for the purposes of the times. There had been a great expansion of experience; men had travelled further, and had made many observations and discoveries which could not be fitted into the received systems of the universe. The most learned man of the twelfth century, Peter the Lombard, had described the earth as a square table, and the heavens as a solid dome.[1] The schoolmen had employed their erudition and intellect in reasoning from propositions which they had assumed as facts, and not in inquiring into the grounds of their belief in them. They discussed, with amazing subtilty, the relation of the soul to the body; and wrote learned disquisitions on the important questions—whether Adam felt pain when the rib was taken out of his side; whether Eve was made of the whole rib, or only the bony part; and whether, at the resurrection, Eve would have a rib too many, or Adam a rib too few.[2] So long as intellectual cultivation was confined to monasteries, such exercises of ingenuity were not unnatural. But when nations were founded, when languages were made, when new Europe rose, then it was discovered that the old bottle of thought-forms was insufficient to confine the fermentation of its contents. The crisis had arrived, and the catastrophe could not be postponed. At such a moment, all that was wanted was a man of sufficient

[1] Hist. Liter. de la France. Vol. VII., p. 133.

[2] Albertus Magnus in 1 Sentent. distinct. 7, art. 10, quoted by Sprengel, Vol. II., p. 235.

inherent self-confidence and audacity to pronounce the sentence of dissolution. "Were there a single man," says Bacon, "to be found with a firmness sufficient to efface from his mind the theories and notions vulgarly received, and to apply his intellect free, and without prevention, the best hopes might be entertained of his success." Such a man was Paracelsus. His burning of the books of Galen was but symbolical of his absolute rejection of his doctrines. Of the humoral pathology, which had been so long implicitly received, he says, "What you call humours are not diseases"—the disease does not consist in a deficiency or excess of black or yellow bile—"that is the disease which makes these humours. How can a physician think to discover the disease in the humours, when the humours spring out of the disease? It is not the snow which makes the winter, but the winter the snow; for although the snow is gone, the winter remains. You mistake the product of disease for disease itself."[1] It would be impossible to put more clearly and effectively one of the radical vices of Galen's system. Again, he says, *contraria contrariis curantur*—that is, hot remedies cure cold diseases;—that is false, the whole design is false, there is no proof of a disease being hot, or a remedy being cold.[2]

Thus Paracelsus undoubtedly struck the weak point of the prevailing system; he struck it with boldness and success. He held it up and said: It is nonsense, no matter though all the wise men that ever lived may have called it sense. I appeal to your understandings, whether it is not nonsense to suppose a disease to be cold, or a remedy to be hot, and to suppose that the one will counteract the other. Besides, he said: Do you find it answer—can you cure the gout, or the plague, or any other disease in this way? Certainly not. The whole system is false, and can lead to nothing but miserable failure. And look at the receipts they give you! "Open one of their herbals (books on herbs), and you will

[1] Fract. II., p. 134. [2] Schultz, s. 44.

there find how one herb has fifty or one hundred virtues; that it will cure so many forms of disease. But open their receipt books, and you will find forty or fifty such herbs in one receipt against one disease."[1]

Paracelsus, not content with simply rejecting the system of the ancients, a system handed down from Hippocrates, and reverenced with superstitious awe for more than 2000 years, treated the whole doctrine of their elements and humours, their crises and purgations, with the most unmitigated scorn and contempt. In its place he proposed a system of his own, of which it is very difficult to give an intelligible description. One of the greatest obstacles to a right understanding of what Paracelsus means, lies in the language he uses. Not only has he a vocabulary of his own, where we meet with such words as *astrum*, *limbus*, *aniadus*, with significations peculiar to Paracelsus, but he seems to have dictated his writings with an indistinct utterance to an amanuensis who was both ignorant of the subject and the language. For example, instead of Œdema we have Undimia, instead of the well-known verse of Ovid, "*Tollere nodosum nescit medicina podagrum;*" which means that there is no cure in medicine for the gout; we have "*Nescit tartarium noades curare podagrum,*" which means—nobody knows what.[2] In short, if we were to suppose an illiterate person attempting to write down a soliloquy of Coleridge's, which the poet delivered with his intellect confused by opium, and (if the supposition be not too extravagant) his speech thickened by wine, we might form some faint conception of the style in which the writings of Paracelsus were composed. We can hardly wonder that the cultivated and respectable Sprengel should manifest contempt for such a man; but we cannot help regretting that he should not have bestowed more pains upon the explanation of the

[1] De Pestil. lib. I., p. 341. [2] Sprengel, Vol. III., p. 449.

doctrines of a writer who, however much his mode of life may have shocked the respectabilities of his own and our times, did yet inaugurate a new era of medicine.

What adds to the difficulty of giving a succinct and lucid account of the system contained in the various writings ascribed to Paracelsus, is that many of them are, undoubtedly, spurious. Besides the difficulties of the words and style, there is such obscurity, that it often seems as if there had been an intentional effort at mystification. If so, he has in this respect been eminently successful. There is, however, one prominent and fundamental idea which stands out in sharp contrast with the doctrines of his predecessors, and round which all the other parts of the system may be grouped. This one idea is, that disease does not depend upon a change in the so-called humours;—not on an excess or deficiency of black bile, yellow bile, phlegm, or blood, nor is it to be cured by getting rid of the peccant or faulty element; but that disease is an actual existence, an entity, that settles like a blight upon the body; that this blight, or possession, or parasite, has its own laws of growth like a plant, and is to be opposed by something of a nature similar to its own; and that the character of the disease, or morbid plant, is decided by the original constitution of the body:—"as the vegetation of a district depends upon its soil, so," says he, "do we find different persons liable to different kinds of complaints."[1] But how, it may be asked, are we to discover the different kinds of remedies which, from their inherent similarity, are proper for the destruction of this morbid principle? To answer this question, we must enter into some explanation of his general theories.

Medicine he represents as consisting of three parts—philosophy, astronomy, and alchemy. The notion of a three-fold unity pervades all his speculations, founded on

[1] Schultz, s. 39.

the idea that everything in nature must have a mystic analogy with the Trinity in Unity. Thus, man consists of spirit, soul, and body; and the world of three elements —water, air, and earth; to which three correspond mercury, sulphur, and salt.

The term *philosophy*, he applies to the knowledge of Nature; a knowledge which we acquire by intuition, and a profound love and reverence for Nature. For he considers that all Nature is a spiritual existence, clothed with a material form; that the soul of man has the faculty of direct or intermediate consciousness of this soul of Nature; that Adam possessed this as an original attribute, so that, by looking at an animal or plant, the spirit of such animal or plant was revealed to his eyes, and he was empowered to give it the true name, which, in Hebrew, was not only an appellation, but a symbol; that this inherent faculty, with which our first parent was dowered by his Heavenly Father, could be restored to his degenerate offspring if they were penetrated by an intense love; and that, under the influence of this love, the object of study—for example, a sick fellow-creature—became transparent like a crystal, to the gaze of the true physician. "A man," he says, "who, by abstraction from all sensuous influences, and by child-like submission to the will of God, has made himself partaker of the Heavenly intelligence, becomes possessed of the philosopher's stone; he is never at a loss; all creatures on earth, and powers in heaven, are submissive to him; he can cure all diseases, and himself live as long as he chooses, for he holds the elixir of life which Adam and the early fathers of the earth employed before the flood, and by which they attained so great longevity."[1]

By astronomy, he meant the relation and influence of the heavenly bodies upon the human constitution. Those

[1] Archidox., lib. 8., p. 818.

constituted a macrocosm, this the microcosm. There was a mystic influence continually flowing from the stars above, upon the spiritual, or siderial, body of man. But Paracelsus, while believing in some emanation from the stars and profound connection between them and the lives of men, was opposed to the prevailing astrology of his age, and treated the indications derived from the position of the constellations with a fine ridicule. The futility of casting nativities he demonstrates by the simple observation—"Many children are born here and elsewhere at the same moment, and, therefore, under the same constellations, and yet of these the great majority turn out fools, and here and there only do we find one turning out wise and good—how then can we impute the folly of the many, or the wisdom of the one to their stars?" It was then the universal practice, as prevails in India to the present day, to regulate blood-letting by the stars: it was considered unsafe to bleed when certain planets were in the ascendant, while, on the other hand, blood-letting was the only cure when other stars were in the place of those. On this, Paracelsus observes, "Go to a battle-field and you will find many men wounded under the same position of the heavenly bodies; but how differently does it fare with them! Would this be so if the stars controlled or indicated the effects of blood-letting?"[1] Thus we find manly sense, and bold disbelief of popular superstition combined with mystic vagueness both of opinion and language.

The word Alchemy is now generally applied to the pursuit of the Philosopher's Stone, by means of which baser metals were to be converted into gold. But Paracelsus used it in an entirely different sense. "Take it not amiss," he says, "that the alchemy I teach yields neither gold nor silver; but look upon it as the key which opens the arcana of medicine to you." "Alchemy makes no gold, it makes arcana,

[1] De Verâ Influentiâ Rerum.

and directs them against disease."[1] "What is it that ripens the pears? what is it that brings the grapes to maturity? Nothing but Nature's alchemy." "As the matter of the pear exists in the blossom, but is of no use till it be ripened, so medicine must be extracted by the alchemy of the physician." "As the grain has to go through a process of decomposition, before it springs into a plant and yields its harvest; so must medicinal substances be submitted to the resolving action of heat, in order that out of this fermentation there may come forth the arcana. What fire performs in the kitchen, that is alchemy."[2] "What is alchemy? A preparer of medicines, a purifier of medicines, giving them perfect and entire, so that the physician may fully accomplish his art."[3] "The third pillar of medicine is alchemy; not that alchemy which makes gold and silver (for these blockheads swarm in all countries), but the alchemy which instructs us how to separate each mysterium into its own reservaculum."[4] Such are a few of the definitions he gives of his notion of alchemy. It is evident that he derived them from observing the processes by which the smelters at the mines separated the metals. These processes we know he studied diligently and applied to the preparation of his medicines. It is probable that he employed the powerful metals, mercury, copper, arsenic, antimony, much more than was usual among the regular faculty; and doubtless it was through their instrumentality that he effected his cures. Indeed, one of the accusations made against him was, that he did not shrink from giving poisons. But the result of his treatment in the cure of diseases which the antiquated school of tradition pronounced certainly mortal and incurable, gave him and his disciples such confidence in the power of medicines to

[1] Tract. II., 65.
[2] Schultz, s. 19.
[3] Fragment. Medic. de Paragramm. Rademacher, s. 39.
[4] Buch von Terpenthin.

avert the fatal issue of all disorders of the human frame, that he breaks out, "Wilt thou love thy neighbour? Tell him not, there is no help for thee; but, only say, 'I cannot do it; I do not understand it.'"[1]

So much for his notions about alchemy, or the art of procuring powerful remedies: to understand his method of applying them, we must examine his pathology. The pathology of Paracelsus affords an instructive illustration of how much easier it is for a man to perceive the actual errors of his contemporaries, than to emancipate himself from the spirit of the age out of which these errors spring. The radical vice of the Galenic system consisted in founding the explanation of the symptoms of diseases, not upon observations of morbid appearances, but upon imaginary changes in equally imaginary constituents of the body—the so-called humours. The absurdity of this Paracelsus saw and exposed with trenchant sarcasm. But his substitute was equally defective, and far more incoherent. He assumed that disease was an immaterial entity, a sort of evil spirit, composed or generated out of three co-efficients, which he called salt, sulphur, and mercury. From his employing names of true chemical substances, it is generally supposed that he introduced a chemical pathology, and meant to express that a disease arose from excess or deficiency of the inorganic materials out of which the body is composed. This, however, seems to be altogether an erroneous conception of his doctrines. The terms he applied were purely arbitrary symbols, and might as well have been X, Y, Z, as salt, sulphur and mercury. "Salt," he says, "gives form and colour to all creatures. Sulphur gives body, growth, nutrition, &c., and these two are the father and the mother which beget all creatures with the help of the stars; that is, sun and moon by sulphur and salt bring forth mercury. Mercury, however, when born,

[1] Rademacher, s. 28.

requires for its daily growth and nourishment, the presence of sulphur and salt." Again, "every body (corpus) consists of three things, mercury, sulphur, salt."[1] Now disease he looked upon as a *corpus* or entity, and it likewise consisted of these three things, or in other words, was the resultant of three co-operating forces. Perhaps under this verbal mystification, the meaning at the bottom of his mind was, that disease required for its production the combination of an external influence and an internal susceptibility; or, in modern phraseology, an exciting and predisposing cause, and that when these two met a third force, or what we call the proximate cause, the *corpus delicti* or body of offence, was generated.

The reference to the stars represents the notion out of which his pathology grew into a therapeutic system. This microcosm, this body of disease, was subject to its own laws of birth, growth, and death, like any other body, and it stood in the same relation to the external world as other separate, independent, immaterial entities. This relation was one of correspondence, there being some mysterious connection between the phenomena of external nature and these spiritual bodies. As an example of his strange illustrations and analogies, we find him describing epilepsy as the earthquake[2] of the microcosm,[3] caused by the ebullition of the vital spirit, and apoplexy as the thunderbolt. The reason that lunacy is increased at the period of new and full moon, is, that the brain is the microcosmic moon. Jaundice arises from astral impressions, and through the imaginative power of the siderial body (durch Einbildingskraft des syderischen Leibes),[4] whatever that may be! In short, if we are to perform radical cures, we must study the physiognomy of disease, as we read the character of a man by perusing his coun-

[1] Schultz, s. 31, 32.

[2] Morb. Ament., lib. 1, p. 487. De Caduc., p. 596.

[3] The microcosm here is the body of man, not the body of disease.

[4] Von den Farbsuchten, s. 522.

tenance. We must know—become personally acquainted with diseases—not only with their symptoms, but with themselves; so that by an intimate knowledge of them we may become acquainted with the whole of their cosmical affinities.

The pathology of Paracelsus, we thus see, assumed, on the part of the physician, a power of direct, intuitive knowledge of a disease as a whole; and hence he maintained that the true physician, the man gifted with the power of healing, was, like the poet, born, not made; that human instruction could do little for such an one, and nothing at all for a man who had no such natural, or rather preternatural gift. This power, however, was to be kept alive and cultivated by the physician's keeping himself responsive to nature; for so long as he was in this relation, he saw and knew a disease at a glance, and he could tell with equal facility and certainty to what plant or mineral this spiritual existence bore the closest resemblance; so that, being similar in kind, but stronger in degree, the one might subdue the other. "Thus," he says, "go the arcana," by which he means the specific antidotes, "against the enemy, as one combatant against another, like two champions ranged one against another; both cold or both hot, both armed with the same weapons, so they engage in their deadly duel. What is this arcanum? Simply the curing power, whatever that is. If the disease be of a mechanical nature, so must the remedy be. What is the arcanum of the stone? We shall not find it in the humours, or in the hot or cold character of the disease, but in the knife. The knife is the arcanum of the stone. What is the arcanum of mania? It is neither coffee nor saliva, but bloodlettting; that is the arcanum of mania. Every disease has its own proper arcanum. That is the thing to be discovered, and diseases should be studied and registered according to their arcana; that is, every disease

should be called by the name of its specific antidote. The arcanum, however, is not the visible outward thing, the plant or mineral that we look upon, but the indwelling spirit." The arcana of the elements are as invisible as the soul of man. What we behold is only the outer shell. "Arcanum is the whole or total virtue of a thing." "Arcana are the virtue and the power, &c."[1] In fact, it is what now goes by the name of dynamism.

Such is our reading of the famous system of Paracelsus. It is impossible not to be struck with its relation to homœopathy. Paracelsus, like Hahnemann, exposes the absurdity of the traditional system; not content with this, he maintains that, being an unnatural monster, disease is not to be left to the so-called laws of nature, but is to be expelled *vi et armis*; that the force and the arms to be employed against this monster must be similar in nature to that of the demon. It is a spirit of evil. "We must summon to our aid a spirit of good; we must discover for every form of disease its own arcanum, or proper specific." So far, the two systems agree. Paracelsus might have called his theory of cure by the name of homœopathy. He made many remarkable observations in anticipation of future discoveries. "Before this world comes to an end, many wonderful occurrences, which are now ascribed to the devil, will be made known, and then it will be seen they are only the result of natural causes." This is said in explanation of the explosions in mines, which were then ascribed to the manœuvres of the Berggeister, or spirits of the mountain. But far as this bold conjecture of these spirits of the mines, which were the terror of the workers of the Hartz Mountains, being in the lapse of ages revealed as of earthly origin, was from the inductive process, with its triumphant result, by which Sir H. Davy won immortal renown by the discovery

[1] Schultz, passim.

of the safety lamp which goes by his name, so far were the speculations of Paracelsus, about the possibility of finding specific antidotes for diseases, removed from the patient research by which Hahnemann realized and put into practical working order the system which now goes by the name of homœopathy. That Hahnemann achieved what he did is owing to the general advancement of the method of philosophy first proclaimed and explicitly propounded by Lord Bacon. Before the rise of this great luminary, the ghosts of the Middle Ages withdrew—splendid gigantic figures vanishing with the morning mists—receding into the remote regions peopled by the demigods of antiquity. Let Paracelsus pass too. His life was none of the purest, but he had something of the giant nature. He was a prodigal son, but a scion of a royal race.



LORD BACON.

CHAPTER VII.

LORD BACON.

His Birth-place—Early Education—Novum Organum—Idola, Tribus, Specus, Fori et Theatri—Truth the Daughter of Time, not of Authority—Science the History of Nature—Negative Instances—Experimentum Crucis—Pathology and Therapeutics—Deficiencies in Medicine—Bacon's Feet of Clay.

PARACELSUS died in 1541. Twenty years after this date, on the 22nd of January, 1561, Francis Bacon was born in a country house in the neighbourhood of London, situated, in fact, between the Thames and the Strand. He was the son of Sir Nicholas Bacon, keeper of the great seal in the reign of Queen Elizabeth, and of Ann, second daughter of Sir A. Cooke, a lady celebrated for her learning. At the age of seventeen, young Bacon had already, at the University of Cambridge, read and rejected Aristotle, "not for the worthlessness of the author, to

whom he would ever ascribe all high attributes, but for the unfruitfulness of the way—being a philosophy, as his Lordship used to say, only strong for disputation and contention, but barren of the production of works for the benefit of the life of man—in which mind he continued to his dying day."[1] On leaving Cambridge he went to Paris, not to study, but in the service of the ambassador. Thus, a mere stripling, Bacon became a man of affairs essentially practical, and it was only the intervals of business that he devoted to the great design formed in his boyhood, and completed so far as it ever was completed, in his retirement and advanced age,—the "Instauratio Magna." "Seeing it was manifest to him that the human understanding creates itself much trouble, nor makes an apt and sober use of such aids as are within the command of man, from whence infinite ignorance of *things* and innumerable disadvantages arise;" his opinion was, "that with all our industry, we should endeavour, if haply *that same commerce of mind and of things* (than which a greater blessing can hardly be found upon earth, at least, among earthly felicities), might by any means be entirely restored, or if they might at least be brought to terms of nearer correspondence."[2] The "Instauratio Magna," then, was the restoration of the direct intercourse of the mind with the external world. No longer were we to imagine certain qualities, such as dryness, moisture, coldness, heat, &c., but we were to bring our senses to bear upon the objects of sense. We were to interrogate nature; to taste, to see, to hear, to smell; and out of the result of this exercise of our powers, to form our conclusions, inferences, or inductions. Bacon may be said to have brought philosophy down to earth. The ancients had set the example in reference to the heavenly bodies. "They succeeded, because they were *observers*, and examined carefully the motions which

[1] Rawley's Life of Bacon. [2] Prolegomena to the Instauratio Magna.

they treated of. Mathematical reasoning was very skillfully applied; and no men whatever, in the same circumstances, are likely to have performed more than the ancient philosophers. The philosophers, again, who studied the motion of terrestrial bodies, either did not observe at all, or observed so slightly, that they could obtain no accurate knowledge, and, in general, they knew just as much of the facts as to be misled by them."[1] These are the words of Professor Playfair, an excellent judge; and he adds that the ancients, while they observed the heavens, were satisfied with dreaming over the earth.

Bacon's task was to rouse men from this dream, and to teach them the true method of investigating the natural world. His success has been so great, that while by his contemporary biographers he was styled the chancellor of learning, by the present age he may be called the chancellor of the laws of physics; for he still presides over the court of last appeal for all questions connected with the investigation of the properties of matter; and it is a presumptive ground for the rejection of any conclusion, that it has not been arrived at according to the principles of the Baconian philosophy.

"Man, the servant and interpreter of nature, does and understands so far as he may have observed, respecting the order of nature in things or in his mind; and further he has neither knowledge or power."[2] This is the first aphorism in Bacon's *Novum Organum*, or new organ or instrument for the reconstruction and advancement of science. The novelty of it he points out in various passages to consist in requiring man, in his intercourse with nature, to be as a little child, conscious of his ignorance, anxious to be taught, ready to receive instruction from all natural facts. This is in contradiction to what he calls the *anticipation of the*

[1] Dissertation on Physical Science, prefaced to the Encyclopædia Britannica.

[2] Nov. Org., Aph. 1.

mind—the method generally pursued by the ancient philosophers, when speculating about material objects. They began by assuming certain axioms, and from these axioms they deduced what nature must do. They looked within, and found preconceived notions, which they mistook for innate ideas, and in accordance with which they presumed that the operations of nature would be performed. Bacon, on the other hand, bade men look out of themselves, and mould their notions upon the testimony of their senses, and on them alone.[1] But he found that this rule, so obvious to us now as the right one for man to obey in his intercourse with nature, was not to be followed without great effort and the removal of many impediments.

The obstacles which obstruct man in the simple apprehension of truth, Bacon classifies into four great divisions, under the heads of *Idola Tribus, Specus, Fori, et Theatri,*—which may be rendered: *Idola Tribus,* the illusions common to the whole race of man, in virtue of the constitution of his mind; *Idola Specus,* the illusions of a man's own den, bred out of his peculiar nature, habits, and pursuits; *Idola Fori,* the illusions derived from common talk—the inaccuracy of language producing inaccurate conceptions, and this inaccuracy being inseparable from the talk of the vulgar; lastly, *Idola Theatri,* the illusions derived from systems invented by the schools—the imaginary or stage world occupying the place of the actual world. The first class—"illusions common to the human race"—he divides into seven orders, the most important of which are the illusions which arise from the fact, that "the mind of man is not like a plain mirror which reflects the images of things exactly as they are; but is like a mirror of an

[1] But the senses themselves sometimes, as in Astronomy, require correction, and in Aphorism x. 41, Bacon observes, "It is falsely asserted that human sense is the measure of things."

uneven surface, which combines its own figure with the figures of the objects it represents;"[1]—that is, exact observation is in itself a difficulty, from what Bacon calls the unevenness of the mind. When a man thinks he describes what he has seen or felt, he only describes the impression compounded of the external object and his own internal image, derived from the texture of his mind: when a man speaks of a fact, he in general speaks only of his own belief, derived from this impression. Another species of illusions springs from the pre-occupation of the mind with its own images, so that the outer world either does not gain admittance; or the impression made by the senses is so modified by the pre-existing conceptions of the object, as to lose its resemblance to the thing seen, and appear like the thing supposed. A good illustration of this is afforded by the consent of Polonius to the observation of Hamlet about the cloud:—

Hamlet. Do you see yonder cloud that is almost in the shape of a camel?
Pol. By the mass, it is like a camel, indeed.
Ham. Methinks it is like a weasel.
Pol. It is backed like a weasel.
Ham. Or like a whale?
Pol. Very like a whale."

In this short dialogue may be found examples of other Idola Tribus; for instance, it illustrates the power of an affirmation—what might be called the advantage of the initiative—the mind is apt to acquiesce in a suggestion. "It is more easily moved by affirmatives than negatives." It would not be easy to over-rate the power of suggestion upon minds in a passive condition. It is exhibited in extreme burlesque in the so-called electro-biology, where the patients are first made purely passive, and then images are suggested. Had Hamlet thrown Polonius into this condition, he would not only have seen a cloud like a weasel, or a camel, but he would have seen the camel, and the

[1] Nov. Org., Aph. 41.

weasel, and the whale. Besides, Polonius, utterly indifferent about the form of the cloud, and in the most uncritical and unscientific mood of mind, was most anxious to please Hamlet at the moment: and he more readily acquiesced in his suggestions. Another of the Idola Tribus, and one of the most important, is that "what a man would most wish to be true, that he most readily believes." For the human understanding does not consist of what Bacon calls *Lumen Siccum*, dry light, or pure conception; but is composed of a mixture of will and affection. "Hence the rarity of an impartial judgment; for man rejects what is difficult, from impatience of inquiry; what is sober, because it narrows his hopes; the deeper things of nature, from superstition; the light of experience, from arrogance and pride, lest the mind should seem to be occupied with things low and fluctuating; in fine, passion imbues and infects the understanding in innumerable ways, and in such as are sometimes imperceptible." Such are some of the effects of the Idola Tribus—illusions common to all men.

The Idola Specus are the illusions to which men are subject in virtue of their peculiar mental constitutions, or their habits and pursuits. Some minds are too much alive to resemblances, and are led by false analogies into premature generalizations; while others have too sharp an eye for differences,—and waste the powers of the reason in making endless distinctions.

Another of these spectres of the den is the tendency of most men to ride their hobby, whatever it may be. Thus, the chemist can see nothing in the animal economy but a compendious and locomotive laboratory: all vital actions are reduced by him to chemical processes; while, on the other hand, the electrician finds in his electricity a substitute for gravitation, and in galvanism a satisfactory explanation of all the wonders of the animal and vegetable creation. "It were a good caution," observes

Playfair, "for a man who studies Nature, to distrust those things with which he is most conversant."[1] That is, not to allow his zeal for any pursuit to claim for its special province universal power and dominion. The caution given by Bacon on this head, has been applicable in every period of science.

Passing over the Idola Fori, or illusions from the vagueness of the language in popular use when applied to purposes of science or philosophy, we arrive at the Idola Theatri, or the deceptions bred out of the systems and schools. "Philosophy, as hitherto pursued, has taken *much from a few things*, or *little from a great many*." Such is the succinct description of the methods adopted by the two great classes who had hitherto managed the scientific stage—the Sophistical, who, from a very few facts, (as, for example, the action of fire upon water,) fabricated the entire system of the universe, and produced it before the credulous multitudes; and the Empirical, who made no end of experiments, and out of a meagre and undigested mass of facts, drew a phantasmagoria to occupy the stage for a time. Such were the alchemists of his day; and from the time of Bacon to the present hour we have not been without examples of these Idola Theatri.

The power of systems to enchain the reason is, in some measure, due to respect for what is old. We are apt to delude ourselves into the belief that what has long existed, is venerable on account of its maturity. Whereas, what is old to us, as being long past, is proportionately new, or young, in reference to the experience of the race. Thus, the most ancient conclusions, having been formed with the smallest opportunity for observation, are the least trustworthy; while the most modern are the most experienced, the most venerable, and in reality, the most

[1] Op. cit.

ancient. "It would, indeed, be disgraceful to mankind if, after such parts of the material world had been laid open which were unknown in former times—so many seas traversed, so many countries explored, so many stars discovered,—philosophy, or the intelligible world, should be circumscribed by the same boundaries as before."

Then, as touching authorities, Bacon maintains that it is the greatest weakness and cowardice to yield abject submission to authors, and to withhold his due from Time —the author of authors, and so of all authority. "Truth is the daughter of Time, not of Authority. No wonder that these spells—authority, traditions, have so bewitched men, that they have not dared to hold direct intercourse with things." Such is the magnificent assertion of the birth-right of man to be, in the deepest sense of the words,

"The heir of all the ages."

The earth is entailed upon him—he is the legitimate possessor, for his own benefit, of all the past—the unchallengeable proprietor of all systems and notions of former ages, to make of them what he can and what he may. His right to reject, to change, or to appropriate, is not liable to question. Thus does Bacon utterly deny that we should submit to the authority of men, however great and good: the father of modern philosophy is one of the first who have ventured to assert, in the fullest acceptation of the expression, the right of private judgment. "For disciples do owe unto their masters only a temporary belief, or a suspension of their own judgment, until they be fully instructed; and not an absolute resignation or perpetual captivity."[1]

Having chased away the phantoms which interpose themselves between the mind's eye, and the objects of the actual outer world, Bacon introduces his method of

[1] Advancement of Learning, p. 48.

making the best use of the direct apprehension of the facts around us, so that they may yield all their practical fruits for the benefit and use of man. Science, he says, is history—the history of nature. In compiling this history, he would have us divide it into three classes. First, the history of those phenomena of nature which are uniform; second, of the extraordinary or apparently anomalous facts; third, of the processes in the different arts. "We are not to wonder at finding the processes of the arts thus enrolled among the material of natural history. The powers which act in the processes of nature and in those of art, are precisely the same, and are in the latter case directed by the intention of man towards particular objects. In art, as Bacon observes, man does nothing more than bring things nearer to one another, or put them farther apart The rest is performed by nature, and on most occasions, by means of which we are quite ignorant. Thus, when a man fires a pistol, he does nothing but make a piece of flint approach a plate of hardened steel with a certain velocity. It is nature that does the rest—that makes the small red-hot and fluid globules of steel which the flint has struck off, communicate their fire to the gunpowder, and by a process but little understood, let loose the elastic fluid contained in it, so that an explosion is produced, and the ball propelled with astonishing velocity. It is obvious that, in this instance, art only gives certain powers of nature *a particular direction.*"[1]

It is plain that medicine falls into this third division of the history of nature: medicine being the art by which such a particular direction is given to certain powers of nature as to enable them to arrest disease, mitigate pain, or prolong life. How then is it possible with regard to medicine to use the words nature and art in opposition? All medicine, all remedial appliances, whether diet, drugs,

[1] Playfair. Op. cit.

exercise, bathing—in short, everything curative (except magic) must resolve itself into giving the powers of nature a particular direction. We are lost in wonder at finding the medical philosophers of the present day setting up this new Idolon—the system of "Nature in Medicine."[1] There is a natural history of disease—that is, we may write down the consecutive changes which a body undergoes under the influence of disease: such a history constitutes pathology. But the only natural history of the use of remedies, according to the Baconian use of the term, is the history of all the processes discovered by the human intellect, and collected out of human experience, by which the purely pathological phenomena are modified, in accordance with a distinct design. That this is a just representation of Bacon's views in regard to practical medicine may be learned from what he has written of its deficiency: "That physicians have not, partly out of their own practice, partly out of the constant probations reported in books, and partly out of the traditions of Empirics, set down, and delivered over certain experimental medicines for the cure of particular diseases."[2]

Thus wrote Bacon of natural medicine:—To him it appeared as a practical method of employing all the powers of nature for the relief of the bodily ills of the human race. So far is he from giving any countenance to the new school of natural medicine, which is nothing but letting ill alone, and leaving nature to work the torment and destruction of the human race!

The object of this natural history of facts, or phenomena, is something very different from the obtaining of a mere index or catalogue. It is to ascertain what Bacon calls the *form*—what we may call the *radical cause*, or *that some-*

[1] See Sir John Forbes's work, "Nature and Art in the Cure of Disease." A fuller explanation of my meaning will be found in the concluding pages of this work.

[2] Advancement of Learning, p. 175.

thing whose existence is necessary for the production of the observed phenomena. To find out this secret, we must arrange the facts in such a way as to present to one another certain points of contrast and agreement. The contrast supplies us with what Bacon calls negative instances. For example, suppose we are inquiring into the form or radical cause of transparency, and we contrast unbroken and pounded glass, we should obtain an important negative instance in the fact, that the transparency was destroyed by the breaking up of the glass into small fragments; the negative instance supplied by this experiment would direct attention to the state of the cohesion of the particles, and we should then proceed to accumulate other negative instances where this cohesion was modified, until we excluded all but a few facts common to all the instances of the phenomenon under investigation; from these few, we should then select one as the most probable, and try whether it met every case where the phenomenon appeared. Bacon laid great stress upon this primary process of exclusion:—"It may," he says, "perhaps" (observe only "*perhaps*"), "be competent to angels, or superior intelligences, to determine the form or essence directly by affirmations, from the first consideration of the subject. But it is certainly beyond the power of man, to whom it is only given to proceed, at first by negatives, and in the last place to end in an affirmative, after the exclusion of everything else."[1]

The affirmative is approached first, as we see, by excluding a large number of impossible causes; and then by selecting out of the remaining *possible*, those which we imagine most *probable*, to be submitted to further investigations by experiment. Coleridge observes upon this: "Bacon demands what I have ventured to call the intellectual or mental initiative as the motive or guide of every philosophical experiment; some well-grounded purpose, some dis-

[1] Nov. Org., lib. II., Aph. 15.

tinct impression of the probable result, some self-consistent anticipation, as the ground of the *prudens questio* (the well-considered interrogation), the fore-thoughtful query, which he affirms to be itself the first half of the knowledge or explanation sought. With him an idea in physics is an experiment proposed; an experiment successful, an idea realized, a question answered in the affirmative."[1]

Thus we see that hypothesis or ingenious conjecture, by which the various possible answers to be given to our questioning of nature are anticipated, is an essential part of the system of induction propounded by Bacon. We are to approach nature with due respect, not rudely asking of her unmeaning questions, else we shall have the fool's answer, and hear nothing but the echo of our last-uttered syllable. We are to meditate well how to frame our speech before we enter into the temple of the oracle; we may then expect to get no ambiguous reply, but just such an answer as covers our question.

The *forms* or *radical causes*, *primary facts*, or *laws*—these terms being used interchangeably in physics—are of various depth and extension. There are laws or general facts which Bacon would call collective instances. These may be looked upon as invaluable generalizations, out of which practical directions are derived, and from which we step to the ultimate form or universal law. Some of the most remarkable examples of such general facts or intermediate laws of nature, are exhibited in Kepler's three great discoveries:—1st. That the planets move in elliptical orbits, having the sun for their common focus. 2nd. That the planets describe equal areas in equal times. And 3rd. That the squares of the periodic times of the planets, are as the cubes of their mean distances from the sun. To arrive at these facts, Kepler had to employ the methods first of exclusion, and next of ingenious hypothesis, which, with

[1] The Friend. Vol. III., p. 167.

enormous labour, he verified by calculation. The facts themselves were most important, and practically useful ; and out of them Newton arrived at his general law of gravitation. To this order would belong any law that indicated the general relationship between morbid actions and curative agencies, as for example, the law proposed to account for the action of specifics, and known as *similia similibus curantur.*

For to medicine is denied the most potent of all the weapons of the inductive philosophy, the *Instantia Crucis,* which comes into play when, in the course of our investigation into the causes of a phenomenon, we can reduce the possible explanations to two. All that then remains to be done, is to look out for some fact included in the phenomena, which is explained by one and not by the other of the supposed causes. This choice between the two is like that which a traveller has to make when he comes to the intersection of one road with another ; and as he is relieved from his dilemma by a cross indicating the direction of both roads, so is the investigator of science enlightened by this kind of experiment ; and hence it has received the name of the experiment, or instance, of the cross, or the crucial experiment. For example, many of the motions of the planets are equally well accounted for by the system of Ptolemy, in which the earth is assumed to be the centre, and by that of Copernicus, where the sun occupies that position ; but there is one particular group of phenomena, known to astronomers as the digression of the planets from the plane of the ecliptic, which cannot be reconciled with the Ptolemaic theory, but finds an instant explanation if we adopt that of Copernicus. Such an observation would be called by Bacon, *Instantia Crucis.* The *experimentum crucis* consists in making two experiments exactly like one another in every particular but one. This, however, is impossible, unless we can

command all the conditions of both experiments, which cannot be done in medicine. Suppose the question we want to resolve is the efficacy of some particular remedy in the cure of a given disease. The two facts are the course of the disease when the remedy is administered to the patient, and the course of the disease without the remedy; but the other causes which combine in producing a recovery or the reverse, and in modifying the progress and event of every particular case, are so numerous and uncontrollable, that it is impossible to institute a crucial experiment—that is, two experiments, corresponding in every condition, except the one in question.[1]

Although the inductive method, as proposed by Bacon, has not led directly to the greatest discoveries in therapeutics, it would be unjust to his memory not to give him credit for a large share in the general advancement of the art of medicine, by the clear and emphatic way in which he pointed out its defects, and laid down the rules, by attending to which we may attain the greatest amount of security and certainty. As one of the suggestions of Bacon, in regard to the form or principle of colour, was the germ out of which Newton's great discovery of the composition of light arose, so we may venture to affirm that the greatest improvements in medicine have been made in accordance with the directions given by Bacon for the successful prosecution of the study of the art of healing.

Thus, in regard to anatomy, he observes:—"As for the passages and pores, it is true, which was anciently noted, that the more subtle of them appear not in anatomies, because they are shut up and latent in dead bodies, though they may be open and manifest in life."[2] The passages which are open in living, and closed in dead bodies, are the arteries. To them Bacon directed the special attention of

[1] Playfair's Dissertation, Mill's Logic, &c.

[2] Advancement of Learning, p. 171.

the investigator; and while he agreed with Celsus in disapproving of the dissection of living men, yet he could see no reason why the experiments required to determine the use of these vessels should not be made on the lower animals. It was by pursuing the investigation of these very arteries, according to the letter of instruction given by Bacon, that Harvey made his discovery of the circulation of the blood.

In regard to pathology, he writes:—"As for the footsteps of disease, and their devastations of the inward parts, . . . they ought to have been exactly observed by multitudes of anatomies, and the contributions of men's several experiences, and carefully set down, both historically, according to the appearances, and artificially, with a reference to the diseases and symptoms which result from them, in case when the anatomy is of a defunct patient; whereas, now they are passed over slightly and in silence."[1]

Here we have an exact description of what modern morbid anatomy and pathology are occupied with; but two hundred years elapsed between the injunction by Bacon and its successful fulfilment. Of medicine, in general, he observes:—"Of all substances which nature hath produced, man's body is the most extremely compounded; for we see herbs and plants are nourished by earth and water; beasts for the most part, by herbs, and fruits; man by the flesh of beasts, birds, fishes, herbs, grains, fruits, water, and the manifold alterations, dressings, and preparations of the several bodies, before they come to be his food and aliment. Add hereunto, that beasts have a more simple order of life, and less change of affections to work upon their bodies; whereas man, in his mansion, sleep, exercise, passions, hath infinite variation. . . . . This variable composition of man's body has made it an instrument easy to distemper, and therefore the poets do well to conjoin

[1] Advancement of Learning, p. 173.

music and medicine in Apollo, because the office of medicine is but to tune this curious harp of man's body, and to reduce it to harmony. So that the subject, being so variable, hath made the art by a consequence more conjectural, and the art, being conjectural, hath made so much the more place to be left for imposture. For almost all other arts and sciences are judged by acts or masterpieces, as I may term them, and not successes and events. The lawyer is judged by the virtue of his pleadings, and not by the issue of the cause. But the physician hath no particular arts demonstrative of his ability, but is judged most by the event. This is the reason why the physician, seeing that it befalleth to him, even as to the fool, in his own profession, and modest merit outstripped by impudent presumpsion, is apt to give himself up to other pursuits besides those of a purely professional character. Though natural, this is not commendable; for nothing can be more variable than faces, and yet memory can retain them and distinguish them; nothing more variable than voices, yet men can discern them; nothing more variable than the sound of words, yet they have been reduced to a few simple letters; so that it is not owing to the incapacity of the mind of man, but because he has not closely observed the varieties of diseases and adapted his remedies accordingly; as the poet says:—

"'Et quoniam variant morbi variabimus artes
Mille mali species mille salutis erunt.'" [1]

To examine minutely the various forms of disease, and to adapt to each its own particular remedy, is the general instruction given by Bacon for advancing medicine.

The following passage, although uttered with rhetorical emphasis, probably expresses Bacon's deliberate estimate of Galen and his system:—"This is the man that would screen the ignorance and sloth of physicians from their

[1] Op. cit.

deserved reproach, and preserve them unattacked; whilst himself most feebly and unequally pretends to perfect their art and fill up their office. This is the man that, like the raging dogstar or the plague, devotes mankind to death and destruction by denouncing certain tribes of diseases to be incurable, taking away all glimmering of hope, and leaving no room for future industry. This is the man who makes his own fiction of mixtures to be nature's sole prerogative,"— that is, the fiction of the temperaments and the humours—the improper mixture of elements, an excess of black bile, yellow bile, and so forth, were nothing but a fiction of Galen's, by which he attempted to explain and control the operations of nature, which he did not understand. "Let him then be dismissed, and take along with him the whole train of his associates—these dispensatory compilers from the Arabians, who have shown such folly in their theories, and from their supine and jejune conjectures amass together such a heap of promises instead of real helps from vulgar remedies."[1] This passage is taken from the appendix to the "Instauratio Magna," where Bacon inveighs against Aristotle, and many other worthies; but it is in entire correspondence with what he says, both in the English edition of the "Advancement of Learning" and in the subsequent enlarged Latin version of the same work. "In the inquiry of diseases they do abandon the cures of many, some as in their nature incurable, and others as past the period of cure; so that Sylla and the triumvirs never proscribed so many to die as they do by their ignorant edicts; whereof numbers do escape with less difficulty than they did in the Roman proscriptions."[2] To this censure he adds, in the Latin edition, the following suggestion:—"A work is wanting upon the cures of reputedly incurable diseases, that physicians of eminence and resolution may be excited and encouraged to pursue the matter as

[1] A short scientific critique on the works of the most eminent philosophers, ancient and modern. Translated by Shaw.

[2] Advancement of Learning, p. 174.

far as the nature of things will permit; since to pronounce diseases to be incurable is to exhibit ignorance and carelessness, as it were, by law, and screen ignorance from reproach."

But most of all Bacon's hopes for the future of medicine, turned upon the discovery of specific remedies:—"I find a deficience in the receipts of propriety respecting the cure of particular diseases." Of this *deficiency of the appropriate*, he writes more definitely in the Latin edition:—"They have no particular medicines which, by a specific property, are adapted to particular diseases." "I remember a learned Jew physician who used to say, 'Your European physicians are like bishops, they have the keys of loosing and binding, nothing more.' It would be of great consequence if physicians, eminent for learning and practical skill, would compile a work of approved and experienced medicines in particular diseases."[1] Again, he says:—"The part of physic which treats of authentic and positive remedies, we note as deficient." We might multiply quotations to this effect; it is enough, however, to observe, that whenever Bacon comes across medicine in any part of his works, he points out, as the great defect, the want of certain authentic, positive, specific medicines for the cure of well-ascertained diseases.

Bacon died in 1626; in 1638, twelve years afterwards, the Countess of Cinchona, the Queen Regent of Peru, was cured of ague by the bark of the cinchona tree, and by her cure the most striking illustration was given of the truth which Bacon had been uttering all his life, that medicine was to be improved by the discovery of remedies for the cure of particular diseases. The method he proposed for this advancement of the healing art was the careful collection of all well-established cures, such as this of ague by bark; in short, an accurate and complete register of all specific medicines. If he did not propose to apply his method of induction to a collection of such instances, and thus to ascertain the law of specifics, it was doubtless because, in his day,

[1] Edition 1633.

the accumulation of such facts was too small to encourage the hope of the successful application of his inductive method. Towards such a law, however, all his efforts tended, and in its discovery Bacon would have recognized the consummation of the theory of the medical art.

If we were to conclude our study of Bacon here, and to pass from the consideration of his intellectual achievements, as exhibited in such works as "The Advancement of Learning," and the "*Novum Organum*," to the next names we encounter in the History of Medicine, we should feel the shock of a great, unbroken, sudden descent. But between these high table-lands of Bacon's mind and the lower levels in which he worked for the every-day world, there was a middle region, both of sentiment and speculation, which allied him with the men of his age, and affords another example of the important lesson, that no man, however great, can come into the world except by submitting to the conditions of time and place; and that even the greatest have very much more in common with the least, than a superficial observer is apt to suppose. It is only the *difference* between their stature and that of their fellows that is extraordinary; all else is common to them and their contemporaries. But as ages pass, time spares the peculiar and the wonderful, and dissolves the rest. So that Bacon, and such as he, are placed in aerial perspective; distance raises their feet of clay off their mother earth, and realizes in a sense the old fable of their translation to the upper regions, inhabited by demi-gods. With Bacon, unfortunately, the clay is so apparent that there is no danger of our yielding to him the adoration due to a divinity. Even if it be true that he committed no offence against morality (as is maintained by a well-known writer[1]), we should be restrained from idolatry by much in his lesser writings entirely at variance with the philosophic scepticism which his greater works insist upon as the indispensable portal to the exact observation and

[1] Mr. Hepworth Dixon.

successful investigation of nature. "It is affirmed," he says, without the expression of any doubt about the credibility of the affirmation, "both by ancient and modern observation, that in furnaces of copper and brass, where chalcitis (*vitriol*) is often cast in to mend the working, there riseth suddenly a fly, which moveth as if it took hold of the walls of the furnace—sometimes it is seen moving in the fire below, and dieth presently as soon as it is out of the furnace; which is a noble instance, and worthy to be weighed; for it showeth, that as well violent heat of fire as the gentle heat of living bodies, will vivify if it hath matter proportionable. Now, the great axiom of vivification is, that there must be heat to dilate the spirit of the body, an active spirit to be dilated, matter viscous or tenacious to hold in the spirit, and that matter to be put forth and figured;"[1] that is, formed into some figure. We have elsewhere in his works, another similar axiom:—"Let this be laid for a foundation, *which is most sure*, that there is in every tangible body a spirit or body pneumatical, inclosed and covered with the tangible parts, and that from this spirit," that is, from the escape of the spirit, "is the beginning of all dissolution and consumption, while the antidote against these is the detaining of this spirit."[2] Here we reach the watershed of Bacon's mind. On the one side run the streams of scientific enquiry, widening as they advance through the fields of time, and enriching them for golden harvests: on the other side, we hear the rush of torrents, but see only spray, or the outline of those shadowless bodies, those spirits or ghosts, which have flitted about from the earliest period in a region inaccessible to science, and which ever and anon startle the practical every-day world afresh by some spiritual manifestation, proclaimed by some new semi-Bacon, some one who has more affinity with the superstitious Bacon, than with Bacon the philosopher.

[1] Sylva Sylvarum, 696.

[2] History of Life and Death, translated by Rawley.



VAN HELMONT.[1]

CHAPTER VIII.

Harvey's Opinion of Bacon—Van Helmont's Birthplace and Early Pursuits—He Studies Medicine—Galen fails him—Archæus—Gas—Blood-letting in Pleurisy—His Aversion to Blood-letting—Harvey—His Studies—Crackbrained—Physician to Charles I.—Present at the Battle of Edgehill—His Discoveries—Galen's Notions about the Course of the Blood—Harvey Discovers the Circulation—His Description of it—He suggests the true theory of Respiration.

As Abraham had two sons,—the one the progenitor of that enduring race, whose wealth at the present day goes far to sustain the political systems of Europe; the other the father of the wandering tribes which have refused to enter within the pale of civilized life, and preserve till now the vagrant habits of the wild Ishmael,—so Bacon may be said to have had two successors,—the one the child of the promise, transmitting the rich and prolific fruits of true philosophy to remotest times; the first to reveal the wonders disclosed to the eye freed from the distorting glasses of antiquated notions;—the other, the representative of Bacon's mysticism, and loose experimentation.

[1] From a print prefixed to his works, 1682.

The name of the first is William Harvey; of the second, Johan Baptista van Helmont. Not that either of these were professed disciples of Bacon, although we think that the influence of the greatest English philosopher may be traced upon the greatest English physiologist. On this point we are at issue with Dr. Willis, the translator of Harvey's books, who, in the biographical sketch prefixed to that work, makes the following observations: "Harvey, besides being physician to the king and household, held the same responsible situation in the families of the most distinguished among the nobles and men of eminence of his time; among others, to the Lord Chancellor Bacon, whom Aubrey informs us 'he esteemed much for his wit and style, but would not allow to be a great philosopher. Said he to me, 'He writes philosophy like a Chancellor,' speaking in derision. Harvey's penetration never failed him: the philosopher of fact cared not for the philosopher of prescription; he who was dealing with things, and through his own inherent powers exhibiting the rule, thought little of him who was at work upon abstractions, and who only inculcated the rule from the use he saw others making of it. Bacon has many admirers, but there are not wanting some in these present times, who hold with his illustrious contemporary, that 'he wrote philosophy like a Lord Chancellor.'"[1] In reply to this singular passage, we would suggest that probably the gossiping Aubrey entirely misunderstood Harvey's expression, "He writes philosophy like a Lord Chancellor." Perhaps he was not aware that among the learned men of his day he was called the chancellor of learning as well as of law, and most likely it was in this sense, and not in derision, that Harvey used the phrase. That "the philosopher of fact cared not for the philosopher of prescription," is a

[1] The works of William Harvey, M.D., translated from the Latin, with a life of the author, by Robert Willis, M.D., 1847. Printed for the Sydenham Society.

gratuitous assumption, disproved by the high terms in which Harvey refers to Bacon, quoting an expression of his *Organum*: "Wherefore, I think it advisable to state what fruits may follow our industry, and in the words of the learned Lord Verulam,[1] 'to enter upon our second vintage.'" We might quote many passages from Harvey's writings to show the respect he bore to Aristotle, and other "philosophers of prescription," as Dr. Willis contemptuously denominates Lord Bacon; but it will be more profitable, when we come to consider the method of research pursued by Harvey, to compare it with the rules laid down by Bacon.

In no sense can Van Helmont be considered as a disciple of Bacon. In common with Bacon, he represented one aspect of the spirit of his age; inasmuch as he was a mystic and experimenter, a man of great learning and keen insight, admirable for his boldness in rejecting the false although supported by all the authority of antiquity, and for exposing with much subtilty and wit the theories held in almost unquestioned reverence at the time he lived. His life was a romance, and more worthy of study and exposition, in my opinion, than that of his more famous predecessor Paracelsus, in as far as, while perhaps equally gifted with genius, he was a truer and better man.

Van Helmont was born at Brussels in the year 1577, seventeen years after Bacon. His parents were noble, and he was heir to great possessions. He pursued in Louvain the usual course of scholastic philosophy. Had he followed the common custom, he would then have taken his degree and left the university, as Bacon did. But, possessed by a noble ardour for learning, he became the pupil of a celebrated Jesuit, Martin del Reo, who gave instruction in all the knowledge of the age, not forgetting magic. The young student did not find in this course

[1] Harvey's Works, p. 270.

the satisfaction he craved, and gave himself to the examination of the doctrines of the Stoics, but found they too failed to satisfy his wants. Becoming accidentally acquainted with the writings of Thomas à Kempis and John Tauler, he from that day adopted what goes by the vague term of mysticism. That is, thoroughly convinced that there was a spiritual world in intimate and eternal union with the spirit of man; that this spiritual world was revealed to that human soul which submitted to receive it in humility; and that the doctrines of Christianity were not to be looked upon as a system of philosophy, but as a rule of life, he resolved to follow them to the letter. The consequence of this resolution was, that he devoted himself to the art of medicine, in imitation of the Great Healer of the body as well as of the soul; and as the prejudices of his time and country made his rank and wealth an obstacle to his entrance into the medical profession, he made over all his property, with its honours, to his sister; that, "laying aside every weight, he might run the race that was set before him."[1]

He entered on his new studies with all the zeal of his character, and very soon had so completely mastered the writings of Hippocrates and Galen, as to excite the surprise of his contemporaries. But although styled a dreamer, and having a mind easily moved to belief in spiritual manifestation, he was not of a credulous nature in regard to matters belonging to the senses. And as he believed that Christianity was to be practised, and to be found true by the test of experiment, so he believed that the doctrines of Hippocrates and of Galen were to be subjected to a similar trial. An opportunity soon occurred to himself. He caught the itch and turned to Galen for its cure. Galen attributes this disease to overheated bile and sour phlegm, and says that it is to be cured by purgatives. Van Helmont, with the implicit faith

[1] Sprengel, Vol. IV., p. 292.

of his simple nature, procured the prescribed medicines, and took them as ordered by Galen. Alas, no cure of the itch followed, but great exhaustion of his whole body :[1] so Galen was not to be trusted. This was a serious discovery ; for if he could not trust Galen, by whom the whole medical world swore, to whom was he to turn? He turned to Paracelsus ; and although disgusted with the extravagance of this illiterate and unscrupulous reformer, he found himself so far agreed with him, as to demand that Medicine should be reconstructed, since what was believed in as truth had turned out to be false; and so Van Helmont resolved to work out for himself a solution of the great problem to which he had devoted his life.

Van Helmont's system may be called *spiritual vitalism*. The primary cause of all organization was *Archæus*. By *Archæus*, man is much more nearly allied, he says, to the world of spirits and the Father of spirits, than to the external world. *Archæus* is the creative spirit which, working upon the raw material of water or fluidity, by means of "*a ferment*" excites all the endless actions which result in the growth and nourishment of the body. Thus, digestion is neither a chemical nor a mechanical operation ; nor is it, as was then supposed, the effects of heat, for it is arrested instead of aided by fever, and goes on in perfection in fishes and cold-blooded animals ; but, on the command of *Archæus*, an acid is generated in the stomach, which dissolves the food. This is the first digestion. The second consists in the neutralization of this acid by the bile out of the gall bladder. The third takes place in the vessels of the mesentery. The fourth goes on in the heart, by the action of the vital spirits. The fifth consists in the conversion of the arterial blood into vital spirits, chiefly in the brain. The sixth consists of the preparation of nourishment in the laboratory of each organ, during which

[1] Van Helmont. Opera omnia. Ort. Med.

operation *Archæus*, present everywhere, is itself regenerated, and superintends the momentary regeneration of the whole frame. If for *digestion* we substitute the word *nutrition*, we cannot fail to be struck by the near approach to accuracy in this description of the succession of processes by which it is brought about.

Van Helmont's pathology was quite consistent with his physiology. As life and all vital action depended upon *Archæus*, so the perturbation of *Archæus* gave rise to fevers, and derangements of the blood and secretions. Thus, gout was a disease not confined to the part in which it showed itself, but was the result of *Archæus*.

It will be seen that by this theory the entire system of Galen was nonsuited. There is no place for the elements and the humours. Indeed, Van Helmont denied the existence of four elements. He threw out fire as an element altogether, and reverted to the notion of Thales, that out of fluidity, with the assistance of *Archæus* acting by means of *a ferment*, all matter received its form. He was the first to use the word *Gas*,[1] and to distinguish between different kinds of gases.

Given such a theory of disease as he advocated, one would be puzzled to construct for it a corresponding system of therapeutics. It is plain, that if disease did not arise from an excess of either black bile, yellow bile, phlegm, or blood, it would not answer to use the great remedies of his day —purgatives, derivatives, and blood-letting. Rejecting the maxims, he rejected the practice of Galen, and his objections founded on the futility of the system, even now adhered to, are unanswerable The following passages are upon

[1] The etymology of *Gas* has been much discussed, and it is usual to derive it from *Geist*. It seems to me to be a word invented, not derived. The reader of Van Helmont will find a number of new words, such as Blas, Gas, &c. When he uses them for the first time, he describes their meaning, as if they were arbitrary symbols, which I believe them to be.

the treatment of pleurisy:—"You adopt venesection, and endeavour by means of Revulsion to withdraw the blood from the *vena azygos*, as if it contained the disease." "Again, they call the process derivation—draining off,—when they open a vein, which is supposed to feed or conduct to the affected part. Alas! how fertile are the schools in words and technicalities which, viewed by the light of nature, are simply ridiculous! For, granted that the vein at the elbow should part with every drop of its blood, and the *vena azygos* be thereby emptied—yet the schools ought to know that there would immediately ensue an equal redistribution of blood throughout the veins; so that, although the vein which was opened were entirely emptied, which is impossible, there straightway would occur an equalization of the blood through the whole web of the veins. Whence it is quite clear that the talk about *revulsion* and *derivation* is mere drivel; for even if you concede their assumed effects, all that they really produce will be a trifling delay."

A few lines further on he exclaims:—"Wholly irrational is the technical treatment—the usual routine. No doubt you can lessen, nay, even arrest the flow of a rushing stream in a specific direction, if you make a lateral opening in one of its banks, and thus effect a nearer and steeper descent towards the lower levels. But what earthly good do you gain by getting rid of so many ounces of blood, and at the same time causing a vast loss of vital power? For is it not the fact, that the moment you close the vein which you have opened, the blood will flow again to its appointed place—*must flow*, so long as the cause of its movement exists? Were it not better to attack the fountain-head, seeing that venesection in pleurisy will not suffer us to cherish any hope, except that which springs from *exhausted powers*?

"Nature, it is true, missing sadly her wonted strength, and bankrupt in blood, will not manifest the abnormal

symptoms so long as her weakness remains; and, like a penitent, ashamed of the recent stormy swelling, may begin to think of the propriety of *concocting pus*, as soon as possible, out of extravasated blood. But the desired effects would follow more naturally and more propitiously, if you retained the blood in which the life—that is, the vital power—resides. For Nature, the only healer of disease, is emphatically life, and when that goes, the physician can only shrug his shoulders."[1]

These are strong expressions to come from a master in Israel. They read like the fierce denunciations of some outlaw, such as Paracelsus. "With pleasure," says Sprengel, "does the lover of truth hang over the writings of the man who, however much he adhered to the mysticism of his age, yet exposed innumerable theoretical and practical errors, and expounded principles which later physicians ignorantly regarded as the fruits of after discoveries. . . By the incorruptible tribunal of History will the chaplet of merit be awarded to this forgotten physician of the olden time."[2] He has had, like other bold innovators, to wait about two hundred years for this justice. By his contemporary, Guy Patin,[3] he was represented as having died raving mad, from his aversion to blood-letting. Van Helmont's son, however, Francis Mercius, who attended his father on his death-bed, says, that this report of his being a victim to his horror of bloodshed, is entirely false and calumnious.[4]

Deprived of the dangerous weapons then in use for combating disease and human life, Van Helmont had recourse naturally to the new medicines, mercury and antimony, and also used wine and opium largely, with what success we are not informed; and, indeed, his thera-

[1] Opera omnia, p. 387.

[2] Sprengel, Vol. IV., p. 316.

[3] Lettres de Guy Patin, Vol. I., p. 14. Cologne, 1691.

[4] See the Introduction, written by his son, to his "Opera omnia," which he edited.

peutic doctrines are chiefly interesting in their negative relations. In these alone have they survived historically. He died in 1644, in the sixty-seventh year of his age, bequeathing to his son all his writings, none of which were published in his lifetime.



HARVEY.[1]

While Van Helmont was the exponent of the speculation of his age, in the direction both of vitality and chemistry, William Harvey served himself heir to the land of promise pointed out by Lord Bacon, in the kingdom of simple observation and direct experiment. His life presents a great contrast to that of his contemporary. Van Helmont was a brilliant meteor, a gasiform body shooting across the planet's orbit—dazzling, but soon lost to view; Harvey, a planet moving in steady radiance, "without haste and without rest," and contributing for ever and for ever his proper tones to the everlasting music of the spheres.

[1] From a picture by Rennel, in the collection of Dr. Mead.

The incidents of his life are of the most common-place. His father, Thomas Harvey, was an opulent yeoman of Kent. His mother was "a godly, harmless woman; a chaste, loving wife; a charitable, quiet neighbour; a comfortable, friendly matron; a provident, diligent housewife; a careful, tender-hearted mother." So runs the epitaph written by her son.[1] He was born at Folkestone, in the year 1578, one year after Van Helmont, and eighteen years after Lord Bacon. At the age of sixteen, he went to Cambridge; and three years afterwards, took the degree of B.A. He then began his medical studies at the famous University of Padua, under Fabricius of Aquapendente, for whom he entertained the highest respect, and who put him on the sure path of his great discovery. After having spent between three and four years at Padua, he returned to England and took his degree of M.D. at Cambridge. Five years afterwards, he was admitted as a Fellow of the College of Physicians. At the age of thirty-one he was appointed Physician to St. Bartholomew's Hospital; and in the year 1615, when thirty-seven years of age, he began his course of lectures upon the motions of the blood. There is no report of these lectures, but it is believed they contained the substance of what he published thirteen years afterwards, in Latin, of which the English translation is "An Anatomical Disquisition on the Motion of the Heart and Blood in Animals." This book, which is a milestone on our road, bears date 1628. It is dedicated to King Charles I., who took a deep interest in Harvey's discovery, and five years afterwards appointed him physician to his royal person. This was some recompense for the treatment he received from his colleagues on account of the novelty of his views. "I have heard Harvey say," writes Aubrey, "that after his book on the circulation of the blood came out, he fell

[1] Harvey's Life, p. xviii., Note.

mightily in his practice. It was believed by the vulgar that he was crackbrained, and all the physicians were against him."[1] His sovereign, however, acted very differently, for he not only went over with him the experiments upon the circulation of the blood, but afforded him most important assistance in his investigation into generation, by placing at his disposal all the does which were killed in the royal forest, that he might study their anatomy. This is not the only time that the innovator in medical science has found shelter in a royal palace from the vulgar antagonism of his profession.

In his capacity of physician to the king, Harvey was at Edgehill upon Sunday, the 23rd of October, 1642. Had a man, looking upon the scene that presented itself on the afternoon of that day, been suddenly endowed with a knowledge of the future, what strange reflections he must have made! There was King Charles I., with his handsome, melancholy face, anxiously watching the uncertain battle raging between his position and the small town of Kineton; while beyond lay the vast expanse of woody Warwickshire, richly coloured by the sharp frost which was to chill many a poor wounded man before the sun rose on the following morning. A little aside, "under a hedge," might be seen an elderly man reading a book. This was Harvey; and beside him were two boys, of whom he had charge: the elder was afterwards Charles II., the younger, James II. What a singular group on this battle-field! It was no affectation on the part of the physician, nor any indifference to the fate of his sovereign, that induced Harvey to read his book while the fight, which was to begin the decision of the fate of his royal friend and patron, was going on within his view; it was simply, that at the time he was more interested in the subject of generation than in any political catastrophe whatever. Had he not been so possessed with

[1] Aubrey's Lives of Eminent Persons. London, 1813.

love for the subject of his investigation, the great, open secret of the circulation would not have been revealed to him. Truth demands the devotion of a whole life for such a revelation in return. The politician and man of science have nothing in common: to be great in either spheres of action, a man must disown the other. Harvey, and men of his stamp, are not in their nature indifferent to ordinary human affairs; they are simply always pre-occupied; they are so intent on the point towards which they are pressing, as to be unconscious of the scenery. The book Harvey was reading on the battle-field of Edgehill, was very likely his favourite, "Fabricius' Treatise upon Generation." For a few days after the battle, he accompanied the king and army to Oxford, and during his very brief stay there, Aubrey says, "I remember he came several times to our College (Trinity), to George Bathurst, B.D., who had a hen to hatch eggs in his chamber, which they opened daily, to see the progress and way of generation." [1] This, doubtless, was the subject of his study and meditation, when, before his eyes, a king was fighting for his kingdom, and the king's sons were looking on.

Four years afterwards, in 1646, at the ripe age of sixty-eight, he quitted the service of the king—for which, indeed, now that the king could no longer supply him with does out of Windsor Forest, he could have had little taste. He was, doubtless, thankful to have done with a soldier's life, for which he was eminently unfit, both in character and appearance; for he was "of the lowest stature; olivaster complexion; round-faced little eye, round, very black, full of spirit; his hair black as a raven, but quite white twenty years before he died." [2]

In the year 1651, when seventy-three years of age, he pub-

[1] Aubrey. Op. cit.

[2] Aubrey. Op. cit. The notice of Harvey by Aubrey is short, and contains little matter of interest beyond the few facts which have passed into general biography.

lished, at the solicitation of his friends, his great work on Generation ;[1] and after due honours tendered by the College of Physicians, but gracefully declined by Harvey, who had enriched that body with a handsome gift, he died at the age of seventy-nine years in June, 1657.

The greatness of the work of Harvey does not consist in the discovery of the circulation of the blood. That discovery was knocking at the door of the human intelligence, and must very soon have gained admittance, even if Harvey had never been born. The great merit of Harvey lies in the lesson he gave to all future ages, of a noble independence of mind, prepared to follow truth at all hazards, while yet imbued with a profound respect for the authority of his teachers. He was not, like Paracelsus and Van Helmont, a bold reformer, careless of opposing the errors of the great men whose names were pronounced with reverence by his contemporaries, or rejoicing in confronting them ; on the contrary, it is with painful effort that he proceeds to convict the "divine Galen" of inconsequence in his reasoning ; while, at the same time, with a noble inconsistency, he quotes his words as of paramount authority. It is difficult for us to realize what it cost Harvey to emancipate himself from the golden fetters of opinions taught and held by men whom he was almost ready to worship. It was years after he had convinced not only himself but many eyewitnesses, by undeniable experiments of the truth of his discovery, that he gave his short treatise to the world. Eight years

[1] A part of his labours was lost by the destructiveness of a mob. He says, "Whilst I speak of these things, let gentle minds forgive me if, recalling the irreparable injuries I have suffered, I here give vent to a sigh. This is the cause of my sorrow : whilst in attendance on his majesty the king, during our late troubles and more than civil wars, not only with the permission but by command of Parliament, certain rapacious hands stripped, not only my house of all its furniture, but what is a subject of far greater regret with me, my enemies abstracted from my museum the fruits of many years of toil. Whence it has come to pass, that many observations, particularly on the generation of insects, have perished, with detriment, I venture to say, to the Republic of Letters."—Op. cit., p. 482.

after his friend, Lord Bacon, had published his *Novum Organum*—his new instrument for opening the door to discovery—Harvey executed the task, and restored "the commerce of the mind and things," putting aside as unfruitful the "commerce of the mind and opinions." Up to his time, in anatomy and physiology, *believing was seeing*—men saw what Galen *said* was there. The final appeal was to Galen, not to fact. It is doubtful, considering Harvey's dislike to contention, and his love of a tranquil, unambitious pursuit of science, whether he would have written his book at all, had he not been supported by the new philosophy which had been so recently published, with such pomp and circumstance, by the superb Lord Chancellor of England.

Harvey's treatise on the circulation of the blood occupies eighty octavo pages of moderately-sized print. It is still a model of clear, elaborate, elegant, and scientific exposition, perfectly intelligible, and highly interesting, even to one possessing nothing beyond the most ordinary acquaintance with technical terms. It opens with an introduction, showing how unsatisfactory are all the views which have prevailed from the time of Galen to that of the last writer, Fabricius, upon the subject of the pulse and the action of the heart. The notion they had it is difficult for us even to understand—impossible for us to believe, since the revolution effected by Harvey's tract. It was, that the pulse resulted from the contraction and dilatation of the arteries, which contained a mixture of blood and air; that the air was obtained by suction, and hence that the dilatation of the arteries, like the expansion of a pair of bellows, was the active process, and the collapse the return to the passive condition of these tubes. In short, it was the idea of a general respiration, carried on all through the body; which, however, not being sufficient for "the ventilation and refrigeration of the blood," required to be supplemented by lungs placed about the heart. Such was the vague idea handed down from

Galen, who on this subject is full of contradiction ; for while in one place he positively affirms that "the arteries contain only blood,"[1] in another portion of his writings he says, "Show us another vessel which draws the absolutely perfect blood from the heart, and distributes it, as the *arteries do the spirits*, over the body."[2] We need not pause to inquire whether any person had anticipated Harvey in his discovery. Many had groped about the truth, vaguely hinting as they vaguely believed, like the man half-restored to sight who saw men like trees walking. Harvey was the first to see, and cause to be seen, the whole operation. To him is due the whole honour of *that*. Let us listen to his own words :—

"When I first gave my mind to vivesections, as a means of discovering the motions and uses of the heart, and sought to discover these from actual inspection, and not from the writings of others, I found the task so truly arduous, so full of difficulties, that I was almost tempted to think, with Fracastorius, that the motion of the heart was only to be comprehended by God ; for I could neither rightly perceive, at first, when the *systole* and *diastole* took place, nor when and where contraction occurred, by reason of the rapidity of the motion, which in many animals is accomplished in the twinkling of an eye, coming and going like a flash of lightning, so that the *systole* presented itself to me now from this point, now from that ; the *diastole* the same ; and then everything was reversed, the motions occurring, as it seemed, variously and confusedly together. My mind was therefore greatly unsettled, nor did I know what I should myself conclude, nor what believe from others. At length, by using greater and daily diligence, having frequent recourse to vivesections, employing a variety of animals for the purpose, and collating numerous observations, I thought

[1] Galen's Works : "Quod sanguis continetur in arteriis" is the title of the chapter in which the doctrine is taught.

[2] Galen's Works, against Erasistratus, De Placitis, &c.

that I had attained to the truth, that I should extricate myself and escape from this labyrinth, and that I had discovered what I so much desired, both the motion and the use of the heart and arteries,—since which time I have not hesitated to expose my views upon these subjects, not only in private to my friends, but also in public in my anatomical lectures, after the manner of the academy of old.

"These views, as usual, pleased some more, others less; some chid and calumniated me, and laid it to me as a crime that I had dared to depart from the precepts and opinions of all anatomists; others desired further explanation of the novelties, which, they said, were both worthy of consideration, and might, perchance, be found of signal use. At length, yielding to the requests of my friends, that all might be made participators in my labours, and partly moved by the envy of others, who, receiving my views with uncandid minds, and understanding them indifferently, have essayed to traduce me publicly, I have been moved to commit these things to the press, in order that all may be enabled to form an opinion both of me and my labours."[1]

In the succeeding chapters he describes with minute fidelity the way in which the heart rises into an erect position, strikes on the chest, and at that moment discharges its blood into the arteries, producing the throb of the pulse. Having done this, he explains what has taken place:—"First of all, the auricle contracts, and in the course of its contraction throws the blood (which it contains in ample quantities, as the head of the veins, the storehouse and cistern of the blood,) into the ventricles, which, being filled, the heart moves itself straightway, makes all its fibres tense, contracts the ventricles, and performs a beat, by which beat it immediately sends the blood supplied to it by the auricle into the arteries; the

[1] Harvey's Works, p. 19.

right ventricle sending its charge into the lungs, by the vessel which is called *vena arteriosa*, but which, in structure and function and in all things else, is an artery; the left ventricle sending its charge into the *aorta*, and through this, by the arteries, into the body at large."[1]

This, then, is the course of the blood within the heart, from the two cisterns of venous blood—the auricles; it flows into the two ventricles—the right ventricle sends its charge into the lungs, the left into the *aorta*. What becomes of the blood sent by the right ventricle into the lungs? "The blood percolates the substance of the lungs from the right ventricle of the heart into the pulmonary veins and left ventricle." This is the lesser circulation. What becomes of the blood discharged by the left ventricle into the *aorta*? The answer to this question is given in the eighth chapter, which, as one of the most interesting historical documents in medical literature, we shall give entire:—

"Thus far I have spoken of the passage of the blood from the veins into the arteries"—that is, the percolation through the lungs—"and of the manner in which it is transmitted and distributed by the action of the heart,—points to which some, moved either by the authority of Galen or Columbus, or the reasonings of others, will give in their adhesion. But what remains to be said upon the quantity and source of the blood which thus passes, is of so novel and unheard-of a character, that I not only fear injury to myself from the envy of a few, but I tremble lest I make mankind at large my enemies. So much doth wont and custom, that become as another nature, and doctrine once sown that hath struck deep root, and respect for antiquity, influence all men. Still the die is cast, and my trust is in the love of truth, and the candour that inheres in cultivated minds. And, sooth to say, when I surveyed my mass of evidence,

[1] Harvey's Works, p. 31.

whether derived from vivesections and my various reflections on them, or from the ventricles of the heart and the vessels that enter into and issue from them, the symmetry and size of these conduits—for Nature doing nothing in vain, would never have given them so large a relative size without a purpose,—or from the arrangement and intimate structure of the valves in particular, and of the other parts of the heart in general, with many things besides, I frequently and seriously bethought me, and long revolved in my mind, what might be the quantity of blood which was transmitted, in how short a time its passage might be effected, and the like; and not finding it possible that this could be supplied by the juices of the ingested aliment without the veins on the one hand becoming drained, and the arteries on the other getting ruptured through the excessive charge of blood, unless the blood should somehow find its way from the arteries into the veins, and so return to the right side of the heart; I began to think whether there might not be *a motion, as it were, in a circle.* Now this I afterwards found to be true; and I finally saw that the blood, forced by the action of the left ventricle into the arteries, was distributed to the body at large, and its several parts, in the same manner as it is sent through the lungs, impelled by the right ventricle into the pulmonary artery, and that it then passed through the veins and along the *vena cava*, and so round to the left ventricle in the manner indicated. Which motion we may be allowed to call *circular*, in the same way as Aristotle says that the air and the rain emulate the circular motion of the superior bodies; for the moist earth warmed by the sun evaporates; the vapours drawn upwards are condensed, and descending in the form of rain moisten the earth again, and by this arrangement are generations of living things produced; and in like manner, too, are tempests and meteors engendered by the cir-

cular motion, and by the approach and recession of the sun.

"And so in all likelihood does it come to pass in the body, through the motion of the blood; the various parts are nourished, cherished, quickened by the warmer, more perfect, vaporous, spirituous, and, as I may say, alimentive blood; which, on the contrary, in contact with these parts, becomes cool, coagulated, and, so to speak, effete; whence it returns to its sovereign, the heart, or to the inmost home of the body, there to recover its state of excellence or perfection. Here it resumes its due fluidity, and receives an infusion of natural heat—powerful, fervid, a kind of treasury of life, and is impregnated with spirits, and, it might be said, with balsam; thence it is again dispersed, and all this depends on the motion and action of the heart.

"The heart consequently is the beginning of life; the sun of the microcosm, even as the Sun, in his turn, might well be designated the heart of the world; for it is the heart, by whose virtue and pulse the blood is moved, perfected, made apt to nourish, and is preserved from corruption and coagulation; it is the household divinity which, discharging its function, nourishes, cherishes, quickens the whole body, and is, indeed, the foundation of life, the source of all action. But of these things we shall speak more opportunely when we come to speculate upon the final course of this motion of the heart.

"Hence, since the veins are the conduits and vessels that transport the blood, they are of two kinds—the *cava* and the *aorta;* and this is not by reason of there being two sides of the body, as Aristotle has it, but because of the difference of office; nor yet, as is commonly said, in consequence of any diversity of structure; for in many animals, as I have said, the vein does not differ from the artery in the thickness of its tissues, but solely in virtue of their

several destinies and uses. A vein and an artery, both styled vein by the ancients, and that not undeservedly, as Galen has remarked, because the one, the artery to wit, is the vessel which carries the blood from the heart to the body at large; the other, or vein of the present day, bringing it back from the general system to the heart; the former is the conduit from, the latter the channel to, the heart; the latter contains the cruder, effete blood rendered unfit for nutrition; the former transmits the digested, perfect, peculiarly nutritive fluid."[1]

On reading this document now, one is apt to accuse Harvey of timidity in imagining that by its publication he could possibly make "mankind his enemy." Alas! his prognostication of evil was more than fulfilled;—by the world at large he was scouted as a crackbrained fool; and by his own colleagues, in whose love of truth and candour, as having cultivated minds, he reposed his trust, he was avoided as a heretic. In derision he was called "Circulator," or quack, and there was a current medical proverb—"*Malo cum Galeno errare quam cum Harveio esse circulator.*"

Thus, in the year 1628, two years after the death of Lord Bacon, was the solution of the greatest problem in vital mechanics given to the world. Harvey, after this, devoted himself to the study of Generation, and greatly advanced the knowledge of that mysterious subject. He also studied, and probably wrote upon one of the most puzzling problems of vital chemistry—Respiration; and he seems to have had a true, although necessarily vague idea, of this process; for he says:—"If any one will carefully attend to these circumstances, and consider a little more closely the *nature of air*, he will, I think, allow that air is given, neither for the 'cooling,' nor the nutrition of animals; for it is an established fact, that if the *fœtus* has once respired, it may be more quickly suffocated, than if it had been entirely excluded

[1] Harvey's Works, p. 47.

from the air: it is as if heat were rather *enkindled within the fœtus*, than repressed by the influence of the air. This much, by the way, on the subject of Respiration; hereafter perhaps, I may treat it at greater length."[1] That Harvey should have suspected the truth, to be revealed long afterwards, that heat was enkindled by respiration, is a most remarkable proof of his genius. For Chemistry may be said not to have been born till after the words just quoted were written. Harvey published his work on Generation in the year 1651, and at that time Robert Boyle was twenty-five years of age. Boyle has been called the Father of Modern Chemistry, and we are now on the threshold of the chemical era of medicine.

[1] Harvey's Works, p. 530.



SYLVIUS DE LA BOE.[1]

CHAPTER IX.

DES CARTES.—SYLVIUS DE LA BOE.—ROBERT BOYLE.

Des Cartes' birth—His exile in Holland—His death in Sweden—His Physical Philosophy—His Vortices—Futility of his Physical Speculations—Sylvius de la Boe—Guy Patin—Use and Abuse of Antimony—Dialogue on Blood-letting between Willis and Van Helmont—Sylvius' Theory of Digestion—Guy Patin's Definition of Cardinal Mazarin—Bonteke's Praise of Tobacco—Robert Boyle—His Studies—Inclination towards Medicine—Just Estimate of Chemistry—Objections to Compound Prescriptions—Expectation from Specifics—Objections to Specifics answered.—The Dose of a Specific.—Boyle the Expounder of the Baconian System of Medicine.

DES CARTES was born in 1596, Sylvius in 1614, twelve years before Bacon's death; and Boyle in 1627, the year Bacon died. René Des Cartes, or Latinised, Renatus Cartesius, "was a gentleman of Brittany, a military man, possessing, in the highest degree," says his distinguished countryman, "our defects and our qualities; clear, firm, resolute, somewhat rash; thinking in his closet with the same intrepidity with which he fought under the walls of Prague."[2] He

[1] C. Van Dalen, junior, del. et sculpt.

[2] Victor Cousin's History of Modern Philosophy.

passed the greater part of his life a voluntary exile in Holland, where he conceived he might enjoy greater liberty than he could in France. He died in Sweden, whither he had gone at the invitation of Queen Christina; and he is said to have been sacrificed to the rigour of the Swedish climate, as administered by his eccentric hostess, who insisted upon studying with him at five o'clock in the morning.[1] "To Des Cartes," says Playfair, "belongs the honour of being the first who ventured on the solution of the most arduous problem which the material world offers to the consideration of philosophy. For this solution, he sought no other data than *matter* and *motion*, and with them alone proposed to explain the structure and constitution of the universe. The matter which he required, too, was of the simplest kind, possessing no properties but extension, impenetrability, and *inertia*. It was matter in the abstract, without any of its peculiar or distinguishing characters. To explain these characters was, indeed, a part of the task which he proposed to himself; and thus, by the simplicity of his assumptions, he added infinitely to the difficulty of the problem which he undertook to resolve."[2] "He begins," says Whewell, "with his celebrated assertion, '*I think, therefore I am,*' which appears to him a certain and immovable principle, by means of which he may proceed to something more. Accordingly, to this he soon adds the idea, and hence the certain existence of God and his perfections. He then asserts it to be also manifest, that a vacuum in any part of the universe is impossible; the whole must be filled with matter, and the matter must be divided into equal angular parts, this being the most simple, and therefore the most natural supposition.[3] This matter being in motion the parts are necessarily ground into a spherical form, and the corners thus rubbed off (like filings or sawdust) form a

[1] Biographical Dictionary.

[2] Preliminary Dissertations to Encyclopædia Britannica, p. 58.

[3] Principia, p. 58.

second or more subtle matter.[1] There is, besides, a third kind of matter, of parts more coarse and less fitted for motion. The first matter makes luminous bodies, as the fixed stars; the second is the transparent substance of the skies; the third, the material of opaque bodies, as the earth, planets, and comets. We may suppose, also,[2] that the motions of these parts take the form of revolving circular currents,[3] or *vortices*. By this means, the first matter will be collected to the centre of each *vortex*, while the second, or subtle matter, surrounds it, and by its centrifugal effort constitutes light. The planets are carried round the sun by the motion of the *vortex*,[4] each planet being at such a distance from the sun as to be in a part of the *vortex* suitable to its solidity and mobility. The motions are prevented being exactly circular by various causes; for instance, a *vortex* may be pressed into an oval shape by contiguous *vortices*. The Satellites are in like manner carried round their primary planets, by subordinate *vortices;* while the comets have sometimes the liberty of gliding out of one *vortex* into the one contiguous, and thus travelling in a sinuous course from system to system through the universe."[5] Although Des Cartes himself styled his famous theory of *vortices* "A Philosophical Romance,"[6] yet it exerted a powerful influence upon the course of speculation both in physiology and pathology. Des Cartes was one of the earliest and most zealous supporters of Harvey, and while he accepted and defended the explanation given by our patient countryman of the cause of the circulation of the blood, he added to it his own imaginative hypothesis as to the production of animal heat. This he conceived to be owing to a fermentation of the blood in the heart; he compares it to the chemical action of an acid upon a metal, and the cause

[1] Principia, p. 59.
[2] Ibid., p. 56.
[3] Ibid., p. 61.
[4] Ibid., c. 140, p. 114.
[5] Whewell's History of the Physical Sciences.
[6] Sir William Hamilton's Dissertations on Philosophy, p. 304.

of the fermentation he ascribes to an ether (or the gas of Van Helmont), a spirit of some kind that vitalizes the fluid. As the blood proceeds in its course, it becomes more and more divided by this spiritual agency, and at the summit of its career in the brain, the spirit has at length effected its final divorce from the bodily element, and is at liberty—we may presume to enter into the court of the soul itself, which Des Cartes enthroned in the pineal gland, for the fanciful reason that this was the only part of the brain which was not double.

Such is the career of the emancipated spirit; but what becomes of the earthly companion in this dissolved alliance? This forsaken half, being matter, as we have seen, must be composed of atoms, or rather fragments, of various shapes and sizes, all hurried along in a perpetual whirl by the vortices. Of these fragments some are round, some triangular, some square. When a round atom arrives at the mouth of a round hole or pore, there is nothing to prevent its entrance; it is swept in by the force of the current, and finds itself at ease, and so moves on till it is taken up by the part requiring the nourishment it can afford. But, if instead of a round atom, a square one should be forced into a round hole, there occurs in the person of man all the evil consequences that result in the political frame when a round body is put into an office which Nature designed to be occupied by a square one, and we have *obstruction of the pores*. Out of Des Cartes' physical romance this important doctrine took its rise—a doctrine which, under various modifications, long held sway in medicine, and powerfully affected the practice of the art.[1]

We may dismiss the consideration of Des Cartes' contribution to medicine, with the words applied by Playfair to his influence on physical science. "The philosophy of Des Cartes could explain all things equally well, and might

[1] Sprengel, Vol. IV., p. 28.

have been accommodated as well to the system of Ptolemy or Tycho, as to that of Copernicus. It forms, therefore, no link in the chain of physical discovery; it served the cause of truth only by exploding errors more pernicious than itself, by exhausting a source of deception which might have misled other adventurers in science, and by leaving a striking proof how little advancement can be made in philosophy by pursuing any path but that of experiment and induction."[1] For philosophy, in the last sentence, we may substitute medicine, and add, that Des Cartes' visions of atoms and pores were of great indirect benefit, by setting men to determine, by actual microscopic inspection, whether they had a counterpart in reality. Thus, while exploding the errors of Galen, and his elements and humours, by a physical theory even of the most fantastic kind, he at the same time instigated the liberated intellect of his age, to cultivate a fertile field of improvement in anatomy and pathology.

Des Cartes' "starting principle—that all philosophy begins in an analysis of the human consciousness—is the foundation of all subsequent psychological investigations down to the present day."[2] He is, therefore, considered the founder of modern mental philosophy; he was, besides, one of the greatest mathematicians that ever lived, being the first to apply algebra to the solution of geometrical problems; —so we cannot wonder that, when this transcendent genius proclaimed the laws of physics, his utterances should be received with profound respect, and accepted as revelations of truth. But it is difficult to adapt our minds to the conditions of the period when Francis de la Boe Sylvius introduced into medicine his chemical theories, which received more attention, and exerted longer and deeper influence than the brilliant reveries of Des Cartes.

[1] Dissert. Encyclop. Brit., p. 394.

[2] An Historical and Critical View of the Speculative Philosophy of Europe in the Nineteenth Century, by J. D. Morrell, 2nd edit., p. 176. London.

To realize, in any degree, how the most absurd and mischievous chemical notions of Sylvius were not only admitted, but greedily accepted by the medical world of his time, we must bear in mind that it had passed, or was passing, from a state of despotism into one of anarchy. Galen was still an authority with the orthodox. In the year 1615, one year after Sylvius was born, the Royal College of Physicians of Paris unanimously passed a decree, whereby "chemical medicines were condemned, and interdicted from all pharmacopœias, and all judges were implored to inflict severe chastisement on all who prescribed, administered, and exhibited those poisonous medicines." [1]

Dr. Guy Patin was the fashionable physician of Paris at the time of Sylvius. His letters have been preserved, and form a most curious collection of medical and general gossip. The first is dated 1630, the last 1672; so they embrace a period of forty-two years. The first was written when Sylvius was sixteen years old, the last when he was fifty-eight. We have thus an opportunity of comparing the extravagances of the orthodox school with those of the heterodox or innovators. These latter went by the derisive name of what we may call "chemikers." The *chemikers* were all who used antimony, and the other new powerful remedies introduced to the notice of the medical world by Van Helmont and the professed chemists. How these chemikers were looked upon by their orthodox brethren, we learn from the celebrated letters of Guy Patin. A few specimens, which are too characteristically written to bear translation without loss of force, may be taken as fairly representing the opinions he maintained during his whole life. "On tient ici pour charlatans ceux qui donnent de l'antimonie ou vin émétique; il y en a quelques uns des notres qui s'en échappent, mais ils en sont *haïs et méprisés*, et voudroient que ce fût à recommencer; la plupart sont moines

[1] Note to Guy Patin, Vol. 1, p. 191.

froqués ou défroqués, *circulatores et agirtæ,* chimistes, souffleurs, apothicaires quelques gens de la cour qui s'y vantent d'avoir des secrets, *et tanquam asini exultant inter simias:* aussi n' y reussissent-ils point et toute leur faveur ne dure guère."[1] Not content with these regular attacks upon the chemikers, he never fails, in mentioning a death, to attribute it, if possible, to these miscreants. "The Duchess of Lorraine has just died here of sorrow and antimony," writes he, and adds, "the grandees are unfortunate in their medical advisers; the court physicians are either ignorant or charlatans—very often both."

"The Count d' Alais was one of the most learned gentlemen of France. He had by him 'un medicastre chimiste,' whom he had brought from Provence. This man told him there was nothing the matter with him. When his malady gained ground, *one of us* was called in, who pronounced it to be suffocative catarrh, and said that the Count must be bled at once, and a consultation held. This the Provençal refused; and called, instead, two other workmen of his own kidney (deux autres ouvriers tels que lui), and gave antimony. 'Cujus vapore maligno statim extinctus fuit et per stibium Stygias ebrius hausit aquas.'[2]

"A few days ago there died here a very rich woman, Mad. de Breton Villiers. She had a shivering, and complained of her head. They put her to bed, and gave her a laxative lavement, containing four ounces of antimonial wine. They afterwards gave her some of the same poison by the mouth. There followed a copious evacuation, a rush of blood to the head, and death in six hours. I hold it for certain that the antimony killed her. The charlatans pretend she died of an abscess in the brain." Here follow the names of the four operators. "It was the first of the four who

[1] Vol. I., p. 174.

[2] The deadly vapour at once extinguished him, and, drunk with the stibial draught, he had to drink the Stygian water.

recounted the story to me. *Non sine sensu peccati.*"—"Et voilà comme ces MM. les antimoniaux se jouent de la vie des hommes, et comme imprudemment ils envoient en l'autre monde leur pauvres malades, avec leur poison, sous ombre d'avoir des remèdes secrets particuliers, qui sont des termes de charlatans, *a quibus decipiuntur idiota tam togati quam tunicati.*[1]

In 1654, he writes—"Antimony, which is hardly ever spoken of now, except with detestation, got a deadly blow here yesterday, in the person of one of the members of the council of the court, whose daughter died at the age of fourteen years, carried off by a double dose of antimony."

Such are a few specimens of the terms in which this most polite, accomplished, clever, fashionable, orthodox physician denounced those of his brethren who had the audacity to administer the now popular nursery remedy—antimonial wine. Surely, if history teaches one thing more than another, it is to beware of dogmatism and intolerance. The orthodox of to-day are the heretics of yesterday, and will become again the heretics of to-morrow; and the language they used towards those who introduced or employed a new method or medicine, will be found appropriate against themselves as soon as the novelty has worn off. This famous Guy Patin, for example, who is so unsparing of the antimoniasts, the charlatans, the chemikers, the mountebanks, and so forth, has exposed himself to the severest censure by the severity of his own treatment. He describes how he treated a gentlemen ill of rheumatism; whom he bled *sixty-four times in eight months,* and then purged, "which gave him great relief, and finally cured him." "The idiots," he adds, "who do not understand our method, abscribe the cure to the purging; but if the impetuosity of the vagabond humours had not been repressed by the blood-letting, the purging would have done

[1] Op. cit., Lettre 252.

no good." Now-a-days, there are many "idiots," who would deny that the recovery was due either to the blood-letting or the purging; and who would rather wonder that the victim survived this vigorous orthodoxy. Even among his own contemporaries, there were those who denounced the practice of blood-letting as always useless, and generally mischievous. For example, a celebrated Roman physician, Dr. Lucia Antonio Portio, wrote a book, entitled "Erasistratus: sive de Sanguinis Missione;" which is in the form of a dialogue between Willis, Van Helmont, and others; and the objections to blood-letting are thus forcibly set forth:—

"*Willis* (*loquitur*).—In those dyscracias of the blood, in which the nobler and more active principles—such as the spirits, the volatile salts, and sulphur—are depressed or consumed, while the aqueous and terrestrial particles are in excess, blood is not to be drawn, but, on the contrary, to be preserved as the treasury of life. But when the active principles are depressed by the incipient or existing plethora, whether in man or beast, the first and most common indication is to let blood."

To this Van Helmont replies:—"But this benefit will be derived from blood-letting, either never, or at most once or twice, in the course of life: for, as you, Willis, say, after drawing blood once or twice, the necessity of repeating the operation is inevitable; and the more blood you draw, the more does the abundance of blood increase (*quo plus mittas eo plus sanguinis copia crescit*)." Again, he says, "According to you, Willis, unless there is *an excess of vitality*, blood-letting is always injurious. But in pleurisy there is never an excess of vitality—not even Methusalem had too much life; and if you perform venesection in this disease, you must always do harm."[1] This argument is applicable to all inflammations as well as to pleurisy.

A discussion between the Roman and French doctors

[1] Erasistratus. Venice, 1683, p. 48.

would have been most edifying. They were both men of knowledge and wit, and the theory and practice of the one were as much opposed to those of the other as are any of the contending systems of the present day. Each must have looked upon the other as daily prosecuting a system not of cure, but of manslaughter.

The great leader of the chemical sect was Sylvius de la Boe, a Frenchman by extraction and a Dutchman by adoption. He was born in 1614, and studied and practised medicine in Amsterdam, where he became familiar with the views both of Des Cartes and of Van Helmont. He compounded out of the opinions of these two original thinkers a system of his own, of great simplicity and of easy application to practice. In the year 1658 he occupied the chair of medicine at Leyden, and was the most popular teacher of his age. He was the first to introduce the plan of giving lectures upon individual cases treated by himself in the Hospital, and was thus the founder of clinical instruction. Let us observe how fallacious his apparently admirable method may be in the hands of an ingenious theorist. Sylvius de La Boe treated all his patients according to his chemical method, and demonstrated its excellence to the satisfaction of his pupils, thus giving it a position which it could not otherwise have taken. Seeing is believing; his pupils flocked round his beds, saw his treatment, and believed his explanations. The foundation of his system was the assumption that almost all vital action is a kind of fermentation. This fermentation was different from that of Van Helmont, being rather a purely chemical reaction between an indefinite number and quantity of acids and a corresponding number and quantity of alkalies. The process begins as soon as food enters the stomach, the first reaction being caused by the acid saliva and pancreatic fluids meeting the alkaline bile. As the digestion goes on, there is a farther development of acids and alkalies, and liberation of volatile spirits. These spirits

are again received into the chyle, which is composed of a fine oil and a weak acid neutralized by an alkali. Out of this the blood is perfected in the spleen, by the addition of a handsome contingent of vital spirits. The blood thus made he naturally regarded as a most unstable chemical compound, kept in a state of perpetual ebullition by the vital heat; of which performance the heart is the centre, the bowl of the animal retort, whence proceed the vessels which convey the heated liquor to the distant parts. In the brain the process of distillation is completed, and the animal spirits are thence diffused by the nerves over the body, to endow every part with its own sensibility and peculiar properties. The spirits that feed the glands unite, in turn, with the acid of the blood; and this forming a sort of naphtha, or animal oil, is dissolved by the lymph, which is made up of a combination of vital spirits and acid.

This physiology has the merit of simplicity, and is easily converted into an equally simple pathology. Does not every brewer know how apt his brewst is to go wrong, —to how many accidents the fermentation is liable? So it is with the chemical works in the human body. "Thus," he says, "I consider the cause of intermittent fevers to be, that some part of the pancreatic juice stagnates in one or more of the pancreatic ducts, and as its habit is—*morâ suâ*—it becomes *acrid.*" This acid acrimony is dissolved by the lymph, and poured into the small intestines. Here it comes in contact with the bile, and straightway an effervescence ensues, from which there arises a paroxysm of cold. This acrimony finds its way naturally, sooner or later, to the heart, and thence is distributed over the system.—This, then, is the cause of ague—an acrimony produced by a stoppage of the pores of the pancreas from some confusion among the vortices *à la* Des Cartes, giving rise to a fermentation *à la* Van Helmont. Given the cause—and such a cause—can anything be simpler than the true method of treatment?

Surely the obvious antidote for an over acid or acrimonious state of the blood is, to pour into it an alkali which will neutralize this condition. This was his method of cure. He assumed that the blood was too acid or too alkaline: for the former condition he gave largely of salts of ammonia, and for an excess of alkalies he gave opium in equal profusion. He also employed that dire poison, that horror of Guy Patin, Antimony, to rid the system of its excess of either alkaline or acid substances, which were deranging the power of distillation.

Sprengel, after giving an example of some of the receipts rendered popular by Sylvius, breaks forth : "And so the lives of thousands were sacrificed for the sake of an empty chimera ! But the spirit of the age, the fashion, willed that the physician should see nothing in the animal economy but fermenting elements and chemical processes ; and better far that the patients should die in the fashion than live *according to the wisdom of the ancients"* ! How far the spirit of that age differs from the spirit of this, is a question we shall not venture to moot.

While we agree with Sprengel that it is deplorable that human lives should be sacrificed to idle chimeras, we must avoid the error he seems to commit, of censuring Sylvius de la Boe and his school, for not following "the wisdom of the ancients." The ancients, or the school of tradition, were represented by Galen and his followers ; and it would have been as impossible for a man of free and vigorous thought, who saw all around him new forms of disease, engendered by new habits, or imported from newly-discovered countries lying beyond oceans unknown to the ancients, to accommodate his system of treatment to the theories of Galen, as it was to reconcile the geography of Columbus with that of Aristotle or Strabo. Those who, like Guy Patin, acquiesced in traditional medicine, did not *think* about it at all. In the whole correspondence of Patin,

amounting to more than 600 letters, all, or nearly all addressed to his professional colleagues in the provinces, there is hardly a single allusion to any improvement in medicine or any scientific discovery; the staple consists of light talk, court scandal, and abuse of antimony and the Cardinal Mazarin—"*animal rubrum capax et vorax omnium beneficiorum.*" [1] Now, much as we shrink from the violent empirical method of the chemists, we must consider it better for the progress of the art and of our race, than the indolent acquiescence in routine practice. It had the *sine quâ non* of progress—belief, and vitality. Pushing forward, even on the wrong road, is better than sleeping in the slough of despond. This vigorous experimentation with powerful drugs was the only way to arrive at powerful specifics—at least, the only way then known. Besides, we must not forget, when we wonder at the great clumsy limbs of these fossil authorities in medicine, that they were not out of place then and there, as they are here and now. In the struggle for existence that fiercely raged about them, they held their own by virtue of superior strength and better adaptation to the circumstances and the conditions of the period. Others of feebler nature went to the wall; multitudes became extinct; and so those that remain stand out in sharp singularity as if they were monstrous productions. To their companions, they were giants; to us, by the extinction of their contemporary specimens, they have the appearance of monsters. The very fact of their having lived, held their own, and become fossil, is a claim upon us to treat them with respect.

At the same time it must be admitted, that it is difficult to concede such a claim to some of the writers of this period, whose works have come down to us; those, namely, whose chief interest consists in exhibiting the utter anarchy of the time, when reasonings of no force could yet have possessed

[1] Op. cit., Lettre 532.

so much influence. This observation does not apply to Sylvius de la Boe, for he was a man of great impressiveness of character, and was respected by able men for half a century. Nor to Guy Patin, whom Don Benaventura thus describes :—Il était satyrique depuis la tête jusqu' au pieds . . il avait dans la visage l'air de Ciceron et dans l'esprit le charactère de Rabelais.[1] But the remark applies to another writer of this period, whose book is quite a curiosity. It is entitled, "A Short Treatise on Human Life, Health, Sickness, and Death, by Cornel. Bonteke."[2]

His pathology and therapeutics are of the simplest kind. "The scurvy, rightly understood, is the only disease of man, and the root of all others, whatever men may call them."[3] Against this one root of evil, there was one panacea—*Tobacco*. "It is remarkable that the three things of greatest importance to man should have been simultaneously discovered, viz., the circumnavigation of the globe, the circulation of the blood, and the smoking of tobacco." "Before telling of the powers of smoke, and how it cures scurvy, we must first remove the prejudices which have hitherto impeded its progress. It is said that smoking dries men up and makes them unfruitful, that it causes sickness, &c. But to smoking is imputed blame which should attach to other causes. If a man, enjoying pleasant company, smokes and drinks brandy, and is in consequence 'seedy,' is that the fault of tobacco? Before smoking was introduced, men drank brandy with a similar result. In like manner, if a man wastes his time, and smokes, his friends tell him to leave off tobacco-smoking, as if smoking were the cause and not the consequence of his idleness! True, those not

[1] Dict. des Sciences Naturelles, Art. Patin.

[2] Kurze Abhandlung von dem Menschlichen Leben, Gesundheit, Krankheit, und Tod durch Cornel. Bonteke, 1688. The name Bonteke, or Latinised *Bontekius*, is said to be transmuted out of Bonny Kuh, or Cow. He having been born at the sign of the Bonny Cow! See the name of Paracelsus, p. 159.

[3] Ibid., p. 165.

used to it are made ill by tobacco-smoking, but that is from not understanding its proper use. There are plenty of things which, at first injurious, become pleasant and useful by habit—and the art of smoking is to be acquired by practice alone; for if, instead of inhaling the smoke we swallow it, it acts injuriously on the gastric juices. As to drying people up, it does not make them half so hot as a day's hunting; so how can it dry them up? One could write a large book upon the thousand services rendered by tobacco; but in one word, the smoking of the precious leaves is the best medicine against the scurvy that is to be found in the world; and this scurvy is the root of all diseases of mankind. Smoking, too, is a remedy which can be employed at all times; we can enjoy this healing Virginian herb from early morn to late even. Like the vital air, we can breathe it in all times, places, conditions, and companies. Is one anxious at heart, deaf, joyless, *malade?* weak, torpid and stiff with scurvy? has one pain in the head, eyes, teeth, or anywhere? is the sight weak or dim? is one sleepless? has one colic, gout, stone, itch, thinness, corpulency, flatulency, worms?—the smoke of the Virginian tobacco is the true remedy against all these disorders, which are the twigs, and leaves, and fruit of scurvy; while at the same time this glorious healing plant, tobacco, eradicates and destroys the hidden roots of the tree of scurvy, whence all diseases shoot." This is a condensed representation of Bonteke's Message to Humanity.

It is a great relief to turn from these absurd extravagances, to the works of Robert Boyle. The Honourable Robert Boyle was the seventh son of the Earl of Cork. He was born at Lismore, in Ireland, on the 25th of January, 1626. Bacon died on the 9th of April of the same year. Boyle enjoyed all the advantages of such an education as he was entitled to from his father's rank. After Eton, he went abroad, under the care of a French tutor; and in the

year 1641 was employed in acquiring the language, and studying "the new paradoxes of the great star-gazer, Galileo, whose ingenious books," he slyly remarks, "perhaps because they could not be so otherwise, were confuted by a decree from Rome."[1] He returned from his travels in 1644, and found himself in possession of an ample patrimony by the death of his parents. From that time, he devoted himself to study and the investigation of natural phenomena, in accordance with the method laid down by Lord Bacon. He excelled in all departments of intellectual achievement. Although he did not make metaphysics his special study, he yet wrote two tracts, which, according to a most competent authority, Dugald Stewart,[2] "display powers which might have placed their author on a level with Des Cartes and Locke, had not his taste and inclination determined him more strongly to other pursuits;" while, in physics, he has been ranked as the father of experimental philosophy; and M. Libes, in his "Histoire Philosophique du Progres de la Physique," devotes a whole chapter to the influence which Boyle exerted upon the development of this branch of philosophy, and observes that "it is impossible to say to what degree of obligation chemistry is to limit its acknowledgment to Boyle. Searching every inlet which phenomena presented, trying the whole material world in detail, and with a disposition to prize an error prevented, as much as a truth discovered, it is impossible to say how many were led to discover what exists, by being previously warned by Boyle not to search for what has no existence." Another writer says of him, that he was "one of the greatest philosophers, as well as best men, that our own or, indeed, any country has produced."[3] We have a very high testimony given to Boyle by Boerhave, the oracle of Medicine of the succeeding generation. "Mr. Boyle, the ornament of his

[1] The works of the Hon. Robert Boyle, in 6 vols. 4to. London, 1772.

[2] Preliminary Dissert., p. 139.

[3] Encyclop. Brit.

age and country, succeeded to the genius and inquiries of the great chancellor, Verulam. Which of Mr. Boyle's works shall I recommend? All of them. To him we owe the secrets of fire, air, water, animals, vegetables, fossils; so that from his works may be deduced the whole system of natural knowledge." So complete a man was he, that besides being devoted to the examination of nature, he was also the most delightful companion, from his intimate acquaintance with every department of learning, and from the wit, copiousness, and kindly humour of his conversation, mingled at times with gentle satire.

It is well worth our while to bestow earnest attention on all that Boyle says about medicine; for he seems to have studied it with more than his ordinary avidity, and to have had a strong inclination to practise it as a profession. What his sentiments in regard to it were, may be gathered from the following passage:—

"And though I ignore not that it is a much more fashionable and celebrated practice in young gentlemen to kill men than to cure them; and that mistaken mortals think that it is the noblest exercise of virtue to destroy the noblest workmanship of nature (and, indeed, in some few cases the requisiteness and danger of destructive valour may make its actions become a virtuous patriot), yet, when I consider the character given of our great Master and Examplar in that Scripture which sayeth 'that he went about doing good and healing all manner of sickness and all manner of diseases among the people,' I cannot but think such an employment worthy of the very noblest of his disciples; and I confess, that if it were allowed to me to envy creatures so much above us as are the celestial spirits, I would much more envy that welcome angel's charitable employment, who at set times diffused a healing virtue through the troubled waters of Bethesda, than that dreadful angel's fatal employment, who in one night

destroyed a hundred and fourscore thousand fighting men." [1]

It is unfortunate for Boyle's influence that he should have written in a style of such prolixity as to make the perusal of his works, at the present day, a most serious task. The cause of this diffuseness is evidently the haste he was in to make the most of a life he knew to be very precarious, and expected to be short. He was always an invalid, and wrote as one anxious, before he passed away, to give to mankind the fruits of his reading, experiments, observations, and reflections. He wrote for the sake of instructing; not to perplex or dazzle, as was then so much the fashion. This style of writing he condemns with the greatest severity.

"If judicious men, skilled in chemical affairs, should once agree to write clearly and plainly of them, and thereby keep men from being stunned, as it were, or imposed upon by dark or empty words, it is to be hoped that these men, finding that they can no longer write impertinently and absurdly without being laughed at for so doing, will be reduced either to write nothing, or books that may teach us something, and not rob men, as formerly, of invaluable time; and so, ceasing to trouble the world with riddles or impertinences, we shall either by their books receive an advantage, or by their silence escape an inconvenience." Again, elsewhere, he observes, sarcastically, "As for the mystical writers scrupling to communicate their knowledge, they might, less to their own disparagement and to the trouble of their readers, have concealed it by writing no books than by writing bad ones." [2]

These admonitions, from the greatest chemist of his age to his brother chemists, were highly requisite then, although now-a-days the error is, perhaps, on the other side. In the efforts made to be intelligible, there is a risk of scientific

[1] Vol. II., p. 201. [2] Ibid., p. 521.

writing becoming superficial,—the present mode of reading while we run or ride being decidedly opposed to earnest study.

There is another admonition about chemistry, which is still worthy of serious consideration. "It is not so sure as both chymists and Aristotelians are wont to think it, that every *seemingly singular and distinct* substance that is separated from a body by the help of fire, was pre-existing in it as a principle or element of it."[1] It was then the fashion to find the so-called elements, salt, sulphur, and mercury, in all bodies. We have passed that stage, but it is still doubtful whether, in the chemical analysis of organic matter, the chemists do not *make* what they find.

Certain it is, and most remarkable, that Boyle, notwithstanding his vision of the wonders that his Art of Chemistry might effect, was utterly opposed to any possible application of its potent machinery to the solution of the great mysteries of medicine. The reason he thus gives:—"I consider the body of a living man, not as a rude heap of limbs and liquors"—not a retort full of chemical mixtures, as Sylvius did,—but "as an engine consisting of several parts, so set together that there is a strange and conspiring communication betwixt them, by virtue whereof a very weak and inconsiderable impression of adventitious matter upon some one part may be able to work on some other distant part, or, perhaps, on the whole engine, a change far exceeding what the same adventitious body could do upon a body not so contrived."[2] He gives, as illustration, the powerful effects caused by the pressure of a finger on the trigger of a gun; for, as successive changes in the relation of the parts follow this slight disturbance, and result in a dangerous explosion, so, in the animal economy, where part is knit to part by a tissue of sympathy, a gentle impression on one part may give rise to a whole train of actions in the body, resulting in the most violent

[1] Op. cit., Vol. I., p. 493.

[2] Op. cit., Vol. II., p. 176.

perturbation of its organs and functions. This makes chemistry inapplicable. A chemical remedy can act only upon the substances presented to it; it cannot touch the springs of life and tune the discordant notes.

What, then, did Boyle look forward to for improving medicine? We shall first see how he tried to call the physicians off the wrong scent, and then how he led them on to where he believed they would find the direction for pursuing to a successful issue the true problem of *how to cure.*

"I cannot forbear to wish that divers learned physicians were more concerned than they seem to be, to advance the *curative* part of their profession, without which, three, at least, of four others may prove, indeed, delightful and beneficial to the physician, but will be of very little use to the patient whose relief is yet the principal end of physic; whereunto the physiological, pathological, and semeiotical parts of that art ought to be referred. . . . . I had much rather that the physician of any friend of mine should keep his patient by powerful medicines from dying, than tell me punctually when he shall die, or show me in the opened carcass why it may be supposed he lived no longer."[1] In another place, he quotes Celsus with great approval, to the effect "that it matters not what causeth the disease, but what removes it." In short, Boyle saw that the great error to which the scientific and learned physicians of all times were liable, was, to take greater pleasure in ascertaining the *certainties* of diseases, their genesis, propagation, mutual affinities, natural termination, and morbid alterations of the body, than in attempting to obtain the greatest possible command over the *uncertainties* on which the restoration of the sick and the relief of suffering depend. It is more to the taste of the man of science to be a political economist than a practical politician. Hence it is one of the general impediments to the progress of

[1] Vol. II., p. 114.

medicine, that the curative branch rather repels than attracts minds of a highly scientific tendency, of whose active co-operation it stands in need, to register its facts and ascertain its laws.

A special hindrance to the advancement of medicine, is the system of prescribing many ingredients in one receipt. On this head, Boyle anticipates to a great extent what has since been written, and is almost as energetic as any of our more modern writers.

"It seems a great impediment to the further discovery of the virtues of simples, to confound so many of them in compositions; for in a mixture of a great number of ingredients, it is hard to know what is the operation of each or any of them, that I fear there will scarce, in a long time, be any progress made in the discovery of the virtues of simple drugs, till they either be oftener employed singly, or be but few of them employed in one remedy.[1] Again he returns to the charge:—"I fear that when a multitude of simples are heaped together into one compound medicine, though there may result a new crisis, yet it is very hard for the physicians to know beforehand what that will be; and it may sometimes prove rather hurtful than good, or at least by the coalition the virtues of the chief ingredients may be rather impaired than improved. . . . Though I had not the respect I have for Mathiolus and other famous doctors that devised the compositions, whereinto ingredients are thrown by scores if not by hundreds, yet, however, I would not reject an effectual remedy, because I thought it proved so rather by chance, than by any skill in the contriver; and I think a wise man may use a remedy that none but a fool would have devised." Such are Boyle's opinions on the use of compound medicines: it was not by them that the art of healing was to be improved. Nor was it by reverting to "the wisdom of the ancients," as Sprengel

[1] Vol. II., p. 124.

suggests; or by worshipping the "vis medicatrix naturæ," as our modern school inculcate. His words on this head are very striking. "Though, in a right sense, it be true that the physician is nature's minister, and is to comply with her, who aims always at the best; yet if we take this in the sense those expressions are vulgarly used in, I may elsewhere acquaint you with my exceptions at them; and in the meantime I confess to you that I know not whether they have not done harm, and hindered the advancement of physic, fascinating the minds of men, and keeping them from those effectual courses whereby they may potently alter the engine of the body; and, by rectifying the motion and texture of its parts, both consistent and fluid, may bring nature to their bent, and accustom her to such convenient courses of the blood and other juices, and such fit times and ways of evacuating (what is noxious or superfluous) as may prevent or cure stubborn diseases more happily than the vulgar Methodists are wont to do."[1]

Boyle does not leave us in any doubt as to the helm by which the vessel is to be steered. Far from denying the power of nature, he was one of the greatest investigators of her hidden forces; but, once discovered, they are to be used, not obeyed; not submitted to as eternal laws to which we owe subjection, but employed under the direction of reason for the benefit of the human race. And what are these forces which are to regenerate the art of healing, and restore it to its pristine dignity as exercised by the Messenger of good-will to man? They are—*Specifics*.

By the term *specific*, Boyle distinctly states that he does not mean a nostrum or panacea, which is to cure all diseases, or any disease whatever, infallibly, and as by magic; all he means is, a remedy which most commonly relieves the patient, lessening the disease by reason of some unknown property or peculiar virtue. One great stumbling-block in

[1] Op. cit., Vol. II., p. 186.

the recognition of specifics he thus tries to remove. "Finding at every turn that the main thing which does prevail with learned physicians to reject specifics, is, that they cannot clearly conceive the distinct manner of the specific's working, and think it utterly improbable that such a medicine, which must pass through digestions in the body, and be whirled about by the mass of the blood to all the parts, should, neglecting the rest, show itself friendly to the brain, for instance, or the kidneys, or fall upon this or that juice or humour, rather than any other. But to this objection, which I have proposed as plausible as I can make it, I shall at present but briefly offer these two things.

"First, I would demand of these objectors a clear and satisfactory, or, at least, an intelligible explication of the manner of working of divers other medicaments that do not pass for specifics. Why the glass of antimony, though it acquire no pungent, or so much as manifest taste, whereby to vilicate the palate, is both vomitive and cathartic? For I confess, that to me even many of the vulgar operations of common drugs seem not to have been hitherto intelligibly explained by physicians, who have yet, for aught I have observed, to seek for an account of the manner of how diuretics, sudorifics, &c., perform their operations." Again, "The same objection that is urged to prove that a specific cannot befriend the kidneys, for example, or throat, rather than any other parts of the body, lies against the noxiousness of poisons to this or that determinate part; yet experience manifests that some poisons do respect some particular parts of the body, without equally (or at all sensibly) offending the rest; and we see that cantharides, in a certain dose, are noxious to the kidneys and bladder, and quicksilver to the throat and glandules thereabouts, stramonium to the brain, and opium to the animal spirits and genus nervosum."[1] Had the

[1] Vol. II., p. 191.

reigning teachers of medicine accepted these propositions of Boyle, and worked them out to their natural consequences, they would have inevitably anticipated a later system, for they would have gone on experimenting with substances which had a specific relation to the parts of the body affected with disease, and they would have been forced to give the medicines in small quantity, to prevent the aggravation which would otherwise have been excited Indeed, this idea is clearly discernible in the system of specifics recommended by Boyle. Here is the earliest vindication of the use of minute doses, and the true explanation of the principle of their efficacy:—

"To show you that a distempered body is an engine disposed to receive alterations upon such impressions as will make none on a sound body, let me put you in mind that those subtle streams that wander through the air before considerable changes of weather disclose themselves, are wont to be painfully felt by many sickly persons, and more constantly by men that have had great bruises or wounds, in the parts that have been so hurt; though neither are healthy men at all incommoded thereby, nor do those themselves that have been hurt feel anything in their sound parts, whose tone or texture has not been altered or enfeebled by outward violence."[1]

Here we have distinct expression of the doctrine of morbid sensitiveness to the action of specific influences—a plain and simple corroboration of the belief, that a dose which produces no effect upon a person in health, may act energetically upon the frame of what Boyle calls "a distempered body."

He repeats elsewhere the answer to the objection against the efficacy of small doses in the following words:—"Whereas it is objected that so small a quantity of the matter of a specific, as is able to retain its nature when it arrives at

[1] Vol. II., p. 176.

the part it should work on, must have little or no power left to relieve it: this difficulty will not stagger those who know how unsafe it is to measure the power that natural agents may have to work upon such an engine as the human body, by their bulk rather than by their subtilty and activity." The force or curative power of a specific is to be measured by its adaptation to the disease, and the degree of intensified sensitiveness which the organ affected with the disease for which it is a specific, has reached.

Such are some of the arguments he advances in favour of the credibility of specifics; but Boyle was far too much of the inductive philosopher to claim a verdict for his client on merely speculative grounds. He not only gives his reasons for believing that there is nothing in the nature of things to warrant the summary rejection of specifics, but he puts forward what he considers valid proofs for believing in the reality and efficacy of this class of medicinal agents. Among these proofs is, "The concurrent suffrage of many eminent physicians, including Galen; and this testimony from physicians in favour of specifics is of more weight from their unwillingness to admit cures they cannot explain." He then gives various examples of the evidence of medical authorities on this point, and quotes from the travels of Dr. Piso, in South America, who gives some remarkable instances of the action of specifics in arresting the poisons of that region.

To quote the words of that writer, "I saw divers, as it were in an instant redeemed from death, who had been poisoned by the eating of venomous mushrooms and other unwholesome things, only by drinking a recent infusion of the root of *Jaborand*, whilst myself and others of Galen's disciples blushed to see the ineffectual endeavours of all our alexipharmacy, treacles, and other antidotes. So that I afterwards suffered myself to be joined in consultation with these barbarous colleagues, not so much to be

arbiters of the condition of our men by their pulse, as to gain their assistance and counsel in the above-mentioned way, viz :—the prescribing of proper medicines."[1] That is, this learned physician assisted at consultations, not so much to afford the advantage of his scientific knowledge of diagnosis to these barbarians, as to receive their aid in applying the specific remedies. Surely a more honourable course than the "*odi profanum vulgus*," too often practised now-a-days. Boyle observes, upon this instance :—"I consider that some poisons that produce such dreadful symptoms in the body, are frequently cured by their appropriate antidotes, which must therefore have a sanative power, great enough to surmount the efficacy of the venomous matter."[2] And he pushes the argument to the effect that there is no essential difference between a disease caused by a poison, and one naturally incident; and if a person poisoned can be cured by an antidote direct and specific, why should not a person ill of a natural ailment be so likewise? In corroboration, he quotes Dr. Willis, one of the most celebrated physicians of his day in England, who calls the Jesuit's powder, *i. e.* Peruvian Bark, the noblest medicine we know, and adds :—"Although I will not dispute whether it be so certain and safe a specific for agues, as it is believed by divers eminent doctors, yet I think it can scarce be denied to be a specific medicine to stop the fits of agues, since it does that more effectually than physicians were wont to do;"—an affirmative, certified by the experience of the two centuries that have elapsed since it was written. That we should use one specific at a time, is laid down by Boyle as an obvious, even self-evident maxim. For if we use more than one, it will be impossible to arrive at a certain knowledge of the power of any one. "By heaping up or blending simples into one compounded remedy, I see not how, in many ages, men will

[1] Op. cit., Vol. II., p. 155. [2] Vol. V., p. 80.

be able to discover their qualities of good and bad, that are comprised under the name of the *materia medica;* whereas, when a physician often employs a simple, and observes the effects of it, the relief or prejudice of the patient may very probably, if not with medical certainty, be ascribed to the good or bad qualities of that particular remedy."[1]

But it may be objected that a disease, being a complicated action, may require a variety of remedies to antagonize its total operation on the system. To this objection Boyle replies, that many symptoms arise from a single cause, and that if we can find out a specific antidote for the cause, on *that* being destroyed, the morbid phenomena will decline of themselves. "Diseases are not always so differing in their nature and essence as they are commonly thought; but the same morbific matter for essence may produce very different symptoms, which may be taken for several diseases, according to the condition of the parts that it resides in, or works upon, in all or most of which it may be subdued by the same remedies, which may destroy its texture, giving it a more innocent one. . . . ."[2]

When we remember that this great philosopher lived when the virtues of Bark were still *sub judice,* and before the discovery of Vaccination, we are lost in admiration of his wonderful penetration. And yet, in all that Boyle wrote upon the subject of medicine, he avowedly only amplified, expounded, and illustrated by new facts, maxims and principles laid down by his great preceptor Lord Bacon. These two earliest instructors in the right method to be pursued for the liberation of the Art of Healing from the yoke of prejudice and blind authority, and for promoting its growth to the full stature of its normal development, entirely agreed both as to what must be given up and what must be worked out. Physicians are desired to give up the

[1] Op. cit., Vol. V., p. 116. [2] Op. cit., Vol. I., p. 81.

blending of many medicines in one prescription; they are desired to give up searching for imaginary causes of disease—such as acidity of the blood—and treating these supposititious causes with equally supposititious antidotes, after the fashion of the chemists and the school of Sylvius; they are desired to give up a blind and infatuated respect for Galen, such as was professed by the College of France and the fashionable Guy Patin. They must neither be disciples of Galen, bleeding because he bled, and giving purgatives because he says the humors must be cleansed; nor must they be disciples of Nature, as Hippocrates was, merely imitating the natural crises and evacuations of the morbific actions in the body. They must do something quite different: they must search out substances which exercise a directly curative power—a power of neutralizing the causes of disease without producing any disturbing effect on the body. Having found these medicines, which are known by the name of Specifics, they must give one, and one only, at a time, and carefully observe its action; they must, moreover, give it in a small dose, for its action must be preternaturally energetic upon a part preternaturally sensitive.

Such is the Baconian system of Medicine as set forth by Boyle.



SYDENHAM.[1]

CHAPTER X.

Formation of Academies of Science—Borelli—Medical Mechanics—Introduction of Cinchona Bark—Its effect upon the General Mortality—Writings against it—Cromwell's last Illness—Richard Talbot—Sydenham—His Birth-place—His Military and Medical Career—His Writings—His relation to Hippocrates—His Imitation of Nature—Treatment of Pleurisy—Rheumatism and Blood-letting—We must discover Specifics—Selection of a Remedy—Herald of Homœopathy—His strange Prescriptions—The English Hippocrates.

It would seem natural to pass at once from Boyle's eloquent and ingenious defence of Specifics, to an account of the introduction of the use of Cinchona Bark in the cure of ague; and of the principles and opinions in regard to the practice of his profession, which characterized Sydenham, the great English physician of his period. But the history of every branch of humanity, besides advancing in one direction from its origin to its end, throws out lateral offshoots, of too great importance to be neglected. The offshoot of the era

[1] From the copy of the bust prefixed to his works.

which occupies our attention at present, is known by the name of mathematical or mechanical medicine.

After the liberation of the European intellect by the religious controversies, great discoveries, and daring thinkers (such as Bacon and Descartes) of the sixteenth century, there was a simultaneous effort in various countries to form a new order of association for the cultivation of physical science. It is very interesting to observe how leading minds tend to anticipate events, and construct plans which, impracticable for the moment, realize themselves in the fulfilment of time, and justify the wisdom of their authors, although their temporary failure brought down the ridicule of more short-sighted contemporaries. Thus, in Italy, in 1603, there was founded the first Academy of Science, called *Accademia di Lincei*. Among the many celebrated men who belonged to this academy was Galileo, whose famous work, "Il Saggiatore," it had the honour of publishing. But this first attempt was premature; it roused the jealousy of Rome, and the academy had to be dissolved. In the year 1657, another Institution of a similar character arose at Florence. It took the name of the *Accademia del Cimento*, or Academy of Experiments. The members of this were the disciples of Galileo, and men of great renown, of whom Borelli was one of the chief. Some years previously, in 1652, Leopold's Academy of Natural Sciences had been established at Vienna. In 1663, our own Royal Society was founded, under the presidency of Sir C. Wren, assisted by Robert Boyle, with the patronage of the restored House of Stuart. In England, as in Italy, there had been a germination suppressed by the civil war, and it was not till peace was confirmed that science was honoured and proclaimed. In 1666, the French Royal Academy of Sciences was established at Paris, by the minister Colbert;[1] an Institution which has, perhaps, done more than any of its sisters to accomplish its

[1] Popular Encyclopædia, Art. Academy, Sprengel, Boyle, &c., &c.

design. Thus, within nine years, we have four similar Institutions for the advancement of science, springing up, for the first time, and with resulting success, in Italy, France, and England. Such a common result betokens the same causes, namely, increased human inquisitiveness, and general freedom of inquiry on all subjects, material as well as spiritual.

No question was more suited to engage the attention of an "Academy of Experiments" whose greatest ornaments were physicians, than the application of the newly-discovered laws of mechanical philosophy to the motions of the animal frame. What are the limbs but solid rods, to which contractile ropes are fastened at various points, for the purpose of moving them in certain directions? Here is a problem of levers, weights, and pulleys; and there is no reason why the formulæ of an inanimate machine should not apply to a living fabric. And what is the heart but a pump, continually receiving and discharging a supply of fluid, provided with valves just such as a human contrivance for the same object would have?

Borelli [1] was not satisfied with giving the most perfect mathematical demonstration of the action of the muscles upon the bones: he pushed his inquiries into the causes of the swelling of the body, of the muscles, and the contraction of their length. This he attributed to an injection of nerve force from the brain, conducted by the nerves, which he represented as tubes. This theory he applied to the origin of fever. Rejecting the chemical hypothesis, he pointed to the fact, that a fit of rage will excite a violent action of the heart, and hasten the circulation of the blood, so as to produce a febrile paroxysm, adding that there is no need to assume any derangement in the constitution of the blood to account for the symptoms. From this he deduced the important inference, that, as fever did not depend upon anything deleterious in the blood, no

[1] Borelli, De Motu Animalium. Neapoli, 1734.

good could come of evacuations, either by the bowels or skin, and that fevers could be cured directly by the use of Cinchona bark, strengthening the tone of the solid parts. One of the most renowned men of this school was Sanctorius, who was born in 1561, and died in 1636.[1] He was the first to discover the insensible perspiration, and to investigate with scientific accuracy the loss sustained by the body through the skin. The attention excited to this organ, as one of the great emunctories, naturally led to the employment of sudorifics more extensively than at any former period.

Another great man of that time was Lorenz Bellini[2] (born, 1643; died, 1704). He was a pupil of Borelli's, and attempted to explain the phenomena of fever by a reference to the laws of hydraulics. He showed how a change in the rate of delivery would derange the capillary circulation, and occasion those perturbations of the system which the chemist attributed to fermentation.

The mechanical philosophers deserve a very different tribute from that due to the chemists. Medical chemistry of those days consisted of loose experimentation, and, if possible, looser reasoning. Acids in the general were talked of, and assumed as well as counter-agents which they called alkalies. These were ordered about, in and out of the body, in the most arbitrary fashion. But these great Italians, Borelli, Sanctorius, Lorenz Bellini, and others, not only were men of great talent, but pursued their investigation into the mechanics of the animal structure by the most rigidly scientific methods; and the results they obtained remain good to the present day. And although it was the fashion at a later period for medical pretenders to employ the

[1] Sanctorius, translated by John Irving. London, 1712.

"I must, in short, confess that these Aphorisms of Sanctorius, with those of Hippocrates, are writings of greater merit than any other in the whole art of Physic; and even if we compare the merits of the two together, the preference will, perhaps, be readily given to Sanctorius."—Boerhaave's Lectures, Vol. III., p. 309.

[2] Lorenz Bellini, Opuscula. Lugd., 1690.

jargon of mathematics as a cloak for their ignorance, and there were some who expected extravagant results from the transference of mathematical reasoning to the practical art of medicine;[1] yet, on the whole, the labours of this school were highly beneficial, and acted like a balance-wheel upon the irregular and violent movements of the age; and although they cannot be said to have directly favoured the reception of the first great specific medicine, yet undoubtedly they prepared the way for a more impartial consideration of its merits, than it would have received either at the hands of the Galenists or of the Chemists. Nor must we forget that Robert Boyle, the great advocate for specifics, would have naturally allied himself to men like Borelli, had it not happened that the rank of the Englishman precluded him from entering the medical profession. Had he done so, he would have united in his person, not only two orders of social rank, but two rival schools of medicine. As it was, it pleased Providence to confound the wise by allowing the weak and foolish to be the channel of one of the greatest blessings conferred upon humanity. To speak of the introduction of Cinchona in such high terms may appear extravagant. We are now more familiar with its abuse than its use, and we do not stand in such apprehension of fever and ague as our forefathers did. But let us look at the bills of mortality in England, before and after bark came into use.

[1] *Vide* Donzellini. De Usu Mathematum. 8vo. London, 1707. Not that he committed the error referred to in the text, but he refutes it as then existing. His little work is in the form of a dialogue, and written with much spirit. Although a natural philosopher himself, he makes one of his speakers say, "What new precepts have the mathematics added to the art? what new remedy suggested? what improvement in the cure of the sick?" To which he must reply, None. The use of natural philosophy is confined almost exclusively to anatomy and physiology, and has no more to do with the practice of medicine than mathematics has with religion. And here we may remark, that the use of academies seems to be limited to advancing *positive* sciences — anatomy, chemistry, &c.; and that their attempts to promote the art of medicine have generally proved rather injurious than advantageous to its development.

In seven years before the use of bark, that is, from the year 1629 to the year 1636, there died—

Of measles . . .	210, or 1 in 374¼	of all who died.
Of consumption . .	15,513, or 1 in 3$\frac{13}{15}$	of all who died.
Of ague	10,484, or 1 in 4½	of all who died.

Thus ague was almost as deadly as consumption, and carried off nearly a fourth of the whole population of England who died during these seven years in which bark was not used. The next seven years embrace from 1653 to 1660, when bark was coming into use,[1] and the subjoined table shows the difference :—

There died of measles . .	399, or 1 in 259.
There died of consumption .	23,707, or 1 in 2$\frac{8}{11}$.
There died of ague . . .	10,466, or 1 in 6¼.

We observe the mortality of ague drops from 1 in 4½ to 1 in 6⅓. Let us pass over eighty years, during which time bark had been in general use, and take the seven years from 1734 to 1742. The result is as follows :—

There died of measles . . .	1,927, or 1 in 112.
There died of consumption .	35,650, or 1 in 3$\frac{5}{18}$.
There died of ague . . .	31, or 1 in 3767.

It is right to observe, that these tables are not made up to prove this fact, or any fact in particular. They were compiled for general purposes by Dr. Short, and published in 1750 ; and I have extracted these three diseases to show

[1] The following advertisement appeared in the London *Times* of that period, entitled, "Mercurius Politicus, comprising the sum of Foreign Intelligence with the Affairs now on Foot, in Three Nations, for the Information of the People. From Thursday, December 9, to Thursday, December 16, 1658 :"—"The Fever Bark, commonly called the Jesuit's Powder, which is so famous for the cure of all manner of Agues, brought over by James Thompson, Merchant, of Antwerp, is to be had either at his own lodgings at the Black Spread Eagle, in the Old Bailey, over against Black and White Court, or at Mr. John Crook's, Bookseller, at the Ship, in St. Paul's Churchyard, with Directions for Use; which Bark or Powder is attested to be perfectly true by Dr. Prujean and other eminent Doctors and Physicians who have made experience of it." This curious advertisement proves that, in 1658, the bark was scarce, so that we could not expect its use to be so common in England as to seriously affect the mortality of ague for a considerable time afterwards.

how little consumption had varied in the havoc it had committed, while measles varied considerably, and ague had almost disappeared. There may be other reasons for this, but the use of bark is the most obvious, and none other has been suggested.[1]

Peruvian Bark, as the name implies, is obtained from a tree indigenous in Peru. Although it is certain that the use of it in Europe was derived from the cure of the ague in the person of the Countess of Cinchona, the Vice-regent of Peru; yet, according to Humboldt, the natives of the district have great dread of its effects, believing it produces mortification. However this may be, it was from the aborigines that the vice-regal court acquired their knowledge of its powers over ague. This cure was effected in 1638. In the following year, 1639, it was first used in Spain, whither it was brought by the Jesuits. It was much opposed by the *regulars* of the medical profession, and would probably have been put down as quackery, had it not been for Pope Innocent X., who ordered a trial to be made of its power in ague. This trial was satisfactory, and it was freely used in the Roman States. In 1653 a book was written against it by Chiftelius. "On the appearance of this publication," says Sir G. Baker, who has given the fullest historical account of the matter in the English language,[2] "the author received the highest compliments from his brethren, *as if he had relieved the world of a monster or a pestilence.*" And popular prejudice for a time ran so high against it, that its use was confined to the Papal States. The date of its introduction into England, is 1653.[3] That it was not countenanced then, or till long afterwards, by "the faculty,"

[1] New Observations on City, Town, and Country Bills of Mortality. By Dr. T. Short. 1750.—Dr. Short evidently entertained this opinion himself, for he observes upon this table, in reference to the diminished mortality from ague, "The most beneficial remedies or specifics in some diseases were the discovery of chance, not philosophy; as the bark for intermittents."—p. 37.

[2] Sir G. Baker, Medical Tracts. London, 1818.

[3] Morton, Opera omnia. Lugd., 1737.

is pretty certain; it was used by the bold, and we may presume the young and pushing, but looked on with doubt and dislike by the older, more cautious heads of the profession. In the year 1658, the death of a certain Alderman Underwood,[1] who had taken the bark, made a great stir in London. As if an alderman had never died of ague before!—whereas, according to the tables of mortality already referred to, there probably died of ague that year, over England, about 1300 persons; including, doubtless, the normal proportion of aldermen. That the death of this alderman, and that of a certain Captain Potter, should be recorded so emphatically as the consequence of ague with *bark*, may be taken as a positive proof that the greatest man of his age did not take bark, although ill of a tertian ague. Dr. Bates, physician to Oliver Cromwell, describes his fatal illness as "slow fever, that at length degenerated into a bastard tertian ague." On examination of his body after death, the same authority tells us that the source of the distemper was the spleen, which "though sound to the eyes," was "filled with matter like to the lees of oil."[2] Whether Cromwell's life could have been saved by the timely administration of Jesuit's powder, must remain among the questions which can never be answered.

"The most important man cannot stay. Did the world's history depend on an hour, that hour is not given. Whence it comes that these *would have beens* are mostly a vanity; and the world's history could never in the least be what it would, or might, or should, by any manner of potentiality, be, but simply and altogether what it is."[3] So writes Carlyle of Mirabeau—and the passage is applicable to Cromwell. Had bark been properly administered to him, his life might have been prolonged, and he might have made a will, and—but why pursue a vain speculation?

[1] Sydenham. The Life of Sydenham, by Dr. Latham, prefixed to the translation of his works by Dr. Greenhill.

[2] Elenchus Motuum Nuperorum in Anglia, by Dr. George Bates, p. 236.

[3] Carlyle's French Revolution.

There can be no doubt that this Dr. Bates, who was one of those who received Cromwell's successor, Charles II., and is described by an eye-witness of the scene, as "the Chief Physician, renowned in the skill of Physic and of Latine,"[1] would have felt himself polluted by the presence of a certain Richard Talbot, who did more than any one man to introduce the use of bark into Europe.

Talbot's history is curious. He seems to have begun life as an apprentice to an apothecary at Cambridge. In 1663, he was a scholar of St. John's College, Cambridge, but whether he took a degree or not, does not appear. From Cambridge he went to the coast of Essex, where he acquired a great reputation by the cure of ague. He then came to London, where he seems to have had a large practice, but to have been looked upon as a sort of quack—at least, his contemporary medical writers have not a good word to bestow on him. Lister calls him "a miserable quack;" Gideon Harvey, "a debauched apothecary's apprentice."[2] Sydenham hints his dislike of him. How far this antipathy was owing to professional jealousy, is an undecided question. That he did effect cures is certain; that he did so in an unprofessional manner, equally certain. So we may, without a breach of charity, suppose that he was heartily hated by the profession,—really, for his greater success; avowedly, for his quackery.

His success seems incontestable. Madame de Sevigné gives the following account of his adventures in Paris in

[1] Motus Compositi, by Thom. Skinner, M.D., p. 79.

[2] *The Diseases of London.* Gideon Harvey is fond of using strong language. Speaking of a French surgeon, of renown in London in his day, he says:—"However, he hath the reputation of a surgeon here, which any French lacquey, having only served a barber ten or twelve months, and coming into England with a pot of turpentine, a lancet, and a stock of impudence, shall never miss of, viz. the reputation of a famous surgeon lately come out of France. By the first ingredient he is to cure you of the *chaude pisse;* by the second of the fever; and by the third ingredient he makes you believe he is as great a physician as he is a surgeon, whereas he is only a surgeon of three ingredients."—Casus Medico-Chirurgus. 1678.

1680. "The English Physician has promised the King (Louis XIV.) in so positive a manner, even on the forfeiture of his life, to cure his Highness (the Dauphin) both of his vomiting and his fevers, that if he should fail, I believe, on my conscience, they would throw him out of the window; and on the other hand, should his predictions prove *as true in this case as they have done in most others that he has had the management of*, I shall be for having a temple erected to him, as to a second Æsculapius. It is a pity that Molière is dead; he would make an excellent scene of Daguin" (first physician to the King), "who is put at his wits' end at not being possessed of the panacea, and the rest of the tribe, who cannot tell what to make of the experiments, the secrets, and the almost divine prognostications of this little foreigner. The King will have him make up his medicines in his presence, and trusts the management of the Prince wholly in his hands. The Dauphiness is already much better, and yesterday the Count de Grammont saluted Daguin with the following stanza:—

"Talbot est vainqueur de trépas,
Daguin ne lui résiste pas,
La Dauphine est convalescente,
Que chacun chante, &c." [1]

Talbot cured the Dauphin, and received 2000 louis d'or for the secret, besides an annual pension of 2000 francs. Having become rich, Talbot became respectable; he was knighted, and, as Sir Richard, received the honours of a splendid funeral, and a monument at Cambridge.

There can be no question that Talbot had a strong tinge of the quackish element. Still, we must do him the justice of admitting, that he was not a false pretender to knowledge, like most quacks: his offence was against the minor morals of his profession. He evidently attempted

[1] Lettres de M. Sevigné. Letter dated Nov. 8, 1680.

to decoy the profession from the right scent, and to make people think that he had discovered specifics of his own, when he was only using preparations of the bark. The style in which his book is written is enough to condemn him. "First administer," he says, "a convenient dose of a specified emeto-cathartic powder (which was communicated to me by the name of *Febrifugum Reverii*). It is composed of three Herculean medicines, each of them requiring twelve several labours in their preparations: to which is added a fourth, which is not unfitly called Athletica; because, like a powerful champion, it dissipates and expels all Nature's enemies, &c., &c., &c."[1]

This is the jargon of quacks in all times. And not less distinctive is the following warning against all shops but his own:—"Let me advise the world to beware of all palliative cures, and especially of that known by the name of Jesuit's powder, as it is given by unskilful hands; for I have seen the most dangerous effects follow the giving of that medicine *uncorrected* and *unprepared*."—And who can correct and prepare it, except me, Richard Talbot! And so he played his part.

It is refreshing to pass from the career of Sir Richard Talbot to that of Sydenham. Thomas Sydenham was born at Winford-Eagle, his ancestral property, in the county of Dorset, in the year 1624. He was of what is called a good family. At the age of eighteen years he went to Oxford, where his elder brother William was a gentleman commoner. When the civil war broke out, it is most probable that he served in the army, on the side of the Parliament;—it is certain, that his two brothers did, the one as a Colonel and the other as a Major. In November, 1644, Sir Lewis Dives was beaten by Major Francis

[1] A Rational Account of the Causes and Cure of Agues, with their Signes, Diagnostic and Prognostic; also, some Specific Medicines prescribed for the Cure of all sorts of Agues. By Richard Talbot, Pyretiatro. London, 1672.

Sydenham; so it is by no means very improbable, that while Harvey was taking care of the princes at Edgehill, Sydenham was fighting on the other side. He returned to his studies at Oxford in the year 1646; and in 1648, at the age of twenty-four, took his degree of "Bachelor of Medicine." Some time between 1648 and 1661, he began to practise at Westminster. In the year 1663, he was made a Licentiate of the College of Physicians, so that he may have been present when King Charles II. (in contending against whose family, his mother had lost her life,) paid his state visit to the College, as thus described by a contemporary:—"The king, on the 15th of April, visited the famous College of Physicians of London, and was received very honourably by the doctors. There he saw the marble statue of Harvey, the chief pilot of the blood's circulation, and heard the President Ent, with equal eloquence and art, reading upon the mysteries of anatomy,—whom there he knighted. There he saw the chief physician Bates, renowned in the skill of physic and of Latine; and Fraser, his chief physician since; and Glisson, excellent in medicine and philosophy; and successful Micklethwait; and much-esteemed Cox; and Scarborough, accomplished in all natural philosophy, and no less famous among the muses; with Wharton, the secretary of the glandules; and acute Merret; besides many others eminent in the art of curing; to whom at length were associated Willis, the great restorer of medicine, but of too short a life, with Lower and Needham, who have illustrated this faculty by their writings."[1] These were the men with whom Sydenham had to contend in the generous or ungenerous rivalry of professional ambition. The incidents preserved of his career, beyond his contributions to medical literature, are few and uninteresting. He was a great sufferer from gout, and died in the year 1689, at the age of sixty-five. He was buried in the

[1] Skinner, op. cit.

church of St. James's, Westminster, and over his tomb was inscribed :—

"Prope hunc locum sepultus est Thomas Sydenham,
Medicus in omne ævum nobilis."

Let us now attempt to discover from his writings, how far this bold prediction that Sydenham was for ever to be held as one of *the nobles of medicine* is likely to be fulfilled.

All that remains of Sydenham's writing is contained in 646 octavo pages. Of these 232 pages consist of descriptions of the various epidemics which he had himself observed. The remainder is divided between a few monographs upon particular diseases, such as hysteria, gout, dropsy, &c., and a collection of practical memoranda or empirical formulæ, for the guidance of the practitioner of medicine.[1] For example, we have this short and characteristic memorandum :—

"On Colica Pictonum.

"This is a sort of colic which is wont to degenerate into palsy, depriving the patient of the use both of his hands and feet (a fact noted by Proerius in his chapter on Palsy), and which is extremely common in the West Indies, where it destroys many persons.

"Balsam of Peru, in large and frequent doses, is the cure for the pain.

"Twenty, thirty, or even forty minims, dropped upon a lump of fine white sugar, should be given twice or thrice a day. This, however, will not cure the palsy." [2]

It will be seen, from this analysis of Sydenham's writings, that they are all of a strictly practical character. His claims for perpetual remembrance rest upon the wisdom of the advice contained in his works, and not upon their literary merits—a fact which reduces to insignificance the question keenly debated by his critics, as to whether he wrote in Latin or English. That he was a well-educated gentleman, and as such was familiar with the Latin lan-

[1] Sydenham's Works. [2] Vol. II., p. 268.

guage, is called in question by no one; that he was not a great classical scholar seems plain from the whole constitution of his intellect. The form of expression was obviously very indifferent to him, so long as he made his meaning clear. We encounter throughout his writings the constant recurrence of certain phrases, such as "Qua data porta ruit," and "Periculosæ plenum opus aleæ," showing a certain poverty of language; and his classical allusions are said not to be always accurate. The fact of his having been on intimate terms with the Honourable Robert Boyle, is far more interesting to us than his acquaintance with Latin or with even Locke, of which so much has been said, and said well.[1]

The following passage is so like what Boyle might have written, that it reads like a quotation from his works:—"I would recommend writers, before they blame others, to try their hand upon some common phenomena of nature that meet us at every turn. For instance, I would fain know why a horse attains his prime at seven, and a man at one-and-twenty years? Why, in the vegetable kingdom, some plants blow in May, and others in June? There are numberless questions of this sort. Hence, if many men of consummate wisdom are not ashamed to proclaim their ignorance in these matters, I cannot see why I am to be called in question for doing the same. Etiology is a difficult and perhaps an inexplicable affair, and I choose to keep my hands clear of it." We may take this passage as an emphatic declaration of the adherence of Sydenham to the school of Bacon and Boyle. He was, probably, the most accurate observer and the freest thinker of all the physicians of his age; and his attitude towards traditional medicine on the one hand, and towards the great innovation of his day on the other, is not that of a man who, strongly alive to the imperfections both of the old and of

[1] North British Review for 1850. See Locke and Sydenham.

the new, takes his refuge in general doubt; he is an example of one of the rarest and highest kind of character, for while he eagerly accepted every improvement in the art he practised, and was painfully aware that the means he employed were often mischievous, yet, like a stout-hearted soldier, he did his best with the weapons at his command. He was a follower of Hippocrates, in so far, at least, that his treatment was mainly *evacuant.* He bled freely, and gave sudorifics and purgatives; but he did all this, as it were, under protest. He expressed himself dissatisfied, and evidently regarded this method of practice as merely provisional. He may be looked upon as the herald of something imperfectly perceived,—of a dispensation infinitely better than that in which he was reared. It is a noble spectacle to behold a man discharging his duties to the best of his knowledge, and, in the full enjoyment of profit and admiration, steadily maintaining the radical imperfection of the system he practised and taught with greater success than any of his distinguished contemporaries.

As this view of Sydenham is not the common one; as, indeed, there is a disposition to hold him up as a present guide to practice, this new reading of his character, in order to be accepted, must be justified out of his own lips.

The two positions to be proved are—

1st. That Sydenham agreed with Hippocrates, in so far that he attempted to *follow* or *imitate Nature.*

2nd. That he differed from Hippocrates in attempting *to arrest the natural course* of disease, by the administration of specifics.

1st. As to Sydenham's imitating Nature.—"I have already mentioned, in speaking upon the treatment of a fever of a preceding constitution, that during its last years it was occasionally attended with a stupor like the one in question; that this stupor affected more especially children and youths; that it was less profound as well as less

epidemic than the present form; that at the beginning of the disease I could not subdue the milder (much less the stronger) sort at all; that I left no stone unturned to do so; that I repeated venesections; that I tried them not only from the arm but from the neck and foot; and that I did the same with blisters, cuppings, clysters, and diaphoretics, of all kinds, under all forms, and with all the parts where they could be applied. At length, I determined, after having bled from the arm, blistered on the nape of the neck, and thrown up, during the first days of the disease, two or three clysters of sugar and milk, to do nothing whatever beyond forbidding the patient meat and fermented liquors. *Meanwhile, I watched what method Nature might take, with the intention of subduing the symptoms by treading in her footsteps.* Now, whilst I so watched the disease, it departed—slowly and safely—still it departed. From thence, therefore, I considered that this method should be applied to all such cases as I might thenceforward have to treat; a fact of no small magnitude, if we considered either the gravity of the symptoms, or the uniform survey of the treatment.

"I often think that we forget the good rule, *festina lente;* that we move more quickly than we ought to do; and that more could be left to Nature than we are at present in the habit of leaving her. To imagine that she always wants the aid of art, is an error—and an unlearned error, too."[1] Surely those are the words of a disciple of Hippocrates!

Speaking of epidemic coughs, he says:—"I consider that all forms of malignity that occur in epidemic diseases (be its specific nature what it may) consist and terminate in the excessive heat and spirituousness of the overstrained humours of the human blood, which are more or less averse to nature; since it is only humours of this sort that are

[1] Vol. I., pp. 212, 213.

competent to produce the sudden changes of those diseases which are called malignant." . . . "With these premises it would seem to follow that the first thing to be done is to procure the elimination of these particles by sweatings, by which means the disease would be exterminated at once."[1] In this particular instance he proposes another plan, but it is as an exception,—the evacuation of "the overstrained humours of the blood" being still the rule with him, as with Hippocrates.

Here is his theory of the nature of Pleurisy, and the treatment corresponding therewith :—

"After attentively considering the various phenomena of this disease, I think that it is a fever originating in a proper and peculiar inflammation of the blood—an inflammation by means of which nature deposits the peccant matter in the pleuræ. In my treatment I have the following aim in view—to repress the inflammation of the blood, and to divert those inflamed particles, which have made an onset upon the lining membranes of the ribs (and which have lit up so much mischief), into their proper outlets. For this reason, my sheet-anchor is venesection. As soon as I am sent for, I bleed from the arm to ten ounces or more."[2] . . . . "Now, although I like, in the treatment of diseases, to leave myself free to take away more or less in the way of blood-letting, according to the circumstances of the case, I have nevertheless rarely observed that a confirmed pleurisy, in an adult subject, has been cured with the loss of much less than forty ounces of blood."[3]

The old sanguinary plan ! But it is adopted with an expression of regret—under protest, as it were ; for he adds, "I have often tried to think out some plan of cure for pleurisy without such an expense of blood. . . . I

[1] Vol. I., p. 232. [2] Ibid., p. 247. [3] Ibid., p. 249.

have, however, failed in finding any treatment like the aforesaid."[1]

He advances a step farther in Rheumatism. In the year 1676, he published the following statement of his opinions about the nature and treatment of acute and chronic rheumatism :—

"Both the sorts of rheumatism arise from inflammation. No one doubts the inflammatory nature of pleurisy, and the blood of rheumatism is as like the blood of pleurisy, as one egg is like another. *Hence, the cure is to be sought in blood-letting.*" . . . "As soon as I am sent for, I draw blood from the arm of the side affected to ten ounces." . . . "The following day, I order the same amount of blood to be drawn ; and a day or two after, according to the strength of the patient, I bleed again. Three or four days after this, I bleed for the fourth time, and this fourth bleeding is generally the last."[2] . . . "After the bleedings, to the number aforesaid, the pains will be much lessened ; they will not, however, wholly go off ; they will do this when the strength *that has been lost along with the loss of blood,* shall be made good again."[3] Three years after this was published, Sydenham wrote a letter to Dr. Brady, giving an account of the change that had come over his views in regard to the necessity of blood-letting in rheumatism. The passage is full of interest. "Respecting the treatment of rheumatism, concerning which you put some questions, I, like yourself, have lamented that it cannot be cured without great and repeated losses of blood. This weakens the patient at the time ; and, if he have been previously weak, makes him more liable to other diseases for some years. Then the matter that created the rheumatism falls upon the lungs, in case the patient take cold, or from any other

[1] Vol. I., p. 250. [2] Ibid., p. 256. [3] Ibid., p. 257.

slight cause. By this, the latent disposition exhibits itself in act and deed. For these reasons, I determined to try whether any other method besides that of repeated bleedings would cure the disease. Reflecting upon this, and arguing that the disease arose from inflammation, a fact, of which one proof out of many is the pleuritic character of the blood, I judged it likely that diet, simple, cool, and nutritious, might do the work of repeated bleedings, and save the discomforts arising therefrom. Hence, I gave my patients whey instead of bleeding them."[1] Three years before Sydenham had published that, "because the blood of rheumatism was like the blood of pleurisy, therefore rheumatism was to be cured by blood-letting." Now, more mature reflection and extended observation lead him to try to cure rheumatism without blood-letting. If he succeeded in doing so, surely we expect him to carry out the analogy in favour of treating pleurisy, too, in the same simple way. This letter is dated March 10th, 1679. He was then in his fifty-sixth year, within ten years of his death, and within a much shorter period of the decay of his powers.—"Vita brevis, ars longa." It is this brevity of any individual life that makes art so long in coming to perfection. This open-minded and practical physician—this man highly endowed by nature, and cultivated in the best school of philosophy and experience—the friend of Boyle and of Locke, dared not take another step in the direction of simplicity. He has even to apologize for recommending so unimposing a remedy as whey in rheumatism. After describing how entirely it satisfied him in the cure of a certain Mr. Matthews, whom he treated for acute rheumatism with nothing but whey and bread, for eighteen days, he thus expostulates with his critics:—"Should anyone despise this method for its simplicity, I would let him know *that weak minds only scorn*

[1] Vol. II., Letter to Dr. Brady.

things for being clear and plain; besides which, I am fully prepared to serve my kind at the price of a little discredit. I say this, because if *it were not for the prejudices of the vulgar, there are other diseases which this treatment would suit.*"[1] Pleurisy perhaps! "The usual pomp of medicine, exhibited over dying patients, is like the garlands of a beast at the sacrifice."

In speaking of the treatment proper for epidemic coughs, after condemning the practice of those "who would force a sweat, and so think to terminate the cause of the disease," Sydenham makes the following observations:—"Nevertheless, it must be owned that *spontaneous* sweats often did good—more, indeed, than anything else. *These, however, are very different things from forced ones.*"[2] What is the difference between spontaneous and enforced perspiration? The former is or may be a symptom that a certain diseased action has terminated; that the good forces have vanquished the bad, this victory being demonstrated by what is called a critical discharge. The recovery and the perspiration were simultaneous; but the sweat was the consequence, not the cause of the recovery. If that were the case, then, indeed, to induce sweating with the purpose of cure, would be as sensible as to light bonfires and ring bells to secure, not to announce, a victory.

This little sentence, which drops parenthetically, shows that Sydenham was questioning the whole theory of the evacuant or Hippocratic system of medicine. These evacuations, although they attended the recovery, he had seen to be unsafe and not conducive to cure.

That disease must be got rid of in some way or other, and that the most obvious way, and the oldest—the evacuation of the mischief-making humours—was attended with great danger and difficulty,—to these conclusions Sydenham had arrived. Here follows the next step. Speaking of

[1] Vol. II., p. 26. [2] Vol. I., p. 228.

intermittent fevers, he says, "We must do one of two things; we must, by careful and anxious observation of the processes *by which Nature relieves herself of this disease*, draw indications as to the manner by which the incipient fermentation may be promoted, and the patient restored to health; or else, *we must discover a specific*. By the latter method we attack the malady directly."[1] Here is the alternative—either, with Hippocrates, to observe and follow Nature, imitate her methods of cure, assist her to open gates, and build bridges for the enemy to retreat with as little loss to the country it has ravaged as may be; or, to march against the foe, and destroy it with a direct specific! Discover specifics! How? Bacon well observes that such discoveries are made, "not in years, but in ages."

Sydenham has won immortal renown by his bold and intelligent use of one specific, discovered by accident from the tradition of savages, and introduced by Jesuit priests: how much honour would be due to a man who should not only discover specifics, but discover and disclose a method of their discovery? By Sydenham, at least, such a man would have been held in highest honour; for he observes, "I have ever held that any accession whatever to the art of healing, even if it went no farther than the cutting of corns, or the curing of toothaches, was of far higher value than all the knowledge of fine points, and all the pomp of subtle speculations,—matters which are as useful to physicians in driving away disease, as music is to masons in laying bricks."

There is a society called by the name of Sydenham: let us hope it appreciates and imitates his independence and candour, and welcomes every improvement in the healing art, come from what quarter it may. As this old parliamentary soldier accepted a gift even from the hands of the Jesuits, let us hope that those who reign in its councils

[1] Vol. I., p. 81.

may never, by any exhibition of bigotry or intolerance, expose themselves to the bitter taunt of building up sepulchres to the memory of the prophets long dead, while they cast stones at their living descendants.

In the following passage we have a broad intimation of what medicine stands in need of to improve its usefulness. It bears a striking resemblance to the words of Lord Bacon on the same subject. "Just as Hippocrates blamed those who, in their exceeding curiosity and officiousness, busied themselves more in speculations on the human frame than in practical observations upon the intentions of Nature, so may a prudent physician of the present time blame those who believe that medicine is to be promoted by the new chemical inventions of our day, more than by any other process whatsoever. To hesitate in our acknowledgments to chemistry for more than one valuable medicine, and for more than one method of satisfying the indications of treatment would be ungrateful." . . . "The art is a useful one, *but most useful when confined to the pharmacopœia.* Blame, or if not blame, *error* lies at the doors of those who have so tortured and overheated their brains as to believe, that the chief weakness of medicine is its want of great and efficacious remedies, which nothing but chemical preparation will supply. Viewing the matter closely, we shall find it otherwise. *The chief weakness of medicine is, not our ignorance as to the ways and means by which certain indications may be satisfied, but our ignorance of the particular indications that thus want satisfying. How I can make a patient vomit, and how I can purge and sweat him, are matters which a druggist's shopboy can tell me off-hand.*" . . . "*When, however, I must use one sort of medicine in preference to another, requires an informant of a different kind—a man who has no little practice in the arena of his profession.*"[1]

[1] Vol. II., p. 172.

Sydenham leaves his meaning a little obscure in the phrase, "when I must use one sort of medicine in preference to another;" but it is very probable that if he did not mean to limit its application to specifics, yet these medicines were pointedly alluded to in the passage.

In reference to the meaning he applied to the word Specific, there is an interesting sentence in his observations upon the alleged specific action of mercury in the cure of *lues*. He maintains that in this mercury is specific only by producing salivation, and adds these significant words: "An indirect (mediate) specific it may be, but only in a loose sense of the term; just as I have hinted elsewhere, that a lancet is a specific to a pleurisy. The bleeding cures the one disease, the ptyalism the other." The knife, according to Paracelsus, was the specific for the stone, blood-letting for mania. Sydenham had advanced from Paracelsus to Bacon and Boyle. He no longer used the term specific to signify a medicine which cured a disease with more or less of certainty, but wished the name to be restricted to a medicine which cured a disease directly, without the intervention of any evacuant or revulsive process. Specific medicine is, in his eyes, something wholly different from either Hippocratic or chemical medicine.

In the following passage, Sydenham expresses the hope, not only of finding accidental specifics, but of inaugurating a specific method of treatment. "Before I come to a close of this discussion, I must notice that whatever has been said concerning the duration of autumnal intermittents, and whatever has been said concerning the time required for the despumation of the blood, apply only to the recorded operations of nature, *under the influence, and with the support of the common-place and usual medicines*" (what we should now call the allopathic). "By no means do I wish to express myself as if wise and learned physicians were to despair, as if they were to think out

no better modes of treatment, and as if they were to throw away the hope of discovering nobler and more potent medicines for accelerating the cure of disease. So far am I from this, that I do not despair of finding out, even myself, some such medicine and some such *methodus medendi.*"[1] This *method of cure*—the expression is important—is by specifics. Of these, the only one Sydenham knew was the Peruvian bark, and this one he employed with greater skill and success than any of his contemporaries, with the exception, always, of the quackish Dr. Talbot.

The reason of his superior success is given in the following passage:—"It seems to me better to imbue the blood with the aforesaid drug (Peruvian bark) moderately, gradually, and at long intervals before the fits, than to attempt, by a single blow, to cut short the paroxysm." To find out specifics, and to give them "moderately, gradually, and at long intervals!"—Surely we are entitled to claim the English Hippocrates as the herald of the new system of medicine which is now developing itself, two hundred years after this was written. Nay, he even seems to have anticipated the objection most commonly made to the homœopathic method; for he observes: "As to the man who accuses my remedies of being simple and inartificial, I may accuse his manners and honesty in disliking that others should be so, when, for his own part, he would be glad that himself, his wife, or his children, might in case of sickness be cured by even the most contemptible means. Such a trifler deceives himself.

"Equitans in arundine longo."

The pomp and dignity of the medical art is less seen in neat and elegant formulæ, than in the cure of diseases."[2]

There is one passage, and but one, where Sydenham stumbles over the homœopathic formula in an inverted

[1] Vol. I., p. 88. [2] Vol. II., p. 181.

form. "Certain females, suffering from the small-pox, are unable to take syrup of poppies without vertigo, vomiting, and other affections, *which naturally are the affections that syrup of poppies would allay.*"[1] Had he met with more instances of this kind, he might have registered them, and let them guide him in search of the great object of his pursuit—specific medicines. He might, but attached as he was to the Hippocratic method of evacuation, and the polypharmacy of Galen, allopathic practice would be the rule with him, specific the exception. He was what we should now call a bold practitioner; he made very free with the blood of his patients. He recommends blood-letting in hysteria, continued fever, pleurisy, bastard peripneumony (suffocative catarrh), rheumatism, erysipelas, quinsey; "bleed freely from the arm" in small-pox; in St. Vitus' dance, "bleed from the arm to eight ounces, more or less, according to age;" after passing a day, "blood must be drawn the next day, and the catharsis repeated; and so bleeding and purging must alternate until the third or fourth time, provided only there be sufficient time between the alternate evacuations to ensure the patient against danger,"—danger, evidently, of sinking from exhaustion. In like manner he bled to this point in chorea! In ophthalmia, "bleed to ten ounces; if the disease do not yield, repeat the venesection once or twice." In dysentery, diarrhœa and gripes, "bleed at once." In bilious colic, "bleed freely. If the disease have arisen from an over-free use of the fruits of the season, or from any other imprudence in food, the stomach must be washed out at once by a large draught of milk and beer. After this, an anodyne must be given. *The next day a vein must be opened.*"[2] Surely a most sanguinary treatment of a very simple disorder! In hysterical colic, "if the patient be of a sanguine temperament, and it be the first attack, blood may be taken

[1] Vol. II., p. 103. [2] Ibid., p. 258.

from the arm before the emetic is given." "*Clavus hystericus* is similarly treated." In *fluor albus*, "bleed from the arm to eight ounces." In *hæmorrhoids*, "bleed to ten ounces from the arm." Hooping cough "is only subdued by bleeding and repeated purging, and it is a disease otherwise most obstinate and incurable." For bleeding from the nose, "bleed frequently." In vomiting and spitting of blood, "bleed from the right arm to ten ounces. Next morning, give the common purgative potion. Bleed, as occasion requires, once, twice, or thrice, at the intervals of a few days." On the treatment of common Mania, he says: "In young patients, bleed from the arm to eight or nine ounces once or twice, with three days between each venesection. Then bleed from the jugular vein. After this the treatment will consist wholly in the following purge, which must be given every third or fourth day until convalescence; observing only, that after the patient has been purged eight or ten times, the exhibition of the cathartic may be omitted for a week or two."

We need go on no longer; enough has been quoted, even before the last remarkable passage; (which, if Hellebore had been stated as the purgative to be used, might have been extracted from the writings of Hippocrates;) enough, and more than enough, is met with in turning over the practical papers of Sydenham, to justify fully the appellation of the English Hippocrates. He resembled Hippocrates in his energetic use of the lancet and the purge, and he resembled Galen in his love of compound medicines. To establish this, we may take the following prescription —want of space forbids other examples, which abound in his writings.

"ON RICKETS.[1]

"Take of the leaves of common mugwort, lesser centaury, white horehound, germander, scordium, calamint, fever-few, meadow saxifrage, St. John's wort,

[1] Vol. II., p. 271.

golden rod, wild thyme, mint, sage, rue, St. Benedict's thistle, pennyroyal, southern wood, chamomile, tansey, lily of the valley, (all fresh gathered and cut up small), of each a handful. Hog's lard, lb. iv.; mutton suet, lb. ij.; claret, o. ij. Soak in an earthen jar over the hot ashes for twelve hours. Then boil until the liquor is consumed. Strain and make into a liniment. Anoint the belly and hypochondres morning and evening, as well as the limbs affected, for thirty or forty days until convalescence."

Surely this is out of Galen or Dioscorides!

But where, unless, indeed, it was out of the Old Testament Scriptures,[1] did he get the following method of cure? It is entitled, "*De Methodo Medendi Morbos, per Accubitum Junioris,*" and consisted in putting to bed with the patient one or more youths, to furnish vital heat. In the case of Mrs. Houlston, who, "after a chronic fever, was falling into a fatal-like diarrhœa, I caused her son, a plump, hot lad of thirteen years of age, and her nurse's son, of six or seven years, to go to bed to her naked, and to lie, the one close to her belly, the other close to her back. The very same course I took with Mr. Little, who had a fever about seven weeks, and at that time, August, 1662, was so far spent that his doctors judged him a dead man. I told his wife that nothing would preserve his life but the putting a boy to bed with him; so she procured a link-boy to lie close to him all night, and the next morning I found his fever almost off. The very same way I cured Bishop Monk's lady,"—only in this case, as the patient was the wife of a bishop, the doctor procured, not a link-boy, but a girl, who fell ill, as she thought, in consequence; but the lady recovered "very speedily both her unspiritedness and coughing." It is evi-

[1] "Now King David was old and stricken in years; and they covered him with clothes, but he got no heat. Therefore his servants said unto him, Let there be sought for my lord the king a young virgin, and let her stand before the king and let her cherish him, and let her lie in thy bosom, that my lord the king may get heat. So they sought for a fair damsel throughout all the coasts of Israel, and found Abishag, a Shunammite, and brought her to the king. And the damsel was very fair, and cherished the king, and ministered unto him."—1st Book of Kings, ch. 1.

dent from various expressions he uses, that Sydenham believed the good derived from the close proximity of a healthy human body, by one in a state of great exhaustion, was due to something more than the heat imparted. The heat was not simple caloric, but animal heat and vital spirits. His views on this subject would have predisposed him, had he lived later, to investigate, and probably to accept, the doctrines of animal magnetism; so far, at least, as these have reference to the cure of disease. In short, Sydenham, this modern idol of medicine, was little better than half a heretic; as such he was regarded by the College of Physicians of his own day, who frowned on him, and did what little they could, as their wont is, to hinder his success. By so doing, it is not unlikely that they increased his popularity; and for this, as for their many acts of unconscious usefulness, they deserve the gratitude of posterity. "The great Sydenham," says Dr. Lettsom, "for all his labours only gained the sad and unjust recompense of calumny and ignominy; and that from emulation of some of his collegiate brethren and others, whose indignation at length arose to that height that they endeavoured to banish him, as guilty of medicinal heresy, out of that illustrious society,"—that is, the Royal College of Physicians. And if they had expelled him, would they not have done their duty, and no more? It is for the College of Physicians to protect the altars of the gods; it is for those who seek to overthrow the old worship and introduce a new—it may be a better, it may be a worse—to show their sincerity by running the risk of a mild course of persecution. To be abused when alive, and worshipped when dead, is one of "the orders of merit." Sydenham was no exception; and, doubtless, when mortified at the conduct of his intolerant colleagues, he sought the refreshing society of such men as Boyle and Locke, and received from them the sympathy his own body denied him.

After all, we find a certain fitness in the title Sydenham has obtained, of the English Hippocrates. It is true, as the writer of the article in Bayle's "Biographie Universelle" observes, that the distance between the great Hippocrates and Sydenham is immense. There can be no question of equality: Hippocrates belongs to a different order of mind. But if we were to imagine the spirit of Hippocrates entered into the body of an Englishman of the seventeenth century, a genuine able-bodied, fighting, gouty, practical medical man, living at Westminster, "struggling for existence" amid ungenerous rivals, in an age of revolutions of all kinds, and much rough work and successful quackery, the result of this strange union might be a character not unlike Sydenham's, accurate in observation, daring in practice, full of self-reliance, tending to bold generalities, in which we may see the germ of aphorisms; respectful of the past, but acting strongly in the present and with rare independence; disposed withal to a fine natural piety, and a reverent acknowledgment of the divine government of the universe.

It would be pleasant to dwell on the character of Sydenham in this aspect, and to speculate what the man would have required to raise him to the position of the English Hippocrates, in the fullest sense of the appellation; of Hippocrates, developing with the cycles of the times, and combining all that is noblest in the Greek with all that is best in the English type of the human family. But *cui bono?* It will be more to the purpose to leave Sydenham as he is, a noble English medical man of the seventeenth century; and to consider, not what he was, but what he did.

His great success was due to the way in which he worked the new specific: of this there can be no doubt. As an ordinary practitioner, he was fond of those strong measures which are now known to be strong against life

—not against death. His practice is not to be copied, but it is well worthy of our most attentive study. It is full of instruction, both in its good and in its bad results.

There is a world of common sense—motherwit as it was then called—in Sydenham, and we may derive from a perusal of his writings many useful hints. He was a great advocate for horse-exercise, and he gives many striking examples of its curative efficacy. He goes so far as to say, that he considers it as specific in phthisis as bark in quartan ague. But the grand contribution to the development of the Art of Medicine made by the English Hippocrates was this: he proved that the true mode of cure was the direct one by specifics, and that all the indirect ones by revulsions or anodynes, were precarious, mischievous, or only palliative; and thus he stands midway between Hippocrates and Hahnemann. One hand he stretches to the ancient Greek, and the other he holds out to the modern German, and so he is a link in the apostolical succession of the living Church of Medicine.



BOERHAAVE.[1]

CHAPTER XI.

STAHL.—HOFFMANN.—BOERHAAVE.

Stahl and Hoffmann—Stahl a Sour Metaphysician—Soul the only Living Force in the Body—Roughly Handled by Haller—Darwin and Whytt—Animal Spirits—Nervous Fluid—Theory of Stimulation—Hoffmann; his Early Career—Theory of Spasms—Fuge Medicos et Medicamenta—Soul and Spirit Identical—Boerhaave—His Birth—His World-wide Fame—His *Institution*—Superficial and Plausible—Galvanism—Contraria Contrariis curantur—Estimate of his Character.

THE names of Stahl and Hoffmann, or rather of Hoffmann and Stahl, like those of Castor and Pollux, are always associated; but, unlike the demigods, they are linked in perpetual antagonism: to believe in Stahl is to disbelieve in Hoffmann, and *vice versâ*. Because they were great rival teachers when alive, their personal rivalry has

[1] From a painting by Mandelaar, taken when Boerhaave was seventy years of age.

been regarded as inherent in their doctrines. This seems to be an error. They appear to have been what we may call polar opposites, therefore organically identical, or at least, very similar. They started from opposite points and arrived at dissimilar conclusions; but they traversed nearly the same space, and the apparent opposition of their ideas is due rather to the method in which they are arranged, than to their essential contrast. They are both represented as the founders of schools, although there is nothing really novel in the speculations of either, and they should be classed rather with medical preachers than with apostles.

To the same order belongs Boerhaave, the most celebrated teacher and practitioner of his age—almost of any age; in whose ante-room one might have encountered the representatives of the Emperor of China, sent from "remote Cathay" to consult the great oracle of his time. Letters directed to "Dr. Boerhaave, Europe," used to be safely delivered into the hands of this modern Galen. "Il faut se conformer à la methode de Boerhaave dans la médicine," wrote the decided Frederick the Great of Prussia, to the Royal Academy of Berlin.[1]

Each of these three men was the exponent of a great intellectual movement, and each represented a different aspect of the progress of medical speculation. For thought may be said to move in line, rather than column; and while Hoffmann commanded one wing, consisting of medical mechanics, Stahl was at the head of the other wing, formed of vitalists; while Boerhaave occupied the centre, composed of what might be called Rationalists and Eclectics.

George Ernest Stahl was born at Anspach, in the year 1660, when Sydenham was beginning to come into notice as a great practical writer, being then about thirty-six years of age. After obtaining his degree of Doctor of Medicine at Jena, in 1683, and occupying the post of Court Physician

[1] Madame de Staël. Vol. I., p. 151.

at Weimar for a few years, Stahl was appointed, in 1694, to the chair of medicine at Halle. For twenty-two years he taught in that university: the only other medical professor being Hoffmann, who lectured on anatomy, chemistry, surgery, and the practice of physic; while Stahl taught botany, physiology, *materia medica*, and the institutes of medicine. In attempting to form a correct estimate of Stahl, we must bear in mind that he was sole colleague to a much more brilliant man than himself. Hoffmann was one of the most popular teachers of the age, and was the great glory of Halle. Stahl was not a popular man. Haller calls him *homo acris et metaphysicus*, "a sour metaphysician."

In virtue of his metaphysical nature, he resented the attempt to explain the whole nature of man on the principles of chemistry and mechanics. Admitting that it was the true method to interrogate nature, and not to attempt to dictate, he began his interrogation in his own consciousness. "What am I? Am I a mechanical apparatus or a chemical laboratory? Are the motions that perpetually take place in this my frame, to be explained by the fermentation of acids and alkalies, or by the size of the atoms of the fluids in relation to the vessels through which they pass? Will this explain how I turn pale when I hear of the death of a friend, or why my face grows crimson when I am insulted? Will this explain how my appetite is destroyed by joy or sorrow, or why a man's hair will turn white in the course of an hour under intense emotion? These undeniable facts are not explained to the slightest extent, either by chemistry or mechanical philosophy. The effervescence of a mixture of acids and alkalies is no way under the influence of their feelings. No intelligence communicated to the retort will either favour or control the cloud of bubbles that rise and burst; nor will the action of a pump be affected by its change of owners. We must look to something beyond the mecha-

nism if we want to obtain a key to the mystery of the human organism."

While the so-called mechanical school strove to arrive at an explanation of the problems of organic structure, by a careful examination of all the parts, by taking the watch to pieces, proceeding from without inwards, Stahl followed the opposite method, and worked from within outwards. The body of man was not to him a curious aggregation of well-fitting parts, acting and re-acting on one another; it was an organic whole, springing out of the influence of mind.

By a rapid analysis he arrived at the conclusion, that what we feel within us and name the soul, is at once the subject of emotion and the moving power. It is the same mind or soul that thinks and feels, that is aware of danger, and contrives a means of resistance or escape—the very same soul that raises the arm to strike, or moves the legs to run. This soul, then, is *the living force* in the body; it not only stimulates the muscles to contract, but it presides over all secretions. What makes the tears flow in sorrow, but the soul? What parches the mouth in fear, by sealing up the sources of the water of the mouth, but the soul? The soul is everywhere present; it does everything. "The body, as body, has no power to move; it must always be put in motion by an immaterial principle. All movement is immaterial, and a spiritual act (ein geistiger act)."[1]

Stahl felt this, and expressed his feelings on the subject with the passionate earnestness of a man who utters convictions derived directly from consciousness. To him they were absolute truth, truth he had won for himself. It was characteristic of the man, that, assuming the mystic language of inspiration, he should be intolerant of contradiction, and should resent as an insult, the suggestion that whether his doctrines on the subject of the soul were true or false, at all events they were not new; for that

[1] Theorie Med., pp. 43, 260.

his soul no way differed from the Archæus of Van Helmont, or indeed from the Psyche of Aristotle. When Stahl was so addressed, he was wont "to curse and to swear," to deny that he owed anything to the ancients, and to appeal to the direct consciousness of his hearers for the truth of his speech. In all this he was natural and true to himself. What he uttered as novelty, had, at least, the charm of freshness He reproduced the thoughts of others, but they were the growth of his own mind; and the bitterness that mingled with them was due in part to what he felt to be the unjust reception of these sublime truths.

Stahl has been severely dealt with by some of the greatest medical writers, especially by Haller; and, undoubtedly, he drew upon himself well-deserved chastisement by the extravagance of his assertions, and his contemptuous treatment of his great contemporaries. "The exact form of the semicircular canals in the ear, of the *malleus*, the *incus*, the *stapes*, and (what a magnificent discovery!) the round bone, would doubtless, if unknown, make the physical knowledge of the human frame very defective! But medicine stands in need of such knowledge, just as much as it does of what became of the snow that fell ten years ago."[1]

We can understand this extravagance in a man who felt himself called on to protest against the exclusive prominence given by his brilliant colleague and his illustrious contemporaries, to the knowledge of the mechanism of the body; and who, glorying in his ignorance, boasted that "he had had no time to saunter through class-rooms and wriggle through antiquarian libraries;" but it was naturally irritating to those he despised.

As a theory of vital action in health, the hypothesis of Stahl is simple, and, to a certain extent, entirely satisfactory; indeed, it is not till we attempt to explain by it all

[1] Proempt Mang. Sprengel, Vol. V., p. 306.

vital manifestations throughout the entire range of creation, that we feel the dilemma of the position of Stahl; for either we must be prepared to show some essential difference in the human vitality from that of the lowest forms of animal life, or else to credit even polypes and animalculi with the possession of a soul—a conclusion from which we shrink. Stahl's theory of animation has been largely accepted, especially in England, where some of the most celebrated writers, such as Darwin (the elder), have pronounced in its favour. Indeed, Darwin's opening sentence in his famous "Zoonomia" seems to have been taken from Stahl:—"The whole of the matter may be supposed to consist of two species or substances; one of which may be termed spirit, and the other matter. The former of these possesses the power to commence or produce motion, and the latter to receive or communicate it."[1] But even if we accept this theory, as Darwin does, as the foundation of the "laws of life," yet it would be difficult to make any use of it in practice. Perfect as a physiological hypothesis, it entirely fails as a pathological one. If all vital healthy action is due to the immediate activity of the intelligent soul, the natural explanation of all morbid action is, the effort of this soul to defend its house against the intrusion of some destructive force. It is thus ingeniously set forth by Dr. Whytt, a celebrated professor of the University of Edinburgh, who died in 1766:—"As the Deity seems to have implanted in our minds a kind of sense respecting morals, whence we approve of some actions, and disapprove of others, almost instantly, and without any previous reasoning about their fitness or unfitness,—a faculty of singular use, if not absolutely necessary, for securing the interests of virtue among such creatures as men!—so methinks the analogy will appear very easy and natural, if we suppose our minds so framed and connected with our

[1] Darwin's Zoonomia. 4to. London.

bodies, as that in consequence of a stimulus affecting any organ, or of an uneasy perception in it, they shall immediately excite such motions in this or that organ or part of the body, as may be most proper to remove the irritating cause, and this without any previous natural conviction of such motions being necessary or conducive to this end. Hence, men do not eat, or drink, or propagate their kind, from deliberate views of preserving themselves or their species, but merely in consequence of the uneasy sensations of hunger, thirst, &c." . . . . "There seems to be in man one sentient and intelligent principle which is equally the source of life, sense, and motion, as of reason; and which, from the law of its union with the body, exerts more or less of its power and influence, as the different circumstances of the several organs actuated by it may require." . . . "It operates by the intervention of something in the brain and nerves."[1]

If the soul pervades all parts of the body, and communicates, by direct radiation to every cell of which it is built, the power of assimilating appropriate nourishment, and of extracting its proper secretion from the blood; if it gives the power of contraction to the muscles, and of secretion to the liver; if, moreover, it so presides over the well-being of its living vesture as to repel, with instinctive perception and force, every source of danger; it is manifest that there is hardly a possibility of the body receiving any injury except from mechanical violence. If what is noxious to any tissue or organ, is instantaneously perceived to be so, just as the palate perceives what is bitter or sour; and if every point has the power of preventing the entrance of this mischievous intruder; the great mass of the disorders of the frame could never exist. Surely the soul is supposed to be immortal, and as immortal must be incapable of languor or fatigue; for languor is the beginning

[1] Whytt on Vital Motions, p. 288.

of death, and, if prolonged, becomes exhaustion, which, unrestored, goes on to extinction of faculty and structure. This immortal soul, then, if *it* be the guardian of every part of the body, must be supposed to be a perfect guardian, always equally vigilant and equally powerful. If this be so, how does it happen that, if you withhold food from a body of men for a couple of days, you will find the great majority of them laid up with a fever? The exciting cause of the fever was present, as well when the men were fed as when they were fasting—why did it take no effect upon the well-fed army, and attack only the famished? Can this be explained by the soul-theory? The soul needs neither meat nor drink; it is immaterial, immortal. Then it was not the soul that opened the gates of the citadel over which it is supposed to keep watch: who or what is it that plays traitor on such occasions? The reply to this question is, that the soul does not operate directly upon the animal frame, but, as Whytt expresses it, "through the intervention of something in the brain and nerves." This "something" is what goes by the name of "the animal spirits," a term preserved in popular language, and still in constant use, as when we say we are in "low spirits," or "out of spirits." Although the term Animal Spirit was by no means new, yet at this period an attempt was made to give it a more rigorous signification; and the writings of the 17th and 18th century abound in definitions of what is to be understood by the expression. "The animal spirits are the quintessence of the blood and other juices; the vehicle of which is lymph and water extremely dessicated and moveable, and extremely attenuated by flowing through vessels which from large become gradually smaller, being rarified by heat with a subtle vapour." . . . "*The nervous fluid*, or animal spirits, consists of phlegm or water, oil, animal salt, and earth, all highly attenuated and subtilized, and intimately mixed and incor-

porated together."[1] We may observe that the terms animal spirits and nervous fluid are used as synonomous. "It is evident," says Dr. Barry,[2] "from the structure of the nerves, and from their being deprived of their influence when obstructed by a ligature or diseases, that the exercise of their function depends upon the motion of a *nervous fluid* or *animal spirits* through them." . . . "This nervous fluid seems to be formed for more extensive uses than sensation and motion."

The celebrated Dr. Mead writes:—"This fluid, so far as we can discover by its effects, is a thin volatile liquor, of great force and elasticity; being, indeed, most probably, a quantity of the "*mineral elastic matter*," incorporated with fine parts of the blood, separated in the brain, and lodged in the fibres of the nerves. This is the instrument of muscular motion and sensation, and a great agent in secretions, and, indeed, in the whole business of the animal economy. By the universal elastic matter I understand the subtle and active substance diffused throughout the universe, which our great philosopher, Sir Isaac Newton, supposes to be the cause of the refraction and reflection of the rays of light, and of the vibrations by which light communicates heat to bodies, and which, readily pervading all bodies, produces many of their actions upon one another. This is the nature of the animal spirits."[3] Between the idea that the animal spirits were a quintessence evaporated by the heat of the body from all its parts, and therefore confining, in a spiritual or ghostly form, all the elements which the body contained; and this notion of the animal spirits being a portion of the ether of the universe, the contrast is great, and warns us not to confound all the so-called vitalists in one category.

[1] Dr. Malcolm Fleming on the Nature of the Nervous Fluid, p. 24.

[2] A Treatise on Digestion, by Dr. Barry, p. 157.

[3] A Mechanical Account of Poisons, by Dr. Mead.

Let us now consider how this hypothesis of Stahl's stands related to pathology and therapeutics. One important fact, well-nigh forgotten by the chemists, was brought into prominence by Stahl, viz., that man was a spirit, and, as such, subject to many disorders from which the lower animals are free; and that, in dealing with man as a subject of experiment or investigation, we shall be led into certain error if we neglect the spiritual elements of his constitution. But, this fact admitted, still we want to know how the spirit acts in deranging the body. We find this question discussed by Stahl's disciples. Perry[1] tells us, that the whole tribe of nervous diseases arises from what he calls distemperature of the animal spirits. Let us observe that most writers of his school, although they so far accept Stahl's notion of the soul as the chief source of life, yet, when they come to work the problems of pathology, transform the soul, or the immaterial and undying part of man, into a material spirit. Thus Perry speaks of the animal spirits being material, although subtle, and being subject to depravation and alterations of various kinds, and of the great indication for the cure of diseases in which they are implicated being to strengthen them. To strengthen the animal spirits! Here is a new theory of treatment. It differs from the doctrine of humours taught by Hippocrates and Galen; it differs from the doctrine of specifics taught by Sydenham, and from the doctrine of the chemists. It is the beginning of a great change in the practice of the art of medicine; for by the term "to strengthen the animal spirits," is really meant to stimulate them; to excite them to make a greater effort to resist or overcome the evil forces in the system. This doctrine is the unavowed parent of subsequent systems. If Stahl is right, that the spiritual principle presiding over every specification of the frame is the source of all vital motions, and if the

[1] A Treatise on Disease, by Dr. C. Perry, Vol. I., p. 50.

languid performance of this all-important office gives rise to imperfect and disordered action, then it follows that the great secret of cure will consist in stimulating the animal spirits or nervous fluid—for the expressions are used as identical—so that it may act with more force, and set right the disorder, wherever it is. Out of Stahl's theory, then, we naturally glide into the doctrine of regarding enfeebled action of the nervous system as the great source of disease, and the administration of stimulants as the great corresponding remedy. It was reserved for another generation to work out the principles enunciated by Stahl to their natural and logical development. For himself, he accepted the traditional doctrine of accumulation and stagnation of blood, requiring the employment of blood-letting and evacuant remedies for their removal. He set his face against the use of Cinchona bark as attended with mischievous consequences, and only acting as an astringent in suppressing but not curing ague. Although he was thus blind to the merits of the great specific medicine of his day, he was in the habit, as well as Hoffmann, of selling various secret medicines; among which, according to Sprengel, who cites his authorities for the statement, were "so-called balsamic pills, made of aloes, veratrum, and bitter extract," which he professed to be good in almost all diseases; also a stomach powder; and both of these were held in very general estimation. He had also his own peculiar styptic, which Goetz suspects was nothing but refined spirits of wine.[1]

This fact, for as such we may accept it, gives a shock to the notions of the present day. For two of the most celebrated physicians and teachers of their age to sell secret medicines, and not to lose caste by doing so, shows that

[1] Gründlicher Bericht von der balsamischen Blut-reinigend-und-comfortirenden Pillen, wie auch, auf sonderbares Verlangen, von den rothen-fluss-magen-und-stein Pulvers, zuverlassiger sonderbaren Wirkung und rechten Gebrauch. Halle, 1716. Sprengel, Vol. V., p. 333.

such a proceeding was not regarded in the same light then as it is now. Indeed, at a considerably later date, we find men of good standing publishing cases cured by remedies the name of which they concealed. For example, in the year 1745, Dr. Cromwell Mortimer, a member of the Royal College of Physicians, and Corresponding Member of the Royal Academy of Science of Paris, dedicated to the King of Britain of that period, George II., a work entitled, "Address to the Public, containing Narratives of Certain Chemical Remedies in most Diseases." This book is full of cases of cures effected by his secret remedies. It is plain, from passages in Sydenham, that he was sorely tempted to do so too; and in referring to the triumph of his virtue over his cupidity, he gives as the reason the broad ground of preferring the advantage of mankind to his own private profit—a reason which, if applied to analogous cases, would do away both with the law of patents and of copyrights. Probably the true reason why secret remedies are held in such disrepute is, that they are for the most part pure impositions; and, having become disreputable, no man of respectable character will have anything to do with them. But this triumph of respectability has not been attained till this the nineteenth century. It did not exist, or but feebly, in the seventeenth and eighteenth, and in forming a judgment upon any case, we must take the conditions of time and place into consideration, if we wish to avoid the most absurd and unjust opinion in reference to its morality, or rather in reference to the morality of the person who performs the act.

Frederick Hoffmann was born at Halle, where his ancestors had for two centuries practised the medical profession, in 1660, the same year as his great colleague and rival Ernest Stahl. He showed at an early age a decided predilection for mathematics, and even before he entered the University of Jena, where he took his degree of Doctor

of Medicine in 1681, he had distinguished himself in mathematical studies. After having passed eight years as *Land-physicus* at Halberstadt, he was, in the year 1694, appointed professor at the newly-constituted University of Halle, where he taught with extraordinary success for forty-eight years, winning for himself immense renown, and exercising a powerful influence at the Court of Prussia in favour of his University, of which he was regarded as the great glory and support. He died in the year 1742, at the age of eighty-two, full of wealth, honour, and respect.

Hoffman was an essentially successful character. Unlike the morose and metaphysical Stahl, he was a man of rapid observation, fluency, and promptitude, rather than of depth and power. His portraits give the impression of a large florid man, of a happy temperament, who would be a good orator. He is altogether cast in the mould of a popular preacher rather than of a physician. He was a very copious writer; his collected works form six thick folio volumes, and at the time of their publication were more popular with the non-professional public than with the medical. Before he settled in Halle, he travelled in various parts of Europe, and visited England, where he made the acquaintance of Robert Boyle, with whom he stands in a certain relationship, so far, at least, as consists in having taken a deep interest in all physical investigation. It was in the nature of such a man to work in the opposite direction from Stahl, who wrought from within outwards, *i. e.* from without inwards. Stahl began with the soul—whence came life, whence came living action, whence came living organism; Hoffman began with the organism, recognizing as true all that had been set forth by the mechanical philosophers, of its wonderful attributes as a machine. His especial attention was directed to the heart, the centre of the great movements of the whole

system. It is the circulation of the blood which prevents its putrefaction, and sustains not only its own vitality, but that of the whole body; affording to each part not only nourishment, but vital power to appropriate the food borne to it by this river of life.

To guard the human frame from sickness and pain, we must maintain the circulation in its true course and regularity. On farther investigation, we find that the great cause of irregularity in the circulation—hence the great cause of disorder of the system—is an unnatural contraction of the vessels through which the blood is transmitted. The action of the heart consists of a series of contractions and relaxations, and similar actions are repeated in the arteries; but these arteries at their extreme ends may contract too strongly or spasmodically, and from such a spasm of the extremities of the blood-vessels, arises an endless train of evil to the frame.

"Universal pathology is much more rightly and more easily deduced and explained from faulty microcosmic movements in the solids, than from various affections of the vitiated humours;"[1]—cramp or spasm on the one hand, relaxation or atony on the other. Here was another system differing from all the previous ones. When spasms attack the organs endowed with sensibility, as the nerves, they give rise to pain. Spasms may be either general or particular. If general, they produce fever, inflammation, hæmorrhage, catarrh, &c. If particular, headache, jaundice, melancholy (spasm of the dura mater). On the other hand, relaxation or atony is the fertile source of a legion of disorders; indeed, of almost all chronic diseases. The immediate effect of this relaxation or atony was congestion. Relaxation or atony of the vessels of the liver, causing congestion of that organ, was, in his eyes, as well

[1] Genealogia Morborum ex turbato Solidorum et Fluidorum Mechanismo. Last chapter of Medicina Rationalis Systematica.

as those of Stahl, the origin of innumerable evils. *Vena portæ, vena malorum!* But let it be observed that spasms pass into atony. These opposites, like all opposites, are also similar. What produces a spasm in the first instance, produces its reverse or a state of atony or relaxation in the second; so that the primary and the secondary effects of all agents upon the human frame are necessarily opposite or contrary. Hence from Hoffmann's pathology is deduced the curious paradox, that not only is there not the seeming difference which the words suggest between the two maxims, *contraria contrariis*, and *similia similibus curantur*, but that these two propositions are, in one sense, identical. The remedy which cures a state of atony is one which produces a contrary effect or a state of spasm. So up goes the *contraria contrariis* flag. But this same remedy, because it produces a spasm, also, in the next remove, produces an atony; for spasms cause atony, and therefore, what produces atony, cures atony. So let the now famous motto, *similia similibus*, be also displayed. Not that Hoffmann himself made this inference, although his great rival, Boerhaave, evidently had a perception of the truth in this matter. Hoffmann's therapeutics were as simple and as unsatisfactory as his pathology.

He preferred the use of a few strong medicines to that of the many commonly employed in his time. All medicines could be classed in four divisions, viz.: tonics, sedatives, evacuants, and alteratives. This classification was accepted by almost all writers on *materia medica* in the eighteenth century. Except under the vague head of *Alteratives*, into which division remedies which will not go into any one of the other three divisions are promiscuously drafted, there is no place in Hoffmann's system for *Specifics*. He seems, indeed, alive to the necessity of grounding therapeutics on experiments; for he lays it down as a rule that "experimental philosophy and experiment can

alone advance our knowledge of the *materia medica;*"[1] but so long as all he sought in his experiments, was to determine under which of his headings the drug under examination was to be catalogued, it is manifest that the knowledge obtained must be limited by the end he had in view. Thus, when he took Cinchona under his patronage, it was not for the simple reason that satisfied Boyle and Sydenham, that experience and experiment proved to their satisfaction that it cured ague. The fact of its curing ague was enough for them; the *mode* of its operation they, in virtue of their being reared in the school of Bacon, put aside as irrelevant—or at all events premature. The only way of giving this latter question a satisfactory answer, according to their great teacher, was to collect "instances" of well-established cures effected by remedies as direct and specific as ague by bark; and then, but not till then, to attempt to discover some attribute possessed in common by all the curative agents. But this was not Hoffmann's plan at all. He defended Cinchona against Stahl, not because there was ample evidence of its curing ague, *but because the return of the fever-paroxysm was owing to weakness, or atony—and Cinchona was a tonic.* He grounded his treatment upon an hypothesis, not upon experiment. His logic was simple, and is easily thrown into the form of a syllogism. Tonics cure atonic disorders; ague is atonic—Cinchona is a tonic; therefore Cinchona cures ague. But if it be because it is a tonic that Cinchona cures ague; then of course all tonics will cure agues equally well, which they certainly do not. Therefore, as tonics will not cure ague, ague cannot arise from atony of the duodenum, or from atony at all. Thus all his therapeutics, and, indeed, all his treatment, rests upon conjecture, and upon conjecture alone; and we cannot wonder that, pursuing such an entirely false method—a method diametrically opposed to the

[1] Opp., Vol. I., p. 426.

movements of the new philosophy, should arrive at the "lame and impotent conclusion," expressed in his famous maxim—"*Fuge medicos et medica menta si vis esse salvus.*" "Flee doctors and drugs, if you wish to be well."

This radical error of founding medication, not upon experiment, but on conjecture, is the reason of the rapid succession of rival schools.

> "Like clouds that rake the mountain's summit,
> Or waves that own no curbing hand,
> How fast has *system* follow'd *system*
> From sunshine to the sunless land!"

This is the reflection that forces itself upon the mind at this period of the history of medicine. After the breaking up of the Galenic Empire, the number of transitory monarchies is immense. Hoffmann, one of the greatest of his day, has now gone into utter oblivion; his books, these great folios, are never read, and are only referred to by the historian out of curiosity.

We have already seen that Hoffmann investigated the machinery of the human frame, in order to discover its moving principle. Stahl announced this moving or animating power to be the soul—ψυχὴ—*anima*. This Hoffmann disputed. "Not the soul," he said, "but a material substance of extreme subtlety, something like æther—whatever that is,—something of a gaseous nature, secreted in the brain, and poured into the blood, which it vivifies. This something, finer than all other matter, but not exactly spirit, or soul, or mind, is the moving principle of the animal organization,—also called the nervous fluid. It is upon this that the contractility of the muscles depends; it is this in excess that gives rise to spasm; and a defective supply of this induces atony.

"It is to be observed," he says, "that the most dangerous diseases do not arise from accumulation of impure

humours, but from a fine, volatile, subtle, vapourous matter. If it were possible to extinguish this by a powerful medicine, this would be much better than evacuating," &c.[1] But this fine volatile matter was, in Hoffmann's view, different, not only in form, but in nature from ordinary matter. This is proved by a treatise on the power of the Devil over the body.[2] In this he argues that the Devil, being a spirit, has power over the "aer," "ether," or "*fluidum catholicum*," which extends throughout space; and that, as there is a similar fluid (*fluidum aero-elasticum*) in our bodies, the Devil must have power there too; in proof of which he quotes the instance of Job's boils, and adds, "that this was a fact, and not an allegory, the great Spanheim demonstrated." The chain of logic is here obvious enough. The Devil is a spirit; as a spirit he affects spirits, of which the ether is one; a similar spirit moves our bodies; therefore, the Devil has power there too. But while the Devil, in virtue of his spiritual nature, is thus related to the spirits of our bodies, surely, as the spirit of Evil, on the other hand, a sentient spirit, a scheming, wicked spirit, he is identical with mind or soul, or immaterial existence. And as things equal to the same thing are equal to one another, if both the human soul and the human corporeal spirit be of the same nature as the bad intelligence that plots our ruin, then the soul of man and the spirit of man must be identical, and there is no difference between the soul of Stahl and the subtle fluid of Hoffmann. The fact seems to be, that whenever men speculate in this transcendental region, they become vague in their ideas and language. Then one of the great sources of error is a confusion of terms in regard to what is material and what is not. By the word material is sometimes meant matter as we know it; at other times, matter as opposed to infi-

[1] Hoffmann, Anweisung zur Gesundheit, p. 101.

[2] De Diaboli Potentiâ in Corpore. 1712.

nite extension; thus a spirit as finite must be material—as invisible and impalpable, it must be immaterial. In this way, the contradiction between Stahl and Hoffmann is reconciled.

Hermann Boerhaave was born in December, 1668, eight years after Hoffmann and Stahl, at a village near Leyden, of which his father was the pastor. It was intended that he, too, should enter the Church; and, after a course of instruction at home, he went to Leyden, where he soon distinguished himself by his rapid acquirement of the Greek, Latin, Hebrew, and Chaldee languages, besides a knowledge of ancient, modern, and ecclesiastical history. He was early remarkable for his ease and fluency of diction: in short, he was the prodigy of the university of his day. With such endowments, and the object of so much notice as he must have been, it speaks much for his integrity and resolution that he declined the profession for which he was intended, feeling himself not disposed thereto, and recommenced his studies, under circumstances of some difficulty, having to maintain himself by teaching mathematics till he had acquired sufficient knowledge and reputation in this new career, to be appointed, in 1701, Lecturer on the Theory of Medicine. In the year 1709, he obtained the chair of medicine and botany; in 1715 he was appointed Rector of the University, Physician to St. Augustine's Hospital, and Professor of Clinical Medicine in the same. In 1718, to his previous appointments was added the chair of chemistry. So that he taught the theory of medicine, the practice of medicine, botany, and chemistry in separate courses, besides giving clinical lectures three times a week. Had he devoted his time to teaching alone, it would have required both wonderful talent and energy to discharge so many offices with respectable success. So far, however, did he exceed this standard, that his lectures were held in such esteem of excellence, as to be translated into most

modern languages—even into Arabic; and instead of devoting his life to it, this was merely the occupation of his leisure, for his time seems to have been nearly absorbed by the practice of his profession, if we may judge from the fact of his having accumulated a fortune of two million florins—somewhere about £200,000 sterling—in about thirty-five years. The unparalleled success with which Boerhaave discharged all his duties, obtained for him a reputation without precedent since the time of Galen, limited only by the boundaries of the civilized, we might almost say the inhabited, world. As might have been expected, he was too good a card to be overlooked by the academies of science and royal societies of his day, and was by their own request enrolled a member of all the most celebrated. He died in the year 1738, in his seventieth year. In summing up his character, his biographer says of him:—"Boerhaave was the most remarkable physician of his age, perhaps the greatest of modern times! a man, who, when we contemplate his genius, his condition, the singular variety of his talents, his unfeigned piety, his spotless character, and the impress which he left not only on contemporaneous practice, but on that of succeeding generations, stands forth as one of the brightest names on the page of medical history, and may be quoted as an example not only to physicians, but to mankind at large." When he recovered from an illness in the year 1722, there was a general illumination in Leyden, and after his death a monument was erected to his memory in the church of St. Peter. "When I first applied to the study of physic," says Cullen, "I learned only the system of Boerhaave: and even when I came to take a Professor's chair in this University (Edinburgh), I found that system here in its entire and full force; and I believe it still subsists in credit elsewhere, and that no other system of reputation has been yet offered to the world."[1]

[1] Cullen's Physiology and Nosology, Vol. I., p. 412.

These quotations are not the expressions of any unusual estimate of Boerhaave; they are the unanimous judgment of the age in which he lived. Shall we call them extravagant? In one sense they are; in another sense they are not. The influence of Boerhaave was immense while it lasted—it was world-wide; but it was like a ripple on the ocean—it had no depth. He knew everything and did everything better than any of his contemporaries, except those who made one thing, not everything, their study. He was familiar with the researches of the great anatomists, of the chemists, of the botanists, of historians, of men of learning, but he was not a great anatomist, chemist, or historian. As to his practice, we cannot pronounce a very decided opinion, except that he was a man of judgment and independence. Here his reputation made his success: a prescription of his would no doubt effect many a cure, although the patient had taken the remedy he prescribed fifty times without any benefit. His greatness depended upon his inexhaustible activity. He had the energy of a dozen ordinary men, and so he was twelve times as powerful as one. He mentions quite incidentally how he was in the habit of frequently spending whole nights in botanical excursions on foot; and we know he had no time to sleep in the day. He took an interest in everything, was always on the alert, had a prodigious memory, and indefatigable industry. On these great homely qualities, added to a kind disposition and an unaffected piety, his popularity was founded. It was all fairly won and nobly worn. It is startling, however, to find that a man whose name one hundred years ago was familiar to the ear as household words, and of whom historians predicted that he would always be regarded as one of the greatest as well as best of men, an example to his race, should be already almost forgotten. An example is of no use unless it is known; Boerhaave is now unknown. The reason is plain;—he

was not the founder of any system, nor did he make any discovery. He simply used with supreme success the thoughts and discoveries of others; as soon as he ceased to live, his influence began therefore to decline; and before his generation had passed away, his star had waned before the genius of Cullen, who succeeded in fixing the attention of Europe, and who, in his turn, was soon to be displaced by others. Thus we are taught, for the thousandth time, the lesson we never shall learn, that the popular estimate of contemporaries does not decide the vitality of a reputation, but that lasting fame depends upon the answer to the question: What would the difference be in the world's history, had such a one never been born? If we apply this test to Boerhaave, we shall be forced to confess, that had his particular light been lost to the medical world by his adherence to his father's profession, it would not now be possible to recognize any diminution in the general radiance of the age.

The works by which he is best known are, "Institutiones Medicæ in usus annuæ exercitationis domesticos," first published at Leyden in 1708, and "Aphorismi de cognoscendis et curandis Morbis in usum doctrinæ medicinæ," published in 1709. It is enough to show the estimate in which these works were held to say, that the great Haller published a commentary on the "Institutions" in seven quarto volumes, and that Van Sweten illustrated the "Aphorisms" with a commentary which extended to five quarto volumes. Thus, on these two works of Boerhaave there are commentaries of twelve quarto volumes, by two of the most celebrated physicians of their age.

The perusal of "The Institutions" confirms the impression of the character of Boerhaave, which one derives from the multitude of his successful enterprises—that he was, above everything, a man of rapid activity. He skims, with the swiftness of the swallow, the surface of all the

subjects with which he deals, leaving nothing unnoticed, nothing unexplained, entirely satisfying the curiosity, without awakening any doubts. He is the Macaulay of medicine. We can perfectly understand how delightful it must have been to listen to a teacher who explained the structure and uses of all parts of the human frame; then described their various functions; passed from that to consider the laws of their healthy action; and concluded by giving a complete arrangement of diseases, and the modes of their cure. All this Boerhaave does with singular felicity of illustration, bringing equally his multifarious knowledge of history and his daily experience gained in practice, to bear on the topic on hand.

He was an eclectic. "At present," he says, "physic may be learned without adhering to any particular sect, by rejecting everything that is offered without demonstration, and by collecting and retaining only what has been offered and approved to be real truth, both by the ancients and moderns."[1] He strongly insists upon the importance of distinguishing a fact from a conjecture about it. "Thus, if any should say that the fixed salt of Tachenius is proper in the beginning of a dropsy, his assertion will be justified by experience; but if he proceeds to explain the manner in which it operates, it is very possible he may be altogether deceived."[2] This is a hit at Hoffmann and the chemists. "What is demonstrated to us by our senses, cannot be disproved by any age . . . The circulation of the blood will be as true and undeniable a thousand years hence as it is at the present time."[3] In these and many similar passages we have the importance of facts or phenomena explicitly affirmed in the true Baconian spirit. Thus, in speaking of the Archæus of Van Helmont, he observes, "One might as well confess his ignorance of the cause of any action, as attribute it to

[1] Vol. I., p. 43. [2] Ibid., p. 44. [3] Ibid., p. 48.

some imaginary and unknown being, of whose existence, nature, actions, and manner of operation, we have not the least knowledge or assurance."[1]

It is remarkable that Boerhaave, who was so thoroughly alive to the necessity of a rigid scrutiny of every explanation of a phenomenon, should have been so perfectly satisfied that the cause of animal heat was the attrition of the blood in its course of circulation. He seems impatient of contradiction in the matter, and utterly, almost contemptuously, rejects the notion of Lower and others, who derived the animal heat from the nitre to which it was exposed in the air received into the lungs—a conjecture much nearer the mark than that of Boerhaave.

It is really amusing how he disposes of the obvious objection to his theory, that if animal heat depended upon the mechanical friction of the particles of the blood, we should have a similar effect in all hydraulic works. To this he replies, that blood is of a viscid and adhesive nature, and that it cannot be forced through the small vessels without producing great friction of its particles, and consequent heat. "It is, therefore, by the excess of force in the heart, that the animal heat is generated."[2] Yet, when Boerhaave taught this, he knew that Borelli had demonstrated that the sum of the cavities of the branches of an artery is always greater than that of the main trunk, so that the circulation is easier than would have been the case had they been of the same calibre; and moreover Boerhaave was perfectly aware that so far from the blood getting hotter as it recedes from the centre, it gets cooler, which, of course, it would not were his hypothesis correct. This is a good illustration of the fatal facility that is required for a popular teacher. Boerhaave undertook to explain the functions of the animal œconomy, and here was a most important one, which it was his business to explain. He was not

[1] Vol. I., p. 310. [2] Vol. II., p. 216.

there to excite doubts or to prosecute inquiries; he was there as a preacher to expound doctrines. Here then was an explanation which, on the whole, seemed the best, and was, therefore, to be accepted as the true one. Very rarely is the faculty of popular exposition united to an equal amount of that earnest inquisitiveness which makes the discoverer. The former is the expression of a satisfied, the latter of an unsatisfied, state of mind. Boerhaave was a man thoroughly satisfied with himself and everything about him.

We might give innumerable illustrations of the superficial character of Boerhaave's method of dealing with the problems he had to explain, and the curious arguments he used to controvert his opponents. For example, he tells us that a celebrated Professor of his own University explained catalepsy by the supposition that it was caused by "a congelation of the animal spirits by a volatile, alkaline salt, in the same manner as alcohol and sal ammoniac do, upon mixture, form a solid body." Now, one might expect a disciple of Bacon to have dealt in a very summary way with such an hypothesis as this, by denying the existence of any such asserted cause, or the efficiency of such cause if actually existing. But Boerhaave meets the chemist on his own ground, and replies *that the juice of the brain does not manifest any phlogistic quality, but extinguishes a flame when thrown upon it!*[1] How much he was influenced by the mechanical and chemical schools, is shown by his notion of the mode in which the nervous fluid is prepared. "The matter from whence the juices or spirits of the brain are prepared, is the viscid and tenacious serum of the blood, which, by passing through many degrees of attenuation, at length acquires *the subtlety of a spirit*, after its particles have been moulded or framed by passing frequently through the smallest series of vessels

[1] Vol. II., par. 277.

in the body; passing from blood into serum, from serum into lymph, from lymph of the first order into all the several orders; till at last, losing the nature of lymph, it acquires *the subtle one of a spirit!*" This is certainly spirit very much above proof. It is, after all, much the same notion, only worked out with more detail of chemical technicality, as that of Hoffmann,—and, indeed, of a great many more—that the spirit of man is a distillation of the body of man, and that the regions beyond our investigation are peopled with these volatile emanations, which retain the form of the human frame, but are without any of its other sensible properties—the ghost of Patroclus, as seen by Achilles, six thousand years ago, at the siege of Troy, and the ghost of the spirit-rapper as seen at Troy in the United States of America, in the present day. He speaks elsewhere approvingly of a notion, "that there is internally concealed a spirituous or nervous man, which governs the whole machine."[1] What is this but the ghost?[2]

We may give another striking illustration of the danger of being satisfied by an ingenious superficial explanation of a strange occurrence. He mentions a fish, resembling a skate, which, when touched, benumbs the hand, and explains it by the agitation of the skin, which is thrown into tremors by the subcutaneous muscle. "To me," he adds, "the whole affair seems to be no great difficulty; when a saw which is very tight and short is sharpened by a file, or a glass ball is sawed by a knife, or a short tense chord is scraped by the bow—all these operations give rise to such an intolerable shrieking noise *as to set the teeth on edge*. By the same reason, when the torpedo fish excites tremors in its muscles, similar tremors are excited in the nerves of the person who touches it."[3] What was no

[1] Vol. III., par. 507.

[2] Boerhaave's "nervous man" may be compared with Bacon's "body pneumatical," see p. 196. If this body pneumatical were liberated by any process, would it not directly act upon the nervous man or pneuma?

[3] Vol. III., par. 484.

difficulty to Boerhaave, was one to Galvani, who made a voyage along the shore of the Adriatic to examine the electric eel —the curiosity of the Italian discoverer not being satisfied with the theory of the great Dutch doctor. Galvani, the discoverer, died in poverty, and left his name embedded in science; Boerhaave, the popular teacher and physician, died immensely rich, and is now nearly forgotten: each had his reward.

It is to this facility of being satisfied that we would ascribe the apparent contradictions in his writings. We have already quoted a passage in which he ridicules the notion of an Archæus,—a spirit dwelling in and governing the body; and yet we find him saying, that "the physician operates by his skill, not upon the disease, *but upon life, which Van Helmont called the Archæus.*"[1] In another place, speaking of perspiration, he says that "the physician who is master of the perspiration, has the secret for curing all chronical as well as acute diseases," and that "the cure of a pleurisy consists in restoring the perviousness of obstructed vessels."[2]

One might attempt to reconcile these passages, by supposing he meant that the primary action of any remedy was upon the Archæus, the vital principle of the nervous man within the frame; and that this, once set right, acted in the most effectual way to free the body of its disorder by opening the pores, &c. In this case, all medicines would act upon the nervous system. But in contradiction of this, we find that Boerhaave was a believer in the old theory of concoction, and was essentially opposed to the immediate restoration of healthy action by the instrumentality of an Archæus. He says, under the head of the *Signs of Disease*, that "we may foresee that another disease will follow when the disorder and its symptoms diminish without any due concoction or critical evacuation of the morbific matter."[3] Here

[1] Vol. VI., par. 1087. [2] Par. 429. [3] Vol. VI., par. 956.

is a manifest recognition of the old doctrine of Hippocrates —his coction and his crises!

One of Boerhaave's prominent therapeutic maxims was, *contraries are removed by contraries*, or, "*contraria contrariis curantur.*" This, however, he thus explains—"Not by such means as are directly opposite or contrary to the present disease, but by such remedies as will afterwards manifest their effects contrary to the cause of the disease"—that is, whose ultimate action is a radical cure. "Paracelsus and Van Helmont ridicule the maxim *contraria contrariis curantur*, and point to the fact that a frozen man would be killed, not cured by exposure to the influence of the fire; cold, a similar, being the proper cure. But they do not reflect that in this case, remedies which cure or relieve cold by renewing heat must produce an opposite effect to cooling. In the same way, when we want to cool in fever, we do not give cold water, but such drinks as will produce cold as their ultimate, not their primary action."[1] Here we have the explicit admission of the opposite effects produced by the same curative agent, its primary action being one thing, and its secondary the contrary.

This is the fifth distinct signification of the maxim, *contraria contrariis curantur*. The first is that of Hippocrates, who said, we must produce an opposite condition of the body to that in which the disease has occurred. If a man be too fat, he is to be made leaner; and if too lean, we must fatten him. The second is that of Galen, who said disease arises from excess of moisture, dryness, heat, or cold. Remedies are in their nature, moist, dry, hot, and cold. Give, then, hot medicines in cold diseases, moist in dry, and so on. The third is that of Paracelsus, whose arcanum was a specific, or opposite of the disease, as the knife of cancer. The fourth was that of the Chemists, who ascribed diseases to an excess of acid or alkali in the

[1] Vol. VI., par. 1086.

blood, and founded their curative system on the neutralizing of this excess by giving an acid to an alkaline, and an alkaline to an acid. Lastly, comes that of Boerhaave, who says, "Give a medicine, whose ultimate action is curative of the cause of the disease, whatever its immediate action may be. If a hot drink produce perspiration in fever, then give a hot drink, for that will cool the body, which is what we want to do. If the primary action of opium is constipating, and of rhubarb laxative, and the secondary the reverse, according to the principle of reaction, then opium may be the remedy in constipation, and rhubarb in diarrhœa." Thus we perceive that between the maxim of *contraria contrariis,* as understood by Boerhaave, and that of *similia similibus,* there is no antagonism.

Besides advocating the system of rational medication, that is, of finding out an opposite to the cause of the disease, Boerhaave acknowledges the specific method which "removes the cause of the disease by the administration of such things as are known to be efficacious only from experiment." How imperfectly he appreciated it, however, we learn from his observation that, as bark cures ague directly, so opium is a specific for pain. Now opium does not remove the cause of pain, and therefore it is not a specific according to his own definition of the term. It is impossible to study Boerhaave without a feeling of surprise that so able a man should be so inaccurate in his observations, and so loose in his reasonings; and that he should have acquired so enormous a reputation, without having contributed one great fact, or even one important suggestion, to the advancement of the art over which he may be said to have presided for so long a period.



HALLER.

CHAPTER XII.

HALLER.—CULLEN.—JOHN BROWN.

Haller—His Wonderful Acquirements as a Boy—His Travels—Professor at Göttingen—His Labours—Doctrine of Irritability—New Definition of Life—Cullen—His Birth-place and Early Education—Professor at Edinburgh—Sir James Mackintosh's Description of Edinburgh University—Cullen's Wisdom—Use and Abuse of Theory—Definition of Life—On Peruvian Bark—Denies its Specific Power—John Brown—Furore Excited by His Doctrines—Brunonian Riots at Göttingen—Brown's Career—Account of His System—Excitability, Exhausted and Accumulated—His Theory of Life—Of Health—Of Disease—Of Treatment—His Prescriptions—His End.

As we approach the latter stages of our long journey, we encounter certain names which suggest the observation that giants are confined to no one period of history. An impartial survey of successive generations inevitably begets a conviction that there is no truth in the notion that the race of man developes itself at the expense of the individual members who compose it; for in the whole range of men of prowess and renown in the domain of medicine, it would be difficult to select one equal in capacity and attainments to Haller, emphatically described by Cuvier

as "Anatomiste, botaniste, poète Allemand, savant presque universel."[1]

Albert Haller was born at Berne, on the 16th of October, 1708, of an ancient and respectable family. He was distinguished almost from his infancy by his extraordinary powers of acquiring knowledge. At the age of four years, he used to expound passages of Scripture to his father's servants; at eight years old, he had written 2000 notices of the lives of persons he had read about; at ten, he had made a vocabulary of the Greek, Hebrew, and Chaldee languages; at fifteen, he had composed tragedies, comedies, and an epic poem of 4000 verses, which he once risked his life to rescue from destruction, when his house was on fire, but which he afterwards himself committed to the flames when his judgment was more mature. His memory was most retentive. On one occasion he got nervous about it, thinking it impaired in consequence of a fall, and to test it went over the names of all the rivers in the world that fall into the sea. Having satisfied himself, by examining a map, that he had forgotten none, he was comforted. This was at a late period of life, when he was engaged in physiological studies.[2]

At the age of fifteen, he went to the University of Tübingen; and at seventeen, to Leyden, where Boerhaave was in the full blaze of his popularity. The young Haller was entirely captivated by this great teacher, and afterwards, as we have already had occasion to mention, he published, with Commentaries of his own, an edition of Boerhaave's Lectures. At the age of eighteen, in the year 1726, he took his degree; and chose for the subject of his thesis, the supposed discovery of a new salivary duct, which he demonstrated to be only a blood-vessel. He then visited the great seats of learning, and made

[1] Biograph. Universelle. Art. Haller.

[2] Leben von Hernn, von Haller, von O. J. G. Zimmermann. Zurich, 1755.

the acquaintance of the most eminent men of his profession —in London, of Sir Hans Sloane and Cheselden; in Paris, of Jusseau, Winslow, and Le Dran; while in Basle, he studied mathematics under Bernoulli. After this extensive tour, he returned to his native town of Berne, where he occupied the posts of Physician to the Hospital, and Principal Librarian in the Museum of Books and Medals. A star of such magnitude as Haller, was not likely to escape the notice of the Elector of Hanover, and King of England, George II., who had just instituted the University of Göttingen, in which he offered him the chair of medicine, anatomy, and botany. Haller accepted the post, and was duly installed as one of the many distinguished teachers in that "famous university." Here he pursued his career of almost superhuman activity; writing light reviews incessantly, to the total amount it is said of 12,000; publishing occasionally such works as the "Life of Alfred the Great," showing great study of a remote and difficult period; so that any one living in the literary world alone, would naturally have supposed that this Haller was nothing but a *littérateur*, and one unusually busy and productive; whereas the fact was, that these efforts, which would have exhausted ordinary men, were to him only relaxation from his real work, which consisted in profound and original researches in anatomy and physiology. In the latter department his discoveries were so important, and his method so new, that, as Hippocrates is called the father of medicine, Bacon the father of modern philosophy, Boyle the father of chemistry,—so Haller has been, and is still, honoured with the proud appellation of the father of physiology.

In the words of Condorcet,[1]—"Haller was aware that the science of physiology, long abandoned to the spirit of system, had become an object of distrust to

[1] "Éloge de M. de Haller," Œuvres Complètes de Condorcet, t. I., p. 379.

natural philosophers, and it was with him a principal object to remove this prejudice. He hoped to render physiology a science as certain as any other physical science; a science by means of which philosophers might acquire a knowledge of the constitution of man, and physicians find a basis upon which to found their practice. For this purpose it was necessary to establish the foundation of physiology upon the correct anatomy of man, as well as upon the comparative anatomy, which has so frequently revealed to us secrets respecting the animal economy that the study of man himself had failed to discover. It was necessary to banish from physiology both that kind of metaphysics which in all the sciences has long concealed real ignorance under scientific terms, and those mathematical and chemical theories rejected by mathematicians and chemists, and always employed with the greater confidence, and adopted with the greater respect, in proportion as teachers or their disciples have been ignorant of mathematics and chemistry. It was necessary to substitute, in place of all these systems, general facts ascertained by observation and experience, to have the prudence to be satisfied with these facts, and to submit to remain ignorant of their causes, and to know that in all the sciences there are limits beyond which it is doubtful whether the human mind can ever penetrate, and which it certainly can only pass by the aid of time and a long series of labours."

His work on physiology is written in Latin; it consists of eight thick quarto volumes, and the research displayed in it may be gathered from the list he gives at the end of books used in its composition. This catalogue occupies one hundred pages, and at the beginning he observes that he has omitted countless brochures, and has only enumerated as works referred to, those which he had in his own library! Had his book been nothing but a record of all facts and opinions known up to his time, it would have

been a work of the greatest value, and a monument of enormous knowledge. But it is far more than this; he has contributed original observations to almost every branch of physiology, and established a doctrine identified with his name, which has survived his decease, and continues to exert a powerful influence on medical speculation—being, indeed, the point of departure for most of the new systems of medicine. This doctrine is called "*Irritability.*"

After having for sixteen years discharged his duty in Göttingen, in the most brilliant style, having been enrolled a member of all learned societies, and honoured with the title of Baron by the Emperor Francis I., Haller returned, in 1753, to Berne, where the remainder of his life was spent in the same unremitting toil. He is said to have actually lived in his library, and to have pressed into his service his wife, his children, and all his friends, to enable him to accomplish the almost incredible tasks he had undertaken. He died on the 12th of December, 1777, aged sixty-nine years.

A glimpse at the scene of Haller's labours, given by one of the students of his university, is not without its interest. The writer is the Rev. A. Davidson; his correspondent, Dr. Cullen:—

"There are in all thirty professors, ordinary and extraordinary. Several of them are very famous, and reckoned men of ability; but all of them, excepting the professors of physic" (of whom Haller was one), "teach in German. The students are about six hundred, made up of Danes, Swedes, Russians, and Germans of all the different sovereignties of the empire, but chiefly Hanoverians, Saxons, and Prussians. The British are exactly equal to the Muses in number, but are not reckoned their most assiduous votaries; five are Scots, viz. Lord Sutherland and his companion Captain Grant, Lord Fincastle, Mr. Murray, nephew

to the Duke of Athol, Mr. Macrae, and myself; and four English, all commoners. We have here a very magnificent library, greatly augmented by the bounty of the Duke of Newcastle, of Mr. Pelham, and of Baron Munchausen, the Prime Minister of Hanover, who is the Mæcenas of the University" (to whom, doubtless, Haller owed his title). "We were recommended to Professor Haller by Dr. Flemming, physician, at London. *The professor seems to be a very agreeable worthy gentleman, but so immersed in study that he has no time to spare for company.*"[1] This letter is dated Göttingen, 19th Nov., 1752.

At the time Haller appeared on the stage of medicine, it was occupied by Spiritualists or Animists, who believed with Stahl that all the movements of the animal frame were the direct operation of the soul or of the animal spirits, which were a sort of material precipitate of the immaterial essence; and by mechanical philosophers, who sought an explanation of all the functions of the body in the form of its parts. The chemists composed a third party, which, overlooking the phenomena of the solid parts, bestowed its whole attention on the fluids, discovered acids and alkalies, invented fermentations of all kinds, and attributed the motions of the frame to the restless activity of their chemical elements. One voice had been raised in favour of another reading of the great riddle, and that was by Glisson, who was the first to use the term *Irritability* to describe that property of muscles in virtue of which they contract on the application of a stimulus. The opinions of Glisson failed to attract the attention of his contemporaries and immediate successors, to the degree their truth and novelty deserved: they have been brought to light by the fuller exposition of Haller. As early as the year 1739, Haller had expressed his opinions in reference to the causes of muscular contractility, in his Commentaries

[1] Cullen's Life, p. 592.

on Boerhaave's Lectures ; and again, more fully, in the first edition of his Physiology, which appeared in 1747 ; but the fullest account was given in a memoir which he communicated to the Royal Society of Göttingen in 1752, when he detailed the result of 190 experiments. The following extract from this important document affords an example of Haller's clear and distinct style of thought and expression :—

"I come now to Irritability. It is so differing from sensibility, that the parts that are most irritable are not sensible, and the most sensible parts are not irritable. I will prove both these propositions by facts, and I will demonstrate, at the same time, that irritability *does not depend upon nerves*, but upon the *primordial constitution* of the parts which are susceptible of it. In the first place, the nerves, which are themselves the organs of all sensations, are destitute of irritability. This is astonishing, but not the less true. If a nerve be irritated, the muscle on which it is distributed is immediately convulsed. I never saw this experiment fail ; and I have often caused the diaphragm and the muscles of the abdomen of a rat, as well as the anterior and posterior extremities of a frog, to become convulsed in the same way. Similar experiments are recorded by Swammerdam ; and, on making them, I found, as well as M. Oeder, that the irritation of a nerve never communicated motion to any but the muscle on which it was distributed, and that it did not agitate those which derived their supply of nerves from other sources.

"I remarked also, constantly, that the convulsion of a muscle followed an irritation with the scalpel, but not at all the use of corrosive substances. But when the fleshy fibres of a muscle are irritated, there is no contraction in the trunk of the nerve. I have assured myself of this often in dogs, and still more in frogs : whatever irritation I gave to a muscle never communicated its motion to a

nerve. I then made the same experiment as M. Zinn, of Berlin. I applied a mathematical instrument, divided into three small points, along a nerve of a living dog, in such a way that it enabled me to perceive if there was the smallest contraction. I then irritated the nerve, but it seemed perfectly immovable. These experiments prove, let me observe in passing, that the oscillatory force which has been attributed to nerves has no existence.

"Neither the skin, which is the seat of touch, nor the nervous membrane of the stomach and intestines, has any irritability; and we must take care not to confound with this property a kind of vermicular movement due to corrosion, which oil of vitriol or spirit of nitre communicates to the nerves, arteries, membrane of the bladder, and gall-bladder. This corrosion has nothing in common with life: it continues twenty-four hours after death, which proves that it is not the result of sensation. Irritability is not in proportion to the sensibility of an organ. The stomach is extremely sensitive—the intestines less so; and they are not liable to such violent pains in a living man; yet I have found them more irritable than the stomach. The heart, which is extremely irritable, is very slightly sensible; and, on touching it in a man who has his senses, it is more likely to produce a faint than a pain.

"It is not enough, when a part is found to be sensible, to conclude thence that it is irritable: the dissection of a nerve, which destroys its sensibility, does not destroy its irritability. I have frequently repeated the experiments of Bellini, with a very different success than is commonly reported. To do it, I seized the phrenic nerve of a living animal, or one recently dead, for the experiment succeeds equally well with either. This compression, irritating the phrenic nerve, begets a movement in the diaphragm. If I tie the nerve, and irritate the inferior extremity, the same thing takes place; if I cut it and irritate below the point

of section where there is no longer any sensibility, since there is no connection with the brain, the diaphragm is equally convulsed. By cutting the crural nerve of a dog, the leg is deprived of all sensibility—it may be dissected without causing pain. However, if the nerve which has been cut is irritated, the muscles of the leg are still agitated; thus, that leg is still *irritable*, although *insensible*."[1]

From this extract, it clearly appears that Haller confined the term *Irritability* to the property of muscles, in virtue of which they performed their contractions, under the influence of a stimulus conveyed by the nerves. Irritability differed from elasticity or mechanical contractility on the one hand, and from sensibility on the other. Haller regarded it as a special endowment of the muscular fibre, carried into effect by its connection with the nervous system. In the following passage, he refutes the notion of Stahl, that muscular irritability depends upon the presence of the soul in the muscle :—

"The soul is that being (*être*) which feels itself—which represents to itself its body, and by means of its body the whole universe of things. I am myself and not another, because that which is called I, or Me, is conscious of all the changes which occur to the body, which *I* call *mine*. If there be a muscle or intestine which makes an impression on another soul than mine, and not upon mine, the soul of this muscle is not my soul, it does not belong to me. But a finger cut from my body, a morsel of flesh taken from my limbs, has no connection with me. *I* do not feel any of *its* changes; it gives rise in me neither to idea nor sensation; it is not then inhabited by my soul; if it were, I should feel its changes. *I* am not in that leg; it is entirely separated both from my soul, which remains entire, and from those of all other men. Its amputation has not

[1] Mémoires de Haller, p. 43.

caused the least injury to my volition; this remains entire; my soul has lost none of its force, but it no longer holds dominion over that leg, and yet the leg continues irritable: irritability is therefore independent of the soul and of volition."[1]

The soul of Nelson was not reduced in size when his arm was amputated; so long as consciousness and personal identity remain, the dismemberment of the body does not affect the soul; but as each separated limb retains its irritability or vitality for some time after it is severed from all connection with the trunk, and its inmate, the soul, it is clear, according to Haller, that irritability or vitality does not depend, as Stahl and his followers assert, upon the presence of the soul in any part of the body; and if irritability does not, then life does not, and we must seek a wholly new definition of this mystery. For although Haller confined the signification of the term *Irritability* to the property possessed by muscles of contracting on the application of a stimulus, yet, by describing that property as depending upon the *primordial constitution* of the part, he inaugurated a revolution in the conception of life; for it was quickly observed that there was no difference in essential character between the contractile power of a muscle and any other purely vital action;—that if a muscle contracted not in virtue of an indwelling soul or vital principle, but simply because it was endowed by its original constitution with the property of contracting when stimulated, there was no reason why other organs,—why the glands, for example, should not possess each one a similar individual susceptibility of independent action; and that thus every part of the animal frame might be endowed at its original formation with a life of its own.

This was a new aspect of the subject: according to it the body was not to be regarded as a monarchy ruled

[1] Mémoires de Haller, p. 53.

by a regal immaterial existence, which at one time was called Soul, at another Archæus, at another Vital Principle; but it was rather to be looked upon as an agglomeration of an infinite number of minute autonomic states, each of which acted in accordance with its own peculiar constitution, and all of which were united in certain congressional actions and influences, by the centralizing powers of the brain and nervous system. Or, to vary the figure, the animal frame was a planetary system, consisting of a certain number of stars, each with its own independent orbit, but each attracting every other, and all revolving round a common centre, so that the term Life ceased to mean an actual essence or thing, like Soul or Vital Principle, but became the name of an abstract conception, like Gravitation. Life came to be defined as the result of two conditions—Irritability on the one hand, or the property of any part to be acted upon by that which should excite in it its specific action—l'aptitude à vivre;—and a Stimulus on the other hand, or something by which the latent faculty of an organ was called into activity. *Irritability* might be called life potential; *irritation*, life actual.

Not that Haller went so far as this. Sprengel,[1] indeed, says that Haller observed that organs were endowed with special *impressionabilities*, to use an awkward word; but I have not succeeded in finding the passage in Haller which bears out this remark of Sprengel. However, it is very probable that Haller held the notion speculatively, although he did not work it out to a full demonstration. Perhaps it was such an idea that induced him, in the following passage, to recommend experiments with medicines on those in health:—"A medicine is to be tested first by its effects upon the body in health, and that without any disturbing influence. Its smell and taste ascertained, small doses are to be taken, so as to determine

[1] Vol. V., p. 389.

its effects upon the pulse, the animal heat, the respiration, and the excretions. After having ascertained its effects upon the system in health, we may proceed to make our experiments with it upon the persons of those who are ill."

Thus, by another road do we come once more to the doctrine of Specifics. Bacon, and Boyle, and Sydenham arrived at the conclusion that, in the discovery of specifics lay the consummation of art—because medicines of this class alone cured directly and radically without enfeebling the frame: they formed their opinion from a survey of the different methods of cure. Haller advanced from the side of physiology. Inasmuch, he said, as each part is endowed with its own specific aptitude for receiving impressions from special properties—the stomach, for instance, to act in a certain way under the influence of tartar emetic, which produces no effect upon the eye; let us ascertain by experiment what are the correspondences between the external world and our internal organism,—what things act, and how, and on what parts of our frame. If we only knew for certain the relationships between the specific properties of bodies and the specific capacities of receiving an impression belonging to every part of our frame, we might adapt the one to the other, and so make therapeutics more simple and more certain.

The transition from Haller to Cullen is like the passing from the Andes to the Alps. We are more struck with the diminished magnitude of the latter, than with their real grandeur and altitude. For after any other man of his time, Cullen could have stood his ground. He was, indeed, no ordinary character. Sir William Hamilton, who is certainly not addicted to unmerited panegyric, says of him, "Cullen is one of those illustrious minds by whom Scotland, during the past century, was raised from comparative insignificance to the very highest rank in literature and science. In no department of intellectual

activity has Scotland been more prolific of distinguished talent than in medicine, and as a medical philosopher, the name of Cullen stands in his native country pre-eminent and alone."[1]



CULLEN

William Cullen was born at the town of Hamilton, in Scotland, on the 15th of April, 1710. He was the second son of a family which consisted of seven sons and two daughters. His father, besides possessing a small property by inheritance from a long line of ancestry, which, in course of time, became the property of William, followed the legal profession, and was factor to the Duke of Hamilton. Cullen received his early education at the Grammar School of Hamilton, and afterwards studied at the University of Glasgow. After a very brief literary curriculum, he was apprenticed to a medical practitioner in Glasgow, and was early introduced into the practical mysteries of the craft. In 1729, he left Glasgow; and, after three years' absence at sea, in the capacity of surgeon to a ship,

[1] Dissertations, by Sir W. Hamilton.

returned to Scotland, and prosecuted his general and medical studies at Edinburgh during three winter sessions. In the spring of 1736, he settled at Hamilton as a country surgeon. He had, however, too much ambition to remain long in the obscure seclusion of his native town, and after having taken his degree of Doctor of Medicine, he went to Glasgow in 1744. Here he formed the bold design of establishing a great medical school, with the assistance of his friend, the celebrated William Hunter. The time, however, was most inauspicious. The rebellion, or rising, took place the following year, and men's minds were too much taken up with the battles of Preston-pans and Culloden, to give attention to so tame a subject as Cullen's project. Cullen, however, was not the man to be baulked of his object by any obstacles which energy, talent, and patience could overcome; and, in the summer of 1746, he made arrangements with the Professors of Medicine to deliver a course of lectures on the theory and practice of medicine in the University of Glasgow. To this course he afterwards added lectures on botany, materia medica, and chemistry; and one of his pupils—afterwards his intimate friend—was Joseph Black, the discoverer of latent heat, and, indirectly, of the true method of managing steam, so as to make it that instrument of power which it has become. Glasgow, about this time, had the honour of having connected with its University the names of Adam Smith and Thomas Reid, and, although as unsuccessful candidates, the names, even more celebrated, of David Hume and Edmund Burke. Still the place for Cullen was clearly Edinburgh; and, after various misadventures, to this goal he arrived in the year 1756. At first he held the chair of chemistry in conjunction with a colleague, but at the same time taught clinical medicine. It was not till nine years later that he was appointed to the chair of medicine. Cullen's position at this time left little to desire. His high reputation attracted students

from all parts of the world, whom his kindness converted into devoted adherents and personal friends; while his high general attainments, as a man of erudition and original powers of thought, enabled him to occupy a conspicuous place even in that galaxy of genius and talent, which made Edinburgh what Weimar was afterwards, and won for the ancient grey metropolis of the north the appellation—*then* well deserved—of the modern Athens. "In the present state of the Scotch Universities," writes Adam Smith—no mean authority—"I do most sincerely look upon them as, in spite of all their faults, without exception, the best seminaries of learning that are to be found anywhere in Europe." Let us hear Sir James Mackintosh's eloquent description of the period :—

"My arrival at Edinburgh opened a new world to my mind. That city was then the residence of many extraordinary men. Dr. Smith, the first economical philosopher, and perhaps the most eloquent theoretical moralist, of modern times. Dr. Black, a man equally philosophical in his character and in his genius, the father of modern chemistry, though his modesty and his indolence will render his name celebrated rather by the curious in the history of that science, than by the rabble of its cultivators. John Home, the feebleness of whose later works cannot rob him of the glory of being the author of the best tragedy produced by the British nation—certainly since the death of Rowe—perhaps since the death of Otway. Henry Mackenzie, to whom we owe (in my opinion) the most exquisite pathetic fictions in our language. Dr. Cullen, the most celebrated medical teacher and writer in Europe, whose system of medicine, just then beginning to be on the wane, had almost rivalled those of Boerhaave and Hoffmann, and whose accurate descriptions of disease will probably survive a long succession of equally specious systems. Dr. Robertson, the most elegant and

picturesque narrator among modern historians; industrious, sagacious, and rational, though not often very profound, or original. Dr. Ferguson, not undeserving of the great reputation which he had acquired by that masculine energy and austere dignity of style, which seemed to become a teacher of morals. Dr. Hutton, with whose metaphysical works I lament that I am unacquainted, and of whose celebrated system of Geology I am not a competent judge; but of whose superior powers I cannot doubt, after reading the admirable account of him by Mr. Playfair. Mr. Robison, one of the greatest mathematical philosophers of his age; and last in seniority, though in no other respect, the ingenious, accomplished, elegant, and amiable Stewart, my excellent friend, whose just fame is now almost the only standing column in the temple of the Caledonian Muses."[1] "I may truly say," he adds, "that it is not easy to conceive a University where industry was more general, where reading was more fashionable, where indolence and ignorance were more disreputable. Every mind was in a state of fermentation."

It is refreshing to find such testimony in favour of the Universities of Scotland, which it is the fashion with some who have not, as yet at least, acquired the fame of either Mackintosh or Adam Smith, to speak of in rather disdainful terms.

"Among the 70,000 souls, or thereby, who then consti-

[1] Memoirs of the Life of the Right Hon. Sir James Mackintosh. Vol. I.

To these names I may be permitted to add that of my grandfather, whom Professor Playfair thus describes:—"Dr. Ferguson was succeeded by Mr. Russell, eminently qualified by the peculiar bent of his genius for explaining the doctrines of natural philosophy. He had early turned his mind to that subject, and with singular clearness and precision of thought, entertained very enlarged and comprehensive views of science. He was distinguished by great fertility of invention and skill in contriving the most impressive and satisfactory experiments. It is matter of much regret that he did not live to complete more than one part of the syllabus of his course, and that his labours were cut short when their utility and excellence were about to be fully unfolded."—Playfair's Introductory Lecture to his Course of Natural Philosophy, delivered in 1805.

tuted the population of Edinburgh, there was a greater proportionate number of men of intellectual and literary eminence than in any other British community, not excepting London." These are the words of one who is recognized by the world of letters as a most competent authority on such a subject.[1]

In corroboration of this estimate of the school of Edinburgh, Cabanis, a celebrated French author, writes: "Celle d'Edinbourg, illustrée, presque tout-à-coup par une réunion d'hommes éminens, n'a pas seulement jeté le plus grand éclât, elle a véritablement formé beaucoup d'excellens practiciens, dont pleusieurs rendent, encore aujourd'hui, dans presque toutes les parties de l'Europe, les plus grands services à l'humanité."[2]

After Boerhaave, Cullen became the greatest medical authority of his day,—and was respected as such by France, Germany, and Italy. Although his peculiar doctrines are now antiquated, his writings are well worth our respectful and earnest attention, and fully justify the reputation enjoyed by their author. Perhaps their most striking quality is the wisdom they display in dealing with general propositions; and, doubtless, upon this faculty of large common sense, mother-wit—or wisdom—(for are not the terms really synonomous?)—depended Cullen's success as a practitioner. Nowhere, perhaps, in medical literature, is there a better defence of the use of Theory than in the following passage:—

"Reasoning in physic is unavoidable; and to render it safe it is necessary to cultivate theory to its full extent. I maintain this by observing, that there is in human nature a strong propensity to seek for causes, and to assign them also on the slightest grounds; and mankind are very gene-

[1] Professor Masson. In "British Novelists and Their Styles," p. 157. 1859.

[2] Coup d'œil sur les Révolutions et sur la Réforme de la Médicine, par P.S. Cabanis, p. 359. Paris, an xii., 1804.

rally guided in their affairs by their judgment of causes and effects. I must own, indeed, that there is nothing more weak and false than their reasonings often are; but I imagine the propensity is irresistible. Sceptics and academics may demonstrate the fallacy, or the rash presumption of human reasoning, but they will never persuade men to give it up, nor even to be restrained in the use of reasoning. The only remedy for the abuse that we know of, is the making men better reasoners, the exercising them much on the particular subjects they are to be employed in, and directing their attention to every consideration that may influence their determinations. A physician will sometimes reason in matters of law, but in doing so he gives occasion to the lawyer to smile at his weakness; and I know that a lawyer, in like manner, may be ridiculous in his turn. In this case, each profession will perceive the abuse in the other; but to correct it, neither the lawyer nor the physician will think of persuading his neighbour to give up reasoning in general, but may very properly advise him to give it up with regard to a subject in which he has not been sufficiently exercised. But it is still doubtful if the advice would be followed; and if there were any propriety in the physician's attempting to reason in law, the only means of rendering it safe, would be to engage him in the study of that science in its full extent.

"Now all this applies to physic, and, as I judge, very exactly. Such is the general propensity I have mentioned, that I have not, in all my life, known a single person belonging to the profession that did not upon many occasions use reasoning concerning it, and what may fairly be called theory. Every practitioner has daily proofs of the propensity and presumption of his patients in this respect; and among the practitioners themselves, though they can declare that Paracelsus was a knave, that Helmont was a madman, and Des Cartes a fool, and that all theory is nonsense

—yet I find that they constantly employ it themselves. This man is plethoric, and therefore must be blooded; that man's stomach is foul, and he must be vomited; a third man's blood is full of acrimony, and he must be purged. Everybody acquainted with practitioners must be familiar with reasonings of this kind. The persons who employ them may not, perhaps, perceive that they are using theory; but I know that they are using it, and that of a bad kind, too. I have known a man deemed plethoric, who was only fat; I have known a stomach supposed foul, when it was only sympathetically affected; and I have known an acrimony of the blood often concluded from what was merely a cutaneous affection. In short, so far as my observation goes, there is not any one practitioner, even the most professed Empiric, who does not, upon many occasions, use theory from a tincture of the school in which he was bred, or from the books he has read. The abuse is, indeed, often very great, but I take the propensity to be irresistible; and, in my opinion, the only possible means of correcting the abuse is by engaging men in the study of the theory in its full extent."[1]

A few pages farther on, we meet with this striking observation:—"We do and must assume that the facts of physic are more frequently the inferences of reason than the simple objects of sense; and, therefore, that the bringing out the facts that are necessary, and the ascertaining them to be such, will always proceed in proportion to our advance in the knowledge of system, *and that, truly, an Empiric system can hardly be perfect till the Dogmatic is nearly so.*"[2] That is, that until there is a true theory of cure discovered, there cannot be such a registration of facts as to be of much practical utility in medicine; such a theory may be arrived at by conjecture and by induction; and this once reached, medicine will be capable of being worked

[1] Cullen's Physiology and Nosology, Vol. I., p. 418. [2] Ibid., p. 425.

by deduction as well as by induction. If the following passage be carefully considered, it will show that Cullen was fully prepared to welcome Jenner:—"With regard to nosology, we can go somewhat further than in mineralogy, for we can there find something analogous to the propagation of seed in the living bodies. We observe this in the case of all contagions, particularly in those we call specific contagions; and as far as my observation goes, even in those that are not strictly specific, when we can trace a disease to its contagion, we can in some measure fix its species. Thus, in the case of small-pox, a great many varieties have been marked, but they are varieties only of one species, a proof of which is, that from the same contagion, that is, from the same seed, all the essential circumstances are produced. . . . . Thus a confluent small-pox may arise from a contagion of the mildest kind, and *vice versâ*. We believe, therefore, that the seed is but one, and that the changes and the varieties are analogous to those produced in plants by culture; that is, that they depend upon the state of the body into which the contagion is conveyed. This is the solid foundation of inoculation, that we have now learned to modify the body in such a manner that the contagion, when applied, will not give rise to these varieties and anomalies. I shall add here what I think a curious corollary, viz., that the specific nature of contagion, and the dependance of the variety of the disease upon the nature of the body, are presumptions in favour of all specific contagions. When we shall have acquired some more experience with regard to the manners of fitting the body, and of conducting the inoculation in other diseases as well as we now do in the small-pox, I am persuaded that the practice will be equally applicable."[1] Here is a prediction not yet fulfilled. But its fulfilment is still anticipated by our best thinkers: if we could only so prepare the body—so

[1] Cullen's Physiology and Nosology, Vol. I., p. 252.

till the ground—that the poison-seeds which fall upon it, instead of springing up in rank and deadly luxuriance, as in the case of the fatal epidemics of scarlet fever and other contagious diseases, should only find just enough of appropriate nourishment to enable them to germinate, and having exhausted the adaptation of the system to the whole species, should die down, leaving their sign-manual like vaccination, as a free pass against the assaults of any of their tribe—when we achieve this, we shall be approaching the consummation of the art, not only of curative, but of preventive medicine.

The principal charm by which Cullen captivated the medical mind of Europe, was not the wisdom displayed in his writings, but the completeness and ingenuity of his system of therapeutics as deduced from his physiology. Cullen starts with the following account of his notion of what life is:—"There is, seemingly, diffused over the whole of nature a quantity of electric matter, which, however, in the ordinary state of most bodies, shows no disposition to a peculiar mobility in passing from one to another; so that, though it is present, it does not show any disposition to motion, but we can by certain artifices accumulate this electric matter in more considerable quantity upon the surface of certain bodies, in consequence of which it can be put in motion from one body to another, exhibiting the various phenomena of electricity; and it is agreed upon among philosophers to call this *Excitement*, and to say that electricity is *excited*, and that such bodies are excited electrics, and all bodies may be so either by being excited themselves, or by having such bodies applied to them as are. So, in our medullary fibre, there is a fluid which was present in the germ, but was not excited; and it is in the excited state of this that I suppose life to consist; and when it is no longer excited in any degree, we call it the state of death; and I can suppose, as in electricity, it may exist

in different degrees."[1] Again: "From what is now said of the excitement and collapse of the brain, it will appear that we suppose LIFE, so far as it is corporeal, to consist in the excitement of the nervous system, and especially of the brain, which unites the different parts, and forms them into a whole."[2]

Life consists, according to this view, of a force generated in the nervous system diffused through the animal frame, just as electricity pervades inorganic bodies; the quantity of this vital force varies according to certain conditions, and the knowledge of these conditions will enable us to explain, as well as to obviate, morbid actions. Thus, this vital force will act as a powerful stimulus to any part where it is in excess, and may produce a state of contraction of the extreme vessels, while, on the other hand, an insufficient supply will induce relaxation.

But, in addition to this assumption of a vital force permeating the frame, Cullen assumed another force, which he called the *Vis Medicatrix Naturæ;* and in the interaction of these two forces he found an easy explanation of the most difficult problems in pathology. His most famous application of this theory was to fevers, and we may take his treatment of them as an example and illustration of his whole system of pathology and therapeutics.

According to him, fevers are, for the most part, the result of some depressing agent, either external, as malaria—or internal, as grief, anxiety, and such like emotions. The first effect of these causes is, to produce an imperfect generation of vital force by the brain; less life pervades the frame; in consequence, the extreme blood-vessels of the surface of the body fall into a state of atony, collapse, or relaxation. This condition alarms the vigilant guardian—the *vis medicatrix.* She comes to the rescue, and excites a counteraction in

[1] Cullen's Physiology and Nosology, Vol. I., p. 131. [2] Ibid., p. 135.

these vessels to remedy the danger; but, like many allies, she rather overdoes her part, and instead of simply restoring the lost balance and generously withdrawing, she excites a contraction or *spasm* of these formerly-relaxed vessels, which constitutes the cold stage of fevers. Having done good to a certain point, and harm beyond it, it is clear that unless something came to counteract this dangerous sanative power, the unfortunate patient would die of nature's doctoring; so the vital force hurries into the field, and turns the table on the *vis medicatrix*, by producing a flow of blood into the contracted vessels, which distends them; and instead of the cold, shrivelled, shivering surface, there comes the full, warm glow, passing into intense burning heat—turgescence—and all the well-known symptoms of what is commonly called *fever*. The indication for the cure of fever is in strict accordance with this theory of its cause: we must relax the spasm of the extreme vessels—cut short the cold stage as rapidly as possible; for, upon the duration of this depends the amount of subsequent reaction.

Thus Cullen explained the action of Peruvian bark. The passage in which he gives his explanation has considerable historical interest, and may be worth quoting:—"As the foundation of the whole of my doctrine, I consider the Peruvian bark, which, like other writers, I shall simply speak of under the title of the Bark, to be a substance in which the principles of bitter and astringent are conjoined. These are sufficiently obvious, and seem to be universally allowed. It may also have somewhat of an aromatic quality; but this certainly is not considerable, and I shall not take any further notice of it. As a bitter and astringent conjoined, I consider the Bark as a powerful tonic. As we have before shown, these qualities in their separate state give tonic medicines, so it will be readily allowed that, conjoined together, they may give one still more powerful; and as such, we

are now to consider the Bark in its effects and virtues, according as these appear in the various cases of disease."[1]

That we may understand the exact sense in which Cullen uses the word Tonic, let us hear his own definition:—

"We have already taken pains to show that the tone of the moving fibres may depend partly on the mechanism of these fibres, *but probably also upon the inherent power or state of the nervous fluid*, as particularly modified in these fibres. If this last position be well founded, it will follow, that whilst on different occasions the tone of the moving fibres may be stronger or weaker, that may depend upon the state of the nervous power in the moving fibre being for the time different; and as this power may be acted upon and variously changed by substances applied to the body, we may allow that there are substances which, applied to the moving fibres, may induce that state of the nervous power, upon which their tone depends."[2] The gist of this uncommonly cautious-worded paragraph, seems to be, that there are substances which act on the nervous system in such a way as to produce a greater quantity of nerve-force in the muscles, so that these contract with more readiness and strength. Cullen does not make the assertion that there is such a quality as nervous tonicity, and such medicines as tonics,—he only says that it is highly probable. Let us continue our former quotation.

"The first (of the medicinal powers of Bark) to be taken notice of is, its operation on the stomach. In many cases dyspeptic symptoms manifestly arise from *a loss of tone* in the muscular fibres of the stomach; and in such cases, as other bitters are, so the Bark is a remedy, and one of the most powerful. Nobody doubts of its being a tonic with regard to the stomach; and it is equally well known that the state of the stomach is readily communicated to the rest of the system. It is in no instance, however, more

[1] Cullen's Materia Medica. [2] Ibid, p. 54.

remarkable than in the case of intermittent fever. That the Bark in this case operates by a tonic power, exerted in the stomach, I have endeavoured to explain in my "*First Lines of the Practice of Physic;*" and have met with nothing in any writers to make me doubt of the truth of my doctrine. It may, indeed, have its imperfections, and may not sufficiently explain the whole variety of phenomena which may occur in such a diversified and complicated system as that of the human body; but in attempting any general doctrine, we must begin with it as adapted to the most general and ordinary course of things. This, I hope, is done in my doctrine respecting fevers, and of the operation of the Bark in the cure of intermittents." . . . . . "We proceed, therefore, upon the supposition that the Bark possesses a tonic power, and that the action of this power on the stomach sufficiently explains its operations in preventing the recurrence of the paroxysms of intermittent fevers; for I see no foundation for referring it to any mysterious and unexplained specific power; which, however, some writers seem still disposed to maintain."[1]

The book from which this extract is taken, was published in 1789. The celebrity of its author secured it a welcome reception, not only in England but on the Continent. A few years after its appearance, it was translated into German by Dr. Samuel Hahnemann, who was at that time distinguished for his general accomplishments, and especially known as a chemist. The explanation of the action of the Bark in curing ague—a disease with which Hahnemann, residing in Leipzic, was very familiar—seems not to have satisfied the mind of Cullen's translator. He was probably struck with the frequency of the occurrence of the conditional mood in the two passages above quoted. Cullen begins by assuming that there *may be* what he calls muscular *tone*,—something different from Haller's irritability; again,

[1] Materia Medica, Vol. II., p. 91.

that this *tone may* depend upon the state of the nervous fluid in the muscles; again, that there *may be* substances which act on this tone, so as to increase it, and hence deserve the name of *tonics*. This being granted, he assumes that fever may depend upon the contraction or spasm of the extreme vessels of the surface, followed by relaxation, &c. He assumes next, that there is such a sympathy between these extreme vessels of the surface and those of the stomach, that when the one set is affected with spasm, so is the other, and that the same medicine that affects the one affects the other. All these postulates being granted, he explains the action of Bark thus:—It excites a tonic state of the muscles of the stomach. This he *supposes* because it is good in certain forms of indigestion, which he *supposes* to be produced by insufficient contraction of the muscles of the stomach. This tonic condition of the stomach is then transferred to the extreme vessels of the surface, where, by forcing an earlier contraction than would otherwise take place, it shortens the stage of relaxation, and so cures the fever. That a hundred objections should occur to the mind of an acute and thoughtful man when translating these passages, was almost inevitable. He must have been struck with the length of the chain of reasoning, the number of links between the starting point and the conclusion, as well as by the intensely hypothetical character of the whole; for Cullen does not even begin with a fact proved either by universal experience or by convincing experiment; and the conclusion, after all, *explains* nothing. There is no less of mystery in the power of Bark to act in a peculiar way upon the nervous fluid, so as to excite a tonic state of the muscles, than in its power to act in a peculiar way upon the condition of the body in ague: both are equally mysterious; but the latter is an acknowleged fact, the former a pure and simple hypothesis. It was the act of a disciple of Lord Bacon to prefer starting from the fact, and attempting, by experi-

ment, to discover whether there was anything in the action of Bark, when taken by himself, to produce any change in his system, which might account for its power of curing ague. Hahnemann, accordingly, took a dose of Bark, and the result was to produce the first symptoms of ague. This led to the bold hypothetical generalization, that possibly the power of curing a morbid condition possessed by any substance, was associated with a power of producing in the healthy person a state resembling that which it had the power to cure—and so the idea of Homœopathy stood revealed.

It is rather remarkable, that, if we carefully compare Cullen's explanation with Hahnemann's inference, there is no contradiction between them. Cullen may be perfectly correct. The power of curing ague possessed by Bark, may depend upon its action on the nerves of the stomach, and on the sympathy between the stomach and the vessels of the surface. The curative virtue of all specifics may be susceptible of a rational explanation. But this does not in the least interfere with the simpler and more practical hypothesis of Hahnemann. Hahnemann says :—Give me a substance that excites a certain well-defined set of symptoms, having a resemblance to a natural disease, and it will cure this natural disease. This, he says, is a fact. Cullen would rejoin :—Suppose I admit your fact, I am not satisfied till you explain on what the operation depends ; you must link your therapeutic doctrine to a corresponding system of physiology and pathology, as I have done. Cullen might be answered tauntingly : You have done it, and so overdone it, as to make all future attempts ridiculous, by the ridicule that has been poured upon your extravagant hypotheses and innumerable theories; and to prove our words, we shall select as your critic the very best qualified we can imagine, for he understands the subject and detests yourself—we mean John Brown.

In proof of Brown's understanding the subject, we give the following sentences :—

"Spasm is the last of the erroneous fundamental hypotheses respecting the cause of the diseases. But how many diseases are there where there is no spasm, and where its absence is demonstrable? And even in some cases, as in fevers, in the beginning of which certain appearances seem to favour the notion of spasm, all these cease before the end of the disease, and a set of phenomena succeed, which exhibit demonstration of the very reverse of such a state. Now, since the effect, that is, the disease, still remains, its cause, whatever that be, must also remain; but that cause is demonstrably not spasm. Admitting, however, for the sake of following out the argument, that there is a spasm, and that it is so far the granted cause; when the physician sets about the cure, where will he find the antispasmodics or remedies, endowed with the power of removing the morbid state by resolving the spasm? There is not one. *There are powers that relax the system*, but in so far as they produce that effect in fevers, they do not remove, but increase the cause of the disease."[1] Let us now give an example of Brown's style, when personal animosity towards Cullen excites his pen.

"The doctrine of spasm, started by an original very worthy of it—the fanatic and visionary Van Helmont—and heavily wrought up into a confused and perplexed system by the painful and verbose labours of the truly Germanic Hoffmann, after having been, by the superior name and authority of Dr. Boerhaave, suppressed and banished from the country which gave it birth, found at last, amidst new persecution raised against it by the pupils of Boerhaave (then in possession of the medical chair in Edinburgh), a friend and protector in Dr. Cullen, who had lately become one of the number of these professors."

[1] Works of Dr. John Brown, with a Biographical Account of the Author, by W. Cullen Brown, M.D., p. 13. London, 1804.



JOHN BROWN.

"This brat,—the feeble, half-vital semi-production of frenzy, the starveling of strained systematic dulness, the forlorn outcast of the fostering care to which it owed its insect vitality,—was now to be pampered by a crude and indigestible nutriment, collected from all the materials which had composed the several fabrications of former erroneous systems; was to be decorated with every foreign plumage; and in this, its totally borrowed and heterogeneous form, instead of the hideous caricature (which it was), contrived to excite the derision of mankind, it was ostentatiously obtruded upon the world as a new and respectable doctrine, and held up, forsooth, as the formidable rival of a splendid system."[1]

Brown's system created a perfect *furore* in Europe about the end of the last and beginning of the present century. In the famous University of Göttingen, the "Brunonians," as they were called, to the number of four hundred, headed

[1] Op. cit., p. 25.

by a young professor, made so furious an attack with cudgels upon their opponents, that the police had to be called in, who with difficulty dispersed the young zealots. Indignant at being defeated, they collected again the next day, carried the guard-house of police by assault, and remained masters of the situation, from which it required a regiment of Hanoverian horse to dislodge them. Had they been trained and armed, as our students happily are, with rifles, even this *ultima ratio* would have failed; and who knows whether the jewel of Hanover might not have been prematurely lost to the British Crown, and a Brunonian dynasty established! As it was, a regular *émeute* of all the students took place, to the number of 1500. They marched out of Göttingen, to show their sense of the insult done to their body by the interference of the military, and nothing but the removal of the dragoons from the town could pacify them.

The author of the doctrines which caused all this hubbub, was born in the year 1735 or 1736, the son of a Scotch peasant, who lived in Berwickshire. When a mere child his father died; and to comfort the little mourner, he was told the parent he had lost was gone to heaven. Next day the child was missed, and, after a long search, was found on the north bank of the Tweed, looking wistfully at England: he said, in his innocence, he thought that was heaven, where he should find his father. The notion that in England a Paradise is to be found for the Scotch, is an illusion generally dispelled by the experience they not unfrequently contrive to obtain of the dream-land of their boyhood.

Having acquired a great reputation for scholarship, he got the situation of tutor in the family of a Berwickshire Laird. This he soon lost by his irrepressible love of repartee, and his uncompromising pride. It was the fashion in this gentleman's house for the tutor to retire after dinner when company was present. On one occasion when the laird entertained his neighbouring lairds, the wine being

upon the table, John Brown received a hint to go to his own apartments. He was, however, looked upon as an oracle, fit to decide any question that was started. The company, as was the fashion then in Scotland, after drinking a good deal of wine, began a theological discussion, and the question mooted was the rather large one of the *Decrees of Providence*. Finding themselves gravelled, they thought they would apply to their oracle up-stairs; so a servant was despatched to Mr. Brown, with his master's compliments, to know what *he* thought of the *Decrees of Providence*. Our hero replied, "Tell the laird I think the Decrees of Providence very absurd, that make so many blockheads lairds." Of course this response of the oracle terminated *his* residence in *that* laird's house. Then he went to Edinburgh as a lecturer, attracted numerous followers by his genius, eloquence, and wit, but soon fell into habits of reckless dissipation. Then he published books, and finally came to London, where, in the midst of a desperate struggle with adverse circumstances, he was cut off by apoplexy in 1788, when fifty-two years of age.

In the year 1784, Mackintosh, then a youth of nineteen years of age, arrived in Edinburgh. He thus describes the character and doctrines of Dr. Brown:—"A few weeks before that time, John Brown—first a teacher, then a writer of barbarous Latin, as well as private secretary to Dr. Cullen,—had become a teacher of Medicine, and the founder of a new medical system, which, after being destined, 'to strut and fret its hour upon the stage,' and after the miserable death of its author, excited the warmest controversies on the Continent of Europe; and, combining with some of the singular novelties of philosophical speculation lately prevalent in Germany, seems likely still to make no inconsiderable figure in the revolutions of philosophy. This extraordinary man had such a glimpse into medical experience as enabled him to generalize plausibly, without

knowing facts enough to disturb him by their importunate demands for explanation, which he never could have given. He derived a powerful genius from Nature; he displayed an original invention in his theories, and an original fancy in his declamation. The metaphysical character of his age and nation gave a symmetry and simplicity to his speculations unknown to former theories of medicine. He had the usual turbulence of an innovator, with all the pride of discovery, and the rage of disappointed ambition. Conscious of his great powers, and very willing to forget the faults which obstructed their success, he gladly imputed the poverty in which he constantly lived to the injustice of others, rather than to his own vices. His natural eloquence, stimulated by so many fierce passions, and delivered from all curb by an habitual, or rather perpetual intoxication, was constantly employed in attacks on the systems and doctrines which had been the most anciently and generally received among physicians, and especially against those teachers of medicine who were most distinguished at Edinburgh, to whom he imputed as base a conspiracy and cruel persecution, as those which Rousseau ascribed to all Europe. They probably were not so superior to the common frailties of human nature, as to examine with patience and candour the pretensions of an upstart dependent whom they, perhaps, had long considered as ignorant, and now might believe to be ungrateful. This new doctrine had great charms for the young; it allured the speculative by its simplicity, and the indolent by its facility; it promised infallible success, with little previous study or experience. Both the generous and the turbulent passions of youth were flattered by an independence of established authority. The pleasures of revolt were enhanced by that hatred of their masters, as impostors and even as tyrants, with which all the power of Brown's invective was employed to inspire them. Scope and indulgence were given to all their

passions. They had opponents to detest as well as a leader to admire, without which no sect or faction will much flourish. Add to all this, that Brown led the way in Bacchanalian orgies, as well as in plausible theories and animating declamation. It will not seem wonderful that a man who united so many sources of influence should have many followers, independently of the real merits of his system, which were very great, but which had a small share in procuring converts. It ought not to be omitted, that some of the most mischievous and effectual of the above allurements arose, not from the subject, but from the teacher. Among these, every one will number personal invective; and it is equally true that the system must have been grossly misunderstood before it could have been supposed to favour idleness or intemperance, though, as it was taught, it did in fact promote these views."[1] It is but fair to the memory of this remarkable man to give a fuller exposition of his doctrines, drawn by a friendly hand.[2]

"Animals and vegetables were endowed with a principle, the nature of which is unknown. This principle, which is named *Excitability*, distinguishes living beings from inanimate matter; and Dr. Brown regards it as one, and indivisible.

"He has studiously avoided all inquiry concerning the *nature* of excitability; but supposes that it may be *accumulated*, or *diminished* in quantity, that it may become more or less abundant; and, in that point of view, he considers it as *matter*. He calls the agents which support life exciting powers, and distinguishes them into external

[1] Memoirs of Sir James Mackintosh, Vol. I.

[2] "To render these preliminary observations, however, still more complete, and convey to those not in the profession a general idea of the principles of a doctrine, in which all who devote themseles to the pursuit of science must feel an interest, the editor has thought proper to conclude with a summary drawn by M. Bertin, a French physician intimately acquainted with the subject."—Extract from the Life of Dr. Brown, written by his son, and prefixed to his works.

and internal. These powers, acting upon the excitability, maintain life—or, in the language of Brunonian doctrine, produce excitement.

"He also gives the name of stimulant powers to whatever can modify the excitability and produce a greater or lesser degree of excitement: when the exciting, or stimulant, powers exert a moderate action on the excitability, they consume a suitable quantity of it, and produce the *degree of excitement* in which *health* consists. Thus the moderate action of the exciting powers, the due exhaustion of the excitability, and proper limitation of the excitement, are synonomous phrases.

"But when the exciting powers act with too great energy, the excitability is too speedily wasted, and the excitement proportionably increased; in which cases, the body is said to be in that state to which he gives the name of *sthenic diathesis:* it does not yet, however, labour under sthenic *disease*, being only predisposed to it.

"It is that intermediate state between health and disease which is named *pre-disposition*, and which is sooner or later changed into that of disease, according to the greater or lesser energy of the stimulant powers. The sthenic diathesis may be gradually increased from the slightest sthenic disease—as the sthenic catarrh, small-pox, the benign measles—to the highest inflammatory pneumonia; and the excitement is then raised to the highest degree of which it is susceptible. It cannot remain long in this state without becoming languid. The physician has, then, two difficulties to encounter. If he employ too debilitating a treatment, he will reduce the excitement too much, and induce a state of great weakness; he will occasion those diseases which supervene on inflammatory affections, when sufficient caution has not been employed in the use of the antiphlogistic plan of cure, or when bleeding has been pushed too far. On the other hand, if he be too timid in

the use of the debilitating method, or employ too powerful stimuli, he will give rise to a different kind of debility.

"It is very essential, according to this doctrine, to distinguish these two kinds of debility; for, though intrinsically the same, they require a different kind of treatment.

"That debility which is produced by too debilitating a method, or, in general, by the deficiency of existing powers, or by their too feeble action, is named *direct debility.* In such a case, the excitability is supposed to be accumulated. Thus, the too feeble action of the exciting powers, the accumulation of the excitability, and the direct diminution of the excitement, are synonomous expressions. There is another kind of debility, occasioned by the excessive action of the exciting powers, or by intensely strong stimuli, or by the too long continued action of these powers, even though their energy be not too great.

"The excitability is then exhausted by the excess of stimuli, and this species of debility is called indirect. Thus, the long-continued action of stimuli, or their most intense action, or their exhaustion of the excitability, and indirect debility, are equivalent terms.

"He distinguishes with great discernment the apparent debility accompanying inflammatory diseases, which it is of such importance to ascertain. The proof, says he, that this debility is not real, is, that it yields to debilitating remedies, while the employment of stimulants would be death. He supposes that both direct and indirect debility may be present at the same time in the same subject; and this he names Mixed Debility. It requires a treatment adapted to the predominance of either.

"In explaining his system, Dr. Brown used two scales, of which the first, divided into 80°, shows the quantity of excitability given to a being at the commencement of existence. The second points out the ascending and descending progression, which the exciting powers observe in acting on the excitability.

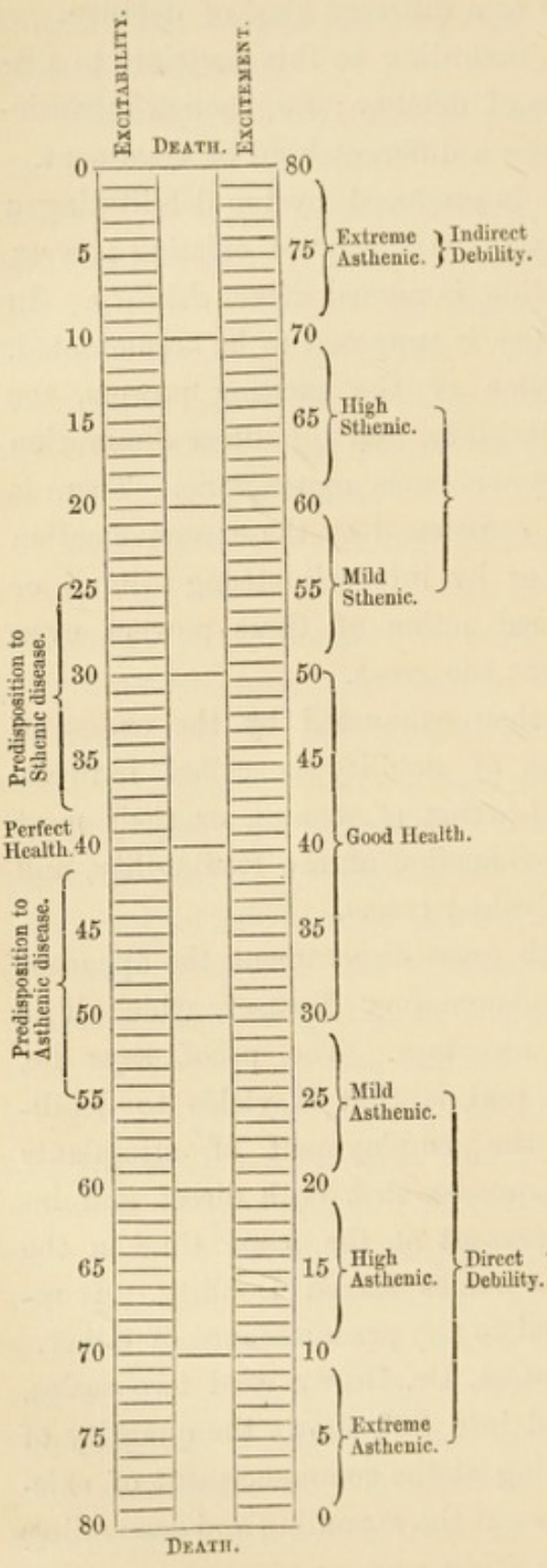


TABLE OF EXCITEMEN

DISEASES.

	Apoplexy.	Confluent Sma
	Palsy.	pox.
	Plague.	Hydrothorax.
	Malignant Fever.	Phthisis.
	Gangrenous Cy-	Contagious I
	nanche.	sentery.
Sthenic Diathesis.	Synocha.	Measles.
	Phrenitis.	Peripneumony
	Inflammatory Cy-	Dysentery.
	nanche.	Mania, &c.
	Mild Small-pox.	
	Synochus.	Miliary Fever
	Rheumatism.	Chicken-pox.
	Catarrh.	Ophthalmia,
	Scarlet Pyrexia.	&c.
	The range of good health	
	consists in the middle point sol	
	is continually exposed; as m	
	less; so that the excitement c	
Asthenic Diathesis.	Intermittent Fe-	Hysteria.
	vers.	Epistaxis.
	Mild Colic.	Menorrhœa.
	Dyspepsy.	Amenorrhœa,
	Hypochondriasis.	&c.
	Rheumatalgia.	Rickets.
	Cholera.	Hæmoptysis.
	Epilepsy.	Scrofula, &c.
	St. Vitus's Dance.	
	Typhus.	Scurvy.
	Cotica Pictonum.	Diabetes.
	Gout.	Dropsy.
	Tetanus.	Jaundice, &c.

ND EXCITABILITY.

CAUSES.		CURE.
NOXIOUS.	IMMEDIATE.	
Excessive action of powerful nuli ; as heat, exercise, food, ndance of blood, violent pas- is of the mind, contagion, the like.	Indirect debility.	The indication of cure is to support the excitement. The remedies are powerful stimuli ; as electricity, opium, æther, spiritous liquors, wine, musk, cinchona bark, snake-root, camphor, rich soups, and the like.
The same as above ; but not hat excess which induces in- ct debility ; yet acting with ter force than in the next ge of diseases.	Greatly increased excitement.	The indication of cure is to diminish the excitement ; which is to be effected by avoiding powerful stimuli, and employing slight or defective stimuli ; as lying cool in bed, tranquillity of mind, bleeding, purging, spare diet, and the like.
The same as above, but not ng with that force which in- es high sthenic diathesis ; greater than in the state of th.	Less increased excitement.	The indication of cure is, as above, to diminish the excitement, but with more moderation.
propriety, ranked from thirty to fifty degrees in the scale : for perfect health, which orty degrees, rarely occurs ; in consequence of the variation of the stimuli to which man k, and the passions of the mind ; which sometimes act with more power, sometimes with y fluctuates between thirty and fifty degrees.		
deficiency of the stimuli ne- ry to the maintenance of health ; and an improper cation of powers, which, h stimulant, do not stimu- n a sufficient degree.	Diminished excitement, or Direct debility.	The indication of cure is to increase the excitement. The remedies are powerful stimuli, such as are exhibited for the cure of indirect debility ; but with this difference, that here it is necessary to begin with a small degree of stimulus, and increase it gradually.
fective stimuli alone ; as diet sparing, and not of quality, fear, and the		The indication of cure is here the same as above ; but stimuli must be applied somewhat more cautiously.
tive stimuli alone.		The indication of cure is the same here also ; but still greater caution is necessary in the application of stimuli.

*

"The excitement will be at 0°, and the excitability at 80°, instantly previous to the exciting powers beginning to act. Life, or excitement, will only take place at the moment the exciting powers begin to act on the excitability. The exciting powers, in consuming the excitability from 80° to 40°, will increase the excitement, or life, to 40°, which corresponds to the 40° of the excitability. The excitability, wasted to the 40°, and excitement increased to the same proportion, constitutes the most powerful degree of life compatible with health.[1] But the excitement, when pushed beyond this degree, tends only to weaken itself, and decreases with the excitability from 40° to 0° which marks the period of life. This scale may afford a sufficiently accurate idea of the progress of the excitability and excitement in a person who leads a temperate life, on whom the exciting powers constantly exert a suitable degree of action.

"Hence, it appears that the excitement of a being at the commencement of life is yet feeble, and that his excitability is accumulated, or not sufficiently wasted, by the action of exciting powers; or, in short, that he is in a state of direct debility, which requires only slight stimuli: while the old man—or he who has brought on premature old age by excesses—has arrived at that exhaustion of the excitability and diminution of excitement, which characterize indirect debility, and require powerful stimuli—as spirituous liquors, succulent food proportioned to the digestive powers, wine, &c. It will readily be perceived, from what has been said, that moderate stimuli produce a suitable degree of excitement. That when too feeble for the support of life, they allow the excitability to accumulate and produce asthenic diathesis, pre-disposition to asthenic diseases, and, in short, all the diseases which depend

[1] See Paragraph 25 of the Elements of Medicine.

upon direct debility. When the exciting powers, called *hurtful exciting powers*, are too great, they produce, as has been already observed, asthenic predisposition, and all the diseases of that class. Lastly, these same powers, after they have occasioned the highest excitement of which the system is susceptible, end in indirect debility, and give rise to the asthenic diseases which depend upon it. It is this transition from the highest excitement to indirect debility, which it is of such importance to prevent, by proper management in inflammatory diseases, which, from the violence of the inflammation alone, are about to degenerate into asthenic diseases.

"The same asthenic powers which contribute to health, produce sthenic or asthenic diseases, according as they stimulate more or less. The same hurtful powers, capable of producing asthenic diseases, may be employed as remedies in sthenic diseases, and *vice versâ*. Dr. Brown allows only two diatheses, sthenic, and asthenic. He divides diseases into *sthenic* and *asthenic*, and these into *universal* and *local*.

"Universal diseases are always preceded by that intermediate state already mentioned, called Predisposition. This state depends upon the same causes which give rise to the subsequent disease. The sthenic or asthenic local diseases are never preceded by predisposition. Universal diseases at first attack the whole system, but may direct their principal effect upon one part, as in peripneumony, &c. Such a local affection, however, is merely a consequence of the disease; whereas, in the diseases which he names local, the injury of a part or organ always precedes the affection of the whole system, which is proportioned to the sensibility of the part primarily attacked.

"Inflammation is also distinguished into *sthenic universal* and *sthenic local*: into *asthenic universal* and *asthenic local*. In his work he explains the causes of these different diseases, their distinguishing symptoms and the remedies adapt-

ed to their cure. Dr. Brown, far from considering fever as an effort of nature to free herself from some noxious cause, regards it as a disease, entirely depending upon debility, in which it is always necessary to employ stimulant remedies. He ranks among the pyrexiœ the diseases called inflammatory fevers, and excludes them altogether from the class of fevers.

"He concludes the reasoning part of his work with the following words :—'As all the motions of the planets, which latter were formed to remain and continue their courses for ever, depend on this principle—to proceed straightforward in the manner all projectiles move, and then, by the influence of gravity which affects them all, to be pulled downward, and thereby, upon the whole, thrown all into circular motions,—so, in the lesser and living bodies with which those greater bodies are filled,—that is, animals and plants, of which the whole species remain, though the individuals of each species die—whatever is the cause of their functions, whatever gives commencement and perfection to these, the same weakens and at last extinguishes them. It is not, therefore, true that some powers are contrived by nature for the preservation of life and health, others to bring on diseases and death. The tendency of them all, indeed, is to support life, but in a forced way, and then to bring on death, but by a spontaneous operation.'[1]

"The following ingenious illustration of the Brunonian doctrine, by Mr. Christie, and the scale drawn up by Dr. Lynch[2]—both formerly Dr. Brown's pupils—as likely to facilitate the comprehending of this doctrine, have been introduced here.

"Suppose a fire to be made in a grate, filled with a kind of fuel, not very combustible, and which could only be kept burning by means of a machine containing several tubes placed before it and constantly pouring streams of air into

[1] See paragraph 327 of the Elements of Medicine. [2] See p. 342.

it. Suppose, also, a pipe to be placed in the back of the chimney, through which a constant supply of fresh fuel was gradually let down into the grate to repair the waste occasioned by the flame kept up by the air machine.

"The grate will represent the human frame; the fuel in it the matter of life, the excitability of Dr. Brown, and the sensorial power of Dr. Darwin. The tube behind, supplying fresh fuel, will denote the power of all living systems constantly to regenerate, or reproduce excitability; while the air machine, of several tubes, denotes the various stimuli applied to the excitability of the body; and the flame drawn forth in consequence of that application, represents life, the product of the exciting powers, acting upon the excitability.

"As Dr. Brown has defined life to be a forced state, it is fitly represented by a flame, forcibly drawn forth from fuel, little disposed to combustion, by the constant application of streams of air poured into it by the different tubes of a machine. If some of these tubes are supposed to convey pure, or dephlogisticated air, they will denote the highest class of exciting powers—opium, musk, camphor, spirits, wine, tobacco, &c., the *diffusible stimuli* of Dr. Brown, which bring forth for a time a greater quantity of life than usual, as the blowing in of pure air into a fire will temporarily draw forth an uncommon quantity of flame. If others of the tubes be supposed to convey common, or atmospheric air, they will represent the ordinary exciting powers, or stimuli, applied to the human frame, such as heat, light, air, food, drink, &c., while such as convey impure or inflammable air, may be used to denote what have formerly been termed sedative powers, such as poisons, contagions, miasmata, foul air, &c.

"The reader will now probably be at no loss to understand the seeming paradox of the Brunonian system. That food, drink, and all the powers applied to the body,

though they support life, yet consume it; for he will see that the application of these powers, though it brings forth life, yet, at the same time, wastes the excitability, or matter of life, just as the air blown into the fire brings forth more flame, but wastes the fuel or matter of life. This is conformable to the common saying, 'The more a spark is blown, the brighter it burns, and the sooner it is spent.' A Roman poet has given us, without intending it, an excellent illustration of the Brunonian system, when he says,

'Balnea, vina, Venus consumunt corpora nostra,
Sed vitam faciunt balnea, vina, Venus.'

'Wine, warmth, and love our vigour drain,
Yet wine, warmth, love our life sustain.'

"Equally easy will it be to illustrate the two kinds of debility termed direct and indirect, which, according to Brown, are the causes of all diseases. If the quantity of stimulus, or exciting power, is proportionate to the quantity of the excitability—that is, if no more excitement is drawn forth than is equal to the quantity of excitability produced, the human frame will be in a state of health, just as the fire will be in a vigorous state when no more air is blown in than is sufficient to consume the fresh supply of fuel constantly poured down by the tube behind. If a sufficient quantity of stimulus is not applied, or air not blown in, the excitability in the man, and the fuel in the fire, will accumulate, producing direct debility; for the man will become weak, and the fire low—carried to a certain degree, they will occasion death to the first, and extinction to the last. If, again, an over-proportion of stimulus be applied, or too much air blown in, the excitability will soon be exhausted, and the matter of fuel almost spent. Hence will arise indirect debility, producing the same weakness in the man and lowness in the fire as before, and equally terminating, when carried to a certain degree, in death and extinction.

"As all the diseases of the body, according to Dr. Brown, are occasioned by direct or indirect debility, in consequence of too much, or too little stimuli, so all the defects of the fire must arise from direct or indirect lowness, in consequence of too much or too little air blowing into it. As Brown taught that one debility was never to be cured by another, but both by the more judicious application of stimuli; so will be found the case in treating the effects of the fire. If the fire has become so low, or the man weak, by want of the needful quantity of stimulus, more must be applied,—but very gently at first, and increased by degrees, lest a strong stimulus, applied to the accumulated excitability, should produce death, as in the case of a limb benumbed by cold (that is, weakened by the accumulations of its excitability, in consequence of the usual stimulus heat), and suddenly held to the fire, which we know from experience is in danger of mortification; or, as in the case of the fire, become very low by the accumulation of the matter of fuel which the feeble flame, assailed by a sudden and strong blast of air, would be overpowered and put out, instead of being nourished and increased. Again, if the man or the fire have been rendered indirectly weak by the application of too much stimulus, we are not suddenly to withdraw the whole, or even a great quantity, of the exciting powers, or air—for then the weakened life and diminished flame might sink entirely; but we are, by little and little, to diminish the overplus of stimulus, so as to enable the excitability or matter of fuel gradually to recover its proper proportion. Thus, a man who has injured his constitution by the abuse of sprituous liquors, is not suddenly to be reduced to water alone, as is the practice of some physicians, but he is to be treated as the judicious Dr. Pitcairn, of Edinburgh, is said to have treated a highland chieftain, who applied for advice in this situation. The doctor gave him no medicines, and only exacted a pro-

mise of him that he would every day put in as much wax into the wooden queich, out of which he drank his whiskey, as would receive the impression of his arms. The wax thus gradually accumulating, diminished daily the quantity of whiskey till the whole queich was filled with wax; and the chieftain was thus gradually, and without injury to his constitution, cured of the habit of drinking spirits. These analogies might be pursued farther, but my object is solely to furnish some general ideas to prepare the reader for entering more easily into the Brunonian theory, which I think he will be enabled to do after perusing what I have said.

"The great excellence of that theory, as applied not only to the practice of physic, but to the general conduct of the health, is, that it impresses upon the mind a sense of the impropriety and danger of going from one extreme to another. The human frame is capable of enduring great varieties, if time be given it to accommodate it to different states; all the mischief is done in the transition from one state to another. In a state of low excitement, we are not rashly to induce a state of high excitement, nor when elevated to the latter are we suddenly to descend to the former, but step by step, and as one who, from the top of a high tower descends to the ground. From hasty and violent changes the human frame always suffers; its particles are torn asunder, its organs injured, the vital principle impaired, and disease, often death, is the inevitable consequence.

"I have only to add, that though in this illustration of the Brunonian system, written several years ago, I have spoken of a tube constantly pouring in fresh fuel, because I could not otherwise convey to the reader a familiar idea of the power possessed by all living systems to renew their excitability when exhausted, yet it may be proper to inform the student, that Dr. Brown supposed every living system to have received at the beginning its determinate proportion of excitability; and there-

fore, although he spoke of the exhaustion, augmentation, and even renewal of the excitability, I do not think it was his intention to induce his pupils to think of it as a kind of fluid substance existing in the animal, and subject to the law by which such substances are governed. According to him, excitability was an unknown somewhat subject to peculiar laws of its own, and whose different states we were obliged to describe (though inaccurately), by terms borrowed from the qualities of material substances."

This full and lucid explanation affords ample materials for forming a dispassionate opinion on the system of Brown. Such a judgment it was difficult to arrive at, when it was first promulgated, as so much of the personality of the man entered into the impression made by his doctrines; and although there might be Brunonians, who were not extravagant in their views and reckless in their advice, we can scarcely class the founder of the school in this category. We frequently see disciples outheroding their master, but John Brown's prescriptions seem a caricature of his system. For example, here is one written in reference to a hypochondriac patient, about whose case he was consulted:—"For breakfast, toast and rich soup made on a slow fire, a walk before breakfast, and a good deal after it; a glass of wine in the forenoon, *from time to time;* good broth or soup to dinner, with meat of any kind he likes, but always the most nourishing; several glasses of port or punch to be taken after dinner, till some enlivening effect is perceived from them, and a dram (of whiskey?) after everything heavy; one hour-and-a-half after dinner, another walk; between tea-time and supper, a game with cheerful company at cards or any other play, never too prolonged; a little light reading; jocose—humourous company, avoiding that of popular Presbyterian ministers and their admirers, and all hypocrites and thieves of every description . . . Lastly, the

company of amiable, handsome, and delightful young women, and an enlivening glass." [1]

We can hardly wonder that a system which seemed to lead to such excesses should excite the strongest opposition in the minds of all moderate and sensible persons, and that the enthusiasm for it among the young and ardent should soon burn down after the death of its vehement apostle. Had Brown been a man of sobriety, he might have placed his doctrines on a much more enduring footing, and have himself achieved a great and permanent renown.

Brown was the Paracelsus of Scotland. He was gifted with great genius, but the victim of the most degrading vice. His career of folly impaired the power of his speculations. These, if read with attention, will be found singularly ingenious and captivating, from their logical coherence and simplicity; but they are radically fallacious as a guide to practice. On applying to his main doctrine the grand touchstone of experience, it was found not to answer, and has become entirely extinct, leaving, however, as genuine thoughts always do, an influence behind, which we find incorporated in succeeding systems. "Brown was wrong," writes Fletcher, "in considering his excitability as imparted to every man in a certain proportion at birth, and not rather continually renewed; he was wrong in making it in every part of the body of the same nature and not everywhere different; and, above all, he was wrong in allowing his doctrine concerning asthenic diseases, including most cases of inflammation and fever, to lead to the most pernicious employment of general stimuli, to the neglect of blood-letting in practice. . . . And these errors are too often held in remembrance, . . . while the real merits of his theory are forgotten or undervalued.

"'The evil that men do lives after them,
The good is oft interred with their bones.'" [2]

[1] Op. cit., p. clx.

[2] Fletcher's Elements of General Pathology, edited by Dr. Drysdale and Dr. Russell, p. 47. 1842.



JENNER.

CHAPTER XIII.

Fatal and Disfiguring Effects of Small-pox—Jenner's Early Training—His Personal Appearance—His Life in Gloucestershire—John Hunter on Hedgehogs and Love-sickness—His Marriage—His Patience—Difficulties of the Investigation—The Profession discourages him—He visits London—Declines London and £10,000 a-year—Danger of Vaccination from False Friends—Discussed in Parliament—Grants voted to Jenner—Opposition he encountered—Dr. Moseley on its Horrors—Moseley-charity suggests the proper Reward—Dr. Rowley backs Dr. Moseley—Vaccination spreads to Greece—French Claims considered—Jenner's Death and Monument.

THE name of Jenner will for ever be honoured as the discoverer of the means of preventing the most terrible pestilence of modern times. It will seem no exaggeration to speak thus of the small-pox, if one considers the long period it has prevailed, its almost universal diffusion over the globe, the number of the victims it has destroyed, and the permanent injury it has inflicted on those whose lives it has spared. It is believed that small-pox has

existed from the remotest ages in China and Hindustan.[1] It is certain that it appeared in Arabia in the seventh century along with Mahomet—whether transported thither by human intercourse, or moving in obedience to that mysterious law of progress which regulates the advance of epidemics from east to west, is unknown; and that when the Saracens invaded Europe, they brought with them an ally more destructive than themselves, and one that remained in occupation long after their expulsion. The dread of the small-pox was so great in the East, that the person affected was abandoned by his friends, relatives, and neighbours. On one occasion, the capital of Thibet was deserted for three years by all its inhabitants, except the victims of this disease, who, of course, were left to perish. Similar scenes took place in Ceylon and in Russia. In one year *two million persons* are reported to have died of small-pox. In Iceland, in 1707, it destroyed sixteen thousand persons—one-fourth of the whole population.[2] It has been calculated that there perished of this disease annually in Europe alone 210,000. So much for its diffusion and deadliness: it is more difficult to form an accurate estimate of the evils, when not fatal to life, which it left behind it. Some conception of its effects may be formed from the fact, that of the inmates of a blind asylum, *three-fourths* had lost their sight in consequence of small-pox.[3] And to this we must add the amount of disfiguration it occasioned; which was so great that Addison gives as the example of the greatest shock he can conceive, the effect produced upon a pretty woman on first viewing her face in a mirror immediately after she has recovered from an attack of small-pox. Surely the man who succeeded in subduing this terrible dragon, had he been a Greek, and lived in the age of mythology, would have

[1] Moore's History of the Small-pox. by Sir George Mackenzie. 1810.
[2] Travels in the Island of Iceland, [3] Moore's Reply, pp. 64-66.

come down to us as one of the demi-gods. But times are changed, and the life of this Englishman was sufficiently prosaic.

Edward Jenner was the third son of a clergyman of the Church of England. He was born in May, 1749, at Berkeley, in Gloucestershire. It became a most important fact in the world's history that Jenner was born and reared in the vale of Gloucester, a district celebrated for cows. Had he been born in any other than a dairy county, it is very unlikely he would have made his great discovery; for he was a man of observation and induction, not of erudition and speculative genius. Whether anyone else would have occupied his niche in the Temple of Fame, is a question we need not entertain; certain it is, that the facts from which he started had been long known, and were as ready for others as for him. His discovery was one of those open secrets of nature which, when once announced, seem so obvious and simple, that the affronted world exclaims, "*We* knew it all before." At a very early age he showed a strong taste for natural history, collecting nests of the dormouse, fossils from the great oolitic formation on which he lived, and other objects of this kind. After the usual school-education of a boy in his circumstances, he was sent to the neighbourhood of Bristol, to be instructed in the practice of his future profession under the care of a Mr. Ludlow. Let us here remark, that two of the most celebrated British physicians, Cullen and Jenner, were both very early initiated in the practical part of their art; and without wishing to generalize from what some may consider cases of exceptional genius, let us suggest the question, whether the essential—that is, the practical—faculty would not be in danger of being sacrificed to the very important, but not quite essential element of medical education, if the student were obliged to go through a long general curriculum before being admitted to his professional studies? Of

course, if it were possible to combine literature and science with technical instruction, it might be a great advantage.

While engaged in assisting Mr. Ludlow, an incident occurred which gave rise to Jenner's first anticipation of his great discovery. A young countrywoman came for advice, and mentioned that she could *not take small-pox, because she had had cow-pox.* This was the local tradition, known as a tradition by many, and treated by the learned as a popular delusion. But the words sunk deep into the mind of young Jenner; and when he went to London, in 1770, one of the subjects on which he conversed with his teacher, John Hunter, was the possibility of substituting vaccination for inoculation. "Dont think, but try," was the characteristic reply of the great British physiologist and surgeon, who, when a youth, had been assisted by Cullen, and now in his turn befriended Jenner. In speaking of Hunter, Jenner always called him "the dear man," and preserved all his letters with venerating care.

It seems to have been in the year 1773, or 1772 (for there is rather a confusion of dates in the life of Jenner), that he returned to his native county, and settled as a country surgeon in the small town of Berkeley. The following description of his personal appearance at that time, is given by his friend Edward Gardner:—"His height was rather under the middle size; his person was robust, but active, and well-formed; in his dress he was particularly neat; and everything about him showed the man intent and serious, and well-prepared to meet the duties of his calling. When I first saw him it was at Frampton Green. I was somewhat his junior in years, and had heard so much of Mr. Jenner, of Berkeley, that I had no small curiosity to see him. He was dressed in a blue coat and yellow buttons, buckskins, well-polished jockey-boots, with handsome silver spurs, and he carried a smart whip with a silver handle. His hair, after the fashion of the times, was done

up in a club, and he wore a broad-brimmed hat. We were introduced on that occasion, and I was delighted and astonished. I was prepared to find an accomplished man, and all the country spoke of him as a skilful surgeon, and a great naturalist; but I did not expect to find him so much at home on other matters. I, who had been spending my time in cultivating my judgment by abstract study, and smit from my boyhood with the love of song, had sought my amusement in the rosy fields of imagination, was not less surprised than gratified to find that the ancient affinity between Apollo and Æsculapius was so well-maintained in his person."

Gardner, till his death, which occurred while he was yet a youth, remained Jenner's most intimate friend, and the one to whom he confided his first anticipations of future fame. It was in the year 1780, when riding on the road between Bristol and Gloucester, that Jenner, after going over the whole facts of the origin of cow-pox in a disease of the horse, and of its communication to the milkers, to whom it gave security against small-pox, with deep and anxious emotion mentioned his hope of being able to propagate that variety from one human being to another, till he had disseminated the practice all over the globe, to the total extinction of the small-pox. "Gardner," he said, "I have entrusted a most important matter to you, which I firmly believe will prove of essential benefit to the human race. I know you, and should not wish what I have stated to be brought into conversation; for should anything untoward turn up in my experiments, I should be made, particularly by my medical brethren, the subject of ridicule, *for I am a mark they all shoot at.*"

We can hardly imagine any motive but envy, that could make Jenner a professional target; for a more purely inoffensive man did not exist,—nay, more, a man more overflowing with all kindly human sympathies. The follow-

ing description suggests a pastoral poem of the highest character:—

"In following the calls of his profession, through the 'alleys brown' and shady lanes of the beautiful vale where he resided, he kept a constant eye to the varying scenes which were passing before him: he had the keenest relish for picturesque beauty, and in his excursions alike gratified his taste in this respect, and increased his knowledge by pursuing the details of natural history. He thus contrived to combine the labours of his profession with the truest pleasure and instruction. On such occasions, he encouraged his friends to join him in his rides. I have known, and do now know, those who have been favoured with such happiness, who have accompanied him for twenty or thirty miles in a morning, and listened with the highest interest at one time to the overflowing of his mind, while with a vivid and imaginative fervour he shadowed forth his own feelings, or with a painter's eye and poet's tongue delineated the beauties around him. He would then descend to less-impassioned themes, and explain, with the most captivating simplicity and ingenuity, the œconomy of vegetables and animals, or the various productions that came within observation."[1]

If Jenner had not *happened* to make his great discovery, which he would not have done had his lot been cast in a less-pastoral district, his name would now, almost certainly, be entirely unknown. Surely there is at this time many an "inglorious" Jenner going his daily round of usefulness, and as he passes from the mansion of the nobleman to the cottage of the labourer, leaving behind him a lesson of pure humanity, simple and elevating—a bond of true Christian union between classes which the harsh maxims of political economy, cheap selling, cheap production, and dear buying—organized selfishness—tend

[1] Baron's Life of Jenner, pp. 13, 14.

in our day more and more to disunite. Surely we do not, in our estimate of modern civilization, give sufficient value to the medical element—the most God-like function that can be exercised by a human being—discharged in its ideal perfection only by the SON OF MAN.[1]

We cannot wonder that such a youth as Jenner, full of energy and sentiment, should, soon after he settled and found himself on the road to independence, have submitted to the common law of humanity in such conditions, and fallen in love with all the ardour of his temperament. He communicated the fact to his friend, Mr. Hunter, and afterwards had to convey to that man of sense the mortifying intelligence that his suit had not prospered, and that henceforth he was doomed to drag out his life in loneliness and misery. The letter John Hunter wrote in reply is so characteristic, that it deserves quotation. It runs as follows:—

"DEAR JENNER,—I own I was at a loss to account for your silence, and I was sorry for the cause. I can easily conceive how you must feel, for you have two passions to contend with, viz., that of being disappointed in love, and that of being defeated; but both will wear out, perhaps the first soonest. I own I was glad when I heard you were to be married to a woman of fortune; but let her go, *never mind her*. I shall employ you with hedgehogs, for I do not know how far I may trust mine. I want you to get a hedgehog in the beginning of winter, and weigh him, put him in your garden, and let him have some leaves, hay, or straw, to cover himself with, which he will do, then weigh him in spring, and see what he has lost. Secondly, I want you to kill one at the beginning of winter, to see how fat he is; and another in spring, to see what he has lost of his fat. Thirdly, when the weather is very cold, and about the month of January, I could wish you would make a hole in one of their bellies, and put the thermometer down into the pelvis, and see the height of the mercury; then turn it upwards towards the diaphragm, and observe the heat there. So much at present for hedgehogs.—London, 1778."[2]

This was John Hunter's receipt for treating a case of love-sickness: it might be quoted as the hedgehog-cure.

[1] "The profession of the Human Healer being radically a sacred one, and connected with the highest priesthoods, or, rather, being in itself the outcome and acme of all priesthoods and divinest conquests here below."—T. Carlyle.

[2] Baron's Life, p. 52.

In the case of Jenner, it was perfectly successful; for, some years later, he writes to another correspondent,—"My place of residence, though unfinished, is extremely comfortable; and I can assure you the last year of my life, dating it from March, has been the happiest beyond all comparison I ever experienced; and I will take it upon me to aver (nay, I would swear it), that if you could be lucky enough to connect yourself with a woman of such a disposition as kind fortune has at last given me, you will find a vast addition to your stock of happiness." He had followed Hunter's advice—let his first object of attachment go, and occupied himself with dissecting hedgehogs, and similar pursuits. The hedgehog-cure is worth the serious attention of all who are in the position in which Jenner found himself in the year 1778; and may the issue be as fortunate! His wife was a Miss Kingcote, a lady of good family, with whom he led a life of uninterrupted domestic happiness.

All the time that he was pursuing his studies in natural history, many of which were very important, the grand object of his life was never out of his mind. "While the vaccine discovery was progressing, the joy I felt at the prospect before me of being the instrument destined to take away from the world one of its greatest calamities, blended with the fond hope of enjoying independence and domestic peace and happiness, was often so excessive, that in pursuing my favourite subject among the meadows, I have sometimes found myself in a kind of reverie. It is pleasant to me to recollect, that these reflections always ended in devout acknowledgement to that Being from whom this and all other mercies flow." It was not till the year 1798, that he had prepared his narrative of the process of vaccination. It is short, and a lesson to those who hasten to divulge their most trifling observations, lest they should be robbed of their claims to originality.

Jenner first communicated his belief in vaccination to Hunter in the year 1770; and, although Hunter mentioned it annually to his class, yet Jenner published nothing about it till nearly thirty years afterwards, having spent the whole of that time in rigidly examining the facts of the case, and making the inferences which were required, in order to substantiate the discovery and render it immediately available. Some one defines genius as the capacity of patient labour. Jenner's career might be quoted in favour of this definition. The result of all his labours of thirty years, is thus quietly told: [1]—"My inquiry into the nature of the cow-pox commenced upwards of twenty-five years ago. My attention to this singular disease was first excited by observing, that among those whom in the country I was called upon to inoculate, many resisted every effort to give them the small-pox. These patients I found had undergone a disease they call the cow-pox, contracted by milking cows affected with a peculiar eruption on their teats. On inquiry, it appeared that it had been known among the dairies from time immemorial, and that a vague opinion prevailed that it was a preventive of the small-pox. This opinion I found was comparatively new among them; for all the older farmers declared they had no such idea in their younger days—a circumstance that seemed easily to be accounted for, from my knowing that the common people were very rarely inoculated for the small-pox, till that practice was rendered general by the improved method introduced by the Suttons; so that the working people in the dairies were seldom put to the test of the securing powers of the cow-pox.

"In the course of the investigation of this subject, which, like all others of a complex and intricate nature, presented many difficulties, I found that some of those who

[1] The Origin of the Vaccine Inoculation. By Edward Jenner, M.D., F.R.S., &c. London, 1801.

seemed to have undergone the cow-pox, nevertheless, on inoculation with the small-pox, felt its influence just as if no disease had been communicated to them by the cow. This occurrence led me to enquire among the medical practitioners in the county around me, who all agreed in this sentiment, that the cow-pox was not to be relied upon as a certain preventive of the small-pox. This for a while damped, but did not extinguish my ardour; for, as I proceeded I had the satisfaction to learn that the cow was subject to some varieties of spontaneous eruptions upon her teats; that they were all capable of communicating sores to the hands of the milkers; and that whatever sore was derived from the animal was called in the dairy cow-pox. Thus I surmounted a great obstacle, and in consequence was led to form a distinction between these diseases, one of which only I have denominated the *true*, the others the *spurious* cow-pox—as they possess no specific power over the constitution. This impediment to my progress was not long removed, before another of far greater magnitude in its appearance started up. There were not wanting instances to prove that when the true cow-pox broke out among the cattle at a dairy, a person who had milked an infected animal, and had thereby apparently gone through the disease in common with others, was liable to receive small-pox afterwards. This, like the former obstacle, gave a painful check to my fond and aspiring hopes; but reflecting that the operations of nature are generally uniform, and that it was not probable the human constitution (having undergone the cow-pox) should in some instances be perfectly shielded from the small-pox, and in many others remain unprotected, I resumed my labours with redoubled ardour. The result was favourable; for I now discovered that the virus of the cow-pox was liable to undergo progressive changes from the same causes precisely as that of the small-pox; and that when it was applied to the human

skin in its degenerated state, it would produce the ulcerative effects in as great a degree as when it was not decomposed, and sometimes far greater; but having lost its *specific properties*, it was incapable of producing that change upon the human frame which is requisite to render it unsusceptible of the *variolous contagion:* so that it became evident, a person might milk a cow one day, and having caught the disease, be for ever secure; while another person, milking the same cow the next day, might feel the influence of the virus in such a way as to produce a sore or sores, and in consequence of this, might experience an indisposition to a considerable extent; yet, as has been observed, the specific quality being lost, the constitution would receive no peculiar impression.

"Here the close analogy between the virus of small-pox and of cow-pox becomes remarkably conspicuous; since the former, when taken from a recent pustule, and immediately used, gives the perfect small-pox to a person on whom it is inoculated; but when taken in a far-advanced stage of the disease, or when (although taken early) previously to its insertion, it be exposed to such agents as, according to the established laws of nature, cause its decomposition, it can no longer be relied on as effectual. This observation will fully explain the source of those errors which have been committed by many inoculators of the cow-pox. Conceiving the whole process to be so extremely simple as not to admit of a mistake, they have been heedless about the state of the vaccine virus; and finding it limpid, as part of it will be even in an advanced stage of the pustule, when the greater portion has been converted into a scab, they have felt an improper confidence, and sometimes mistaken a spurious pustule, which the vaccine fluid in this state is capable of exciting, for that which possesses the perfect character.

"During the investigation of the casual cow-pox, I was

struck with the idea, that it might be practicable to propagate the disease by inoculation, after the manner of the small-pox, first from the cow and finally from one human being to another. I anxiously waited some time for an opportunity of putting this theory to the test. At length the period arrived. The first experiment was made upon a lad of the name of Phipps, in whose arm a little vaccine virus was inserted, taken from the hand of a young woman who had been accidentally affected by a cow. Notwithstanding the resemblance which the pustule thus excited on the boy's arm bore to variolous inoculation, yet as the indisposition attending it was barely perceptible, I could scarcely persuade myself the patient was secure from the small-pox. However, on his being inoculated some months afterwards, it proved that he was secure. This case inspired me with confidence; and as soon as I could again furnish myself with virus from the cow, I made arrangements for a series of inoculations. A number of children were inoculated in succession one from the other, and after several months had elapsed they were exposed to the infection of small-pox—some by inoculation, others by variolous effluvia, and some in both ways; but they all resisted it. The result of these trials gradually led me into a wider field of experiment, which I went over, not only with great attention, but with painful solicitude. This became universally known through a treatise published in June, 1798. The result of my farther experience was also brought forward in subsequent publications in the two succeeding years, 1799, and 1800. The distrust and scepticism which naturally arose in the minds of medical men on my first announcing so unexpected a discovery has now nearly disappeared. Many hundreds of them, from actual experience, have given their attestations that the inoculative cow-pox proves a perfect security against the small-pox: and I shall probably be within compass if I

say, thousands are ready to follow their example; for the scope that this inoculation has now taken is immense. A hundred thousand persons, upon the smallest computation, have been inoculated in these realms. The numbers who have partaken of its benefits throughout Europe and other parts of the globe are incalculable: and it now becomes too manifest to admit of controversy, that the annihilation of the small-pox, the most dreadful scourge of the human species, must be the final result of this practice."

This memoir was published in 1801, and in it Jenner omits, with characteristic magnanimity, all allusion to the discouragements he had experienced in his endeavours to obtain the recognition of his discovery. Before his first publication, "he left Berkeley, with Mrs. Jenner and his daughter, on the 24th of April, 1798. They slept the first night at Cirencester; next day they proceeded to Benson, and the following afternoon they arrived in Pall Mall, where they dined with Mrs. Jenner's relative, Mr. Ladbroke. Dr. Jenner remained in London till the 14th of July; on that day he quitted it, and arrived in Cheltenham the same evening. I am thus particular," says his biographer, "in specifying the dates, which I have ascertained by a reference to his journal, because they are connected with a remarkable fact in the history of vaccination. It will scarcely be believed, that with all his efforts and those of his friends, he was unable, during the period of nearly three months that he continued in the metropolis, to procure one person on whom he could exhibit the vaccine disease. I remember, he often stated that his patience had been exhausted on that occasion, and that he had actually quitted the capital without having accomplished the object of his journey; but it was not till lately I discovered that he had so much cause for feeling disappointed." Jenner's patience had been tried for twenty-five years, while he was making his investigations among the meadows

of his native vale; but three months passed in London during the season wore it out. Nor can we wonder, when we consider the bitterness of his disappointment. He came to London not an unknown adventurer, but already authenticated as a man of accurate scientific observation. His papers had been read and applauded by the Royal Society, of which body he became a member. The discovery he wished to exhibit was in strict accordance with physiology and pathology, and one which John Hunter, the founder of the greatest anatomical museum in the kingdom, had speculatively recognized: so much for its antecedent probability. There was nothing very strange or paradoxical about it to repel inquiring minds—nothing in the discovery, and nothing in the discoverer. Nor was it one which even the most ignorant and indifferent could affect to treat with unconcern, if true. A discovery which professed to eradicate the small-pox could not be slighted. How then did it happen, that in London, among all the physicians and surgeons, none was found of zeal and enterprise sufficient to put Jenner's method to the test, and acquire for himself, if not the renown of the discoverer, at least the distinction of having verified a most important and till then disputed truth, or exploded a dangerous delusion? Doubtless the reason was, that the men to whom he applied were all too busy with their hospitals and their private patients to give up their valuable time to this ingenious Country Doctor, who, doubtless they whispered, was becoming a decided bore; and so Jenner returned, his object unattained; and having carefully prepared his treatise, he published it that very year.

In the mean time, the celebrated surgeon, Mr. Cline, had succeeded in his repetition of Jenner's experiments; and with the instinct of a successful metropolitan practitioner, wrote at once to the author of the discovery to come to London, take a house in Grosvenor Square, and make

£10,000 a-year. This was the practical view of the value of the discovery! Jenner's reply is interesting:—"It is very clear, from your representation, that there is now an opening in town for any physician whose reputation stood fair in the public eye; but here, my dear friend, is the rub. Shall I, who, even in the morning of my days, sought the lowly and sequestered paths of life, the valley, and not the mountain; shall I, now my evening is fast approaching, hold myself up as an object for fortune and fame? Admitting it as a certainty that I obtain both, what stock should I add to my little store of happiness? My fortune, with what flows from my profession, is sufficient to gratify my wishes: indeed, so limited is my ambition, and that of my nearest connections, that were I precluded from future practice, I should be enabled to obtain all I want. And as for fame, what is it? *A gilded butt, for ever pierced by the arrows of malignancy.* The name of John Hunter stamps this observation with the signature of truth." The letter goes on to say, that although himself indifferent to the allurements of wealth and fame, he is keenly sensitive in regard to the progress of his discovery, and that he fears that it will fall into the hands of persons incapable of carrying on his method with the requisite care, and that for this he will be held answerable. We shall see that his fears were but too well grounded; but not, alas! his hopes of escaping obloquy and abuse by courting seclusion, and refusing the glittering prize of his merit.

The first serious risk encountered by vaccination was from the indiscretion of two of its earliest advocates, Dr. Pearson, and his colleague, Dr. Woodville. They were the physicians to the Small-pox Hospital, and there made experiments with the vaccine matter in so careless a manner, that they mixed the small-pox and the vaccine disease, and produced a sort of hybrid which was capable of producing true small-pox; and when they believed they

were disseminating innocuous vaccine, they were really spreading its deadly sister-disease. The consequence was, that an alarm was raised that the pretended discovery was good for nothing; and it required all Jenner's penetration of mind and vigour of character to detect and arrest this dreadful calamity. He went to London, expostulated with the great men there, and exposed their errors. By so doing, he succeeded in rescuing his discovery from destruction, and in securing for himself the life-long hatred of those whom he had been obliged to correct.

Having thus escaped shipwreck at the outset of its career, the triumph of vaccination was rapid and complete. Many persons of high rank and influence in society, took up the subject as one of national importance; and, in the year 1801, a proposal was mooted for bringing it before the notice of Parliament. Among the correspondence published by Dr. Baron, there is a curious letter from Lord Sherbourne, to this effect:—

Lord Sherbourne to Dr. Jenner.

My Dear Doctor,—Many thanks for your circumstantial letter. I am sorry to say I do not know Mr. Addington, even by sight. They tell me the king is recovering very fast, and we may expect a Drawing-room soon, which I will attend; and I will then speak to Mr. Pitt. If Patriot Grattan gets £50,000 for his patriotism, the true patriot, Jenner, deserves much more—I am sure not less; and less would be perfectly shabby to think of. I perfectly recollect Grattan's business—it was settled amongst his friends to propose £100,000 for him; determining to ask enough, and fearing that sum should not be granted, one of his most particular friends was to get up afterwards and propose £50,000, which was immediately granted, and he took £47,000 for prompt payment.

I am, my dear Doctor,

Yours very truly,

Sherbourne.

So it was arranged that the matter should be brought before Parliament by a petition from Jenner, which was accordingly done on the 17th of March, 1802. The Prime Minister of the day, Mr. Addington, informed the House that he had taken His Majesty's pleasure on the con-

tents of the petition, and that His Majesty strongly recommended it to the consideration of Parliament. It was referred to a committee, of which Admiral Berkeley was chairman. The report of the committee was brought up on the 2nd of June. The chairman stated, that it was usual in such cases to examine only the petitioners' witnesses, but that, in this instance, they had sifted every case that told against Dr. Jenner, and the result was, that his discovery was the greatest ever made for the preservation of the human species. The Chancellor of the Exchequer spoke of vaccination as "the greatest, or one of the most important, discoveries to human society, that has been made since the creation of man." Mr. Courtenay said it appeared in evidence that "40,000 men were annually preserved to the State by Dr. Jenner's discovery; by this £200,000 were annually brought in to the Exchequer." It appeared, moreover, that Dr. Jenner had *actually expended* £6000 in prosecuting his discoveries; and that, by the evidence of the first medical practitioners in the kingdom, he might easily have made £10,000 a-year had he kept it a secret. An honourable member suggested, that had he done so, there would have been no need of coming before Parliament at all. That was evidently the right view for Jenner to have taken: *he should have sold his discovery in the dearest market.*

Of the fact of vaccination being one of the greatest discoveries, and perhaps the most directly beneficial, ever made, there was no question; nor was there a doubt expressed as to Jenner's loss from his liberality; so that all the House had to do, was to consider how they were to reward the man "whom the king delighted to honour." The House of Commons, as the nation's treasurers, had power to give only a money reward; and the question was, what sum would adequately represent the gratitude of the richest nation in the world to its greatest benefactor. As Lord

Sherbourne puts it, if Grattan had received £50,000 from poor Ireland, "as a testimony of the national gratitude for great national services," which consisted in persuading an Irish Parliament, "that the King's Most Excellent Majesty, and the Lords and Commons of Ireland, are the only Powers competent to make laws to bind Ireland," what sum of money should be voted to Jenner for preserving the lives of 40,000 Englishmen every year? Here was a sum given to the House of Commons to be worked by the rule of three. The answer they gave was £10,000, from which is to be deducted £6000 of expenditure, leaving to the fortunate author the handsome fee from the British nation of £4000, for an annual saving of 40,000 lives. The Chancellor of the Exchequer was evidently somewhat ashamed to offer this shabby fee, but, as a makeweight, added, that the discussion "had given a reward to Dr. Jenner that would last for ever." The honour of attending the British nation was to be a deduction from the amount of acknowledgment. It is fair to add that Grey, Wilberforce, and others, wished the sum to be doubled, but their motion was lost by a majority of three on the other side. The wise economists carried their point, and showed how much more profitable it was to be a political agitator than a national benefactor.

It is true that a grant of double the amount was voted on a subsequent occasion; but it is a matter of surprise that no title of honour should have been conferred upon Jenner. There can be no doubt that had he, instead of only *saving* forty thousand British lives a year, succeeded, in the capacity of general or admiral, in *destroying* an equal number of the king's enemies, he would have been raised to the peerage, with an annual income at least as great as the capital sum he received from the State. "How is it," his biographer asks, "that merit such as his is so inadequately rewarded? Why this disparity between military and civil

heroes?" Several causes tend to produce this result. One of them is the remote traditional sentiment derived from the period of the Norman Conquest, that war and the chase are the two occupations proper for gentlemen, and that labour is for serfs. This feeling, as now expressed, no longer exists; but it has left its trail behind, which sensibly, though unconsciously, affects British thought and action. Another and deeper cause may be thus expressed:—As the strongest instinct in the individual is self-preservation, so a corresponding sense of national preservation is the most essential sentiment for a nation, as such, to cherish. Parliament and royalty are the legitimate organs for the expression of this national instinct; and it devolves upon them to be the exponents, not of the rights of humanity at large, but of the rights and privileges of the nation in particular. Hence, those who add to the power, the wealth, or the glory of one nation, to the exclusion or detriment of other nations, are the proper objects of national reward. When we say—the proper objects of national reward, we mean upon the ground of the present idea of a nation, as a unit always in the attitude of self-defence, always prepared to strike to avoid the risk of being struck. The Jews afford the best type of this intense national sentiment; it may be a question whether it is not in some degree repugnant to Christianity. At all events, if the time that the poet sings of shall ever come, when

> "——— the common sense of most shall hold a fretful realm in awe,
> And the kindly earth shall slumber, lapt in universal law,
> When the war-drum throbs no longer, and the battle-flags are furl'd,
> In *the Parliament of man*, the federation of the world;"[1]

—if this time ever come, there is little doubt that such a Parliament will award very different promotion to men of the stamp of Jenner, from what was allotted him by the British House of Commons.

[1] Tennyson.

After the national recognition of vaccination, and even before it, the practice rapidly spread over England, being zealously adopted by many clergymen and ministers of religion, who did their utmost, by persuasion and example, to induce their flocks to exchange the dangerous plan of small-pox inoculation for the new and safe method of Jenner. Associations, too, of various kinds, both general and local, were formed for keeping up a supply of vaccine matter, and promoting the adoption of the practice by gratuitous vaccination, and by the publication of tracts and handbills, in which the superiority of the new to the old plan was set forth. These associations contained a large proportion of the non-medical element; and, indeed, it may be said of vaccination, that it owed the position it rapidly gained, much more to the efforts of public-spirited noblemen, clergy, and gentlemen, than to the members of the medical profession. While Jenner only met with cold support or covert opposition from such men as Drs. Pearson and Woodville, who, as physicians of the Small-pox Hospital, should have been most forward in appreciating the magnitude of his discovery; he and his system, and all who adopted it, were made, by some of his brethren, the butt of attacks which equal in extravagance anything we have yet met with in the History of Medicine.

Among the most energetic and unscrupulous of his opponents was Dr. Moseley, a man of some reputation, whose works upon tropical diseases and the effects of coffee had gone through, the one four, the other five editions. The Bishop of Dromore bears testimony to his merits, recording the fact that "the public and ourselves are under infinite obligations to him for his generous attempt to *dispel the prevailing delusion.*"

The title of Dr. Moseley's book[1] indicates the character

[1] A Treatise on the Lues Bovilla, or Cow-pox. By Benjamin Moseley, M. D. 2nd edit. London. 1805.

of its contents. It is called a treatise on *Lues Bovilla*, or cow-pox. The motto on the title-page is so inconsistent with the spirit of the work, as even to shock us by its profanity. Dr. Moseley prefaces his attack on Jenner and his followers with these sacred words :—"Father, forgive them, for they know not what they do." We shall let this enlightened, candid, and tolerant physician, this "generous" dispeller of a delusion, speak for himself. The preface of his second edition opens thus :—

"I thought then (1798) as I do now (1805), that experience is not necessary to know that cow-pox *cannot be* a preventive against small-pox ; for on the principles of pathology and analogy, from the laws of the animal economy, and the want of reciprocity between the two diseases, it is impossible to believe, without an entire subversion of our reason, that either should render the human frame unsusceptible of the other. The introduction of a bestial humour into the human frame besides, was not, in my mind, a matter of indifference in respect of future health ; and, from analogous circumstances, I was not without apprehension that in some habits the most dreadful consequences might ensue. Time and experience have at length proved that I was not influenced by erroneous conjectures. Blindness, lameness, and deformity, have been the result in innumerable instances ; *and its fatal venom has removed many an infant untimely from the world.* Many of the clergy who have taken so active a part in promulgating cow-pox doctrine, are to be excused, as their profession does not seem to furnish their abundant zeal with sufficient engagement. Therefore, if on this occasion they have gone a little out of their road, it is only hoped that they will return into it as fast as possible. It is likewise hoped, when any medical dispute shall arise hereafter in the world, that they will wait until it is over *before they join the wrong side of the question.*"

Surely this is a very Hibernian view of the duty of the clergy, to wait till they know for certain which is the wrong side, and then join *that!* So much for the preface: the book itself opens thus:—

"In the year 1798, the cow-pox inoculation mania seized the people of England *en masse*. . . . . Great events are foreboded. Some pretend that a restive, greasy-heeled horse will kick down all the gallipots of Galen; others, that the people of England are becoming like the inhabitants of a wilderness beyond the land of Cathay, seen in 1333 by the rare and inimitable Sir John Mandeville, who, he says, were 'wild, with horns on their heads, very hideous, and speak not, but rout as swine.'"[1] . . . . "Can any person say what may be the consequence of introducing a bestial humour into the human frame after a long lapse of years? Who knows, besides, what ideas may arise in the course of time from a *bestial fever* having excited its incongruous impression on the brain? Who knows but what the human character may undergo strange mutations from quadrupedan sympathy?"[2]

Who, indeed?

Not content with suggesting these dire consequences to the human body by the introduction of a bestial humour into it, Dr. Moseley charitably represents that the vaccinators are most unscrupulous and tyrannical in their proceedings; and gives, as an example, the following anecdote:—"A very respectable apothecary has informed me, that when he related to one of the cow-pox enthusiasts several instances of small-pox after cow-pox occurring in his own practice, the enthusiast told him he would be ruined if he did not hold his tongue. The cow-pox medical men, he said, were numerous and powerful; that they had their eye on any person who made observations against the cow-pox, and that they *were determined to do all the injury they could*

[1] Op. cit., p. 8. [2] Op. cit., p. 11.

to any man who should make known any case of mischief or failure. This is cow-pox philosophy!"[1]

Here is a picture of the Jennerian sect, drawn by an adversary:—the very fact of believing in Jenner corrupted their principles of religion and philosophy. This was written in the present century! It seems almost incredible that passion could so blind judgment; but so it was, so it is, and so, we fear, it will be till the final judgment, when the highest reason and the widest charity shall resume their reign over our race, restored to the Paradise they lost by man's first disobedience to the commands of Him in whose image he was created.

It is, perhaps, unfair to Dr. Moseley to deny him "melting charity;" for in the following passage he speaks, more in sorrow than in anger, of the perpetrators of this heinous offence against humanity.

"Although I am ready to admit that the cow-pox is not contagious, yet I know that the cow-pox mania is; and that the malady, whether arising from the empty ventricles of the brain, or from the thickness of the *os frontis*, makes the distempered—*to men not steeled against the infirmities of their fellow-creatures*—more objects of pity than of resentment; more proper than any infected from the Levant, to perform solitary quarantine on beds of straw with a regulated diet usual in such cases, than for the rational pursuits of society."[2] Returning to the charge of intolerance, Moseley observes, "Mr. Birch, an excellent surgeon, *in the safe school of orthodoxy, and an enemy to surgical quackery*, has met with as little civility."[3] So Jenner, and all who believed in vaccination, were quacks! The *safe* school of orthodoxy consisted of those who adhered to inoculation, although it was proved by statistics that, while vaccination was never attended by fatal consequences, the mortality in small-pox inoculation was one in three hun-

[1] Op. cit., p. 64. [2] Op. cit., p. 66. [3] Ibid.

dred. Notwithstanding this well-attested fact, orthodoxy, or the old system—not very old either—was safe; the new practice was medical heresy, quackery, and dangerous, because new; so dangerous that "Zacchia" is of opinion that whether a child should die or not from cow-pox inoculation, the person who deviates from a certain, secure, and well-known path into one that is uncertain, new, and doubtful, ought to do penance at the Old Bailey. Nay, he even insinuates that a small pilgrimage at the cart's tail would be very proper for those sinners whose crime has been increased by disorderly behaviour in defence of it.[1] According to this "generous opponent of a prevailing delusion," instead of a Parliamentary grant when alive, and a statue after his death, Jenner should have been whipped at the tail of a cart along the Strand.

To deter the public from accepting the dangerous gift offered by this wily Gloucester surgeon, Dr. Moseley gives a catalogue of the horrible consequences that attend vaccination. The first on his list is the "*Facies Bovilla*, or cow-pox face," of which he gives the following description: —"The face swollen, with the eyes distorted by strabismus; tumefactions or abscesses about the zygoma, orbits of the eye, and cheeks; the nose flattened, the front tauriform, and the countenance so changed that people have with much reason given this sort of face the appellation of the ox-face."[2]

The clergy and ministers of religion were among the chief offenders, and one of the foremost was Rowland Hill. So against Rowland Hill, Dr. Moseley hints the following: —"Instead of saints and societies for the suppression of vice arising from his immaculate doctrines, we shall see a set of *deistical* medical disciples issuing from Surrey Chapel, with lancets in their hands instead of religious books;

[1] De Erroribus Medicorum a lege punibilibus. Quest. vii. 2.

[2] Moseley, op. cit., p. 127.

and instead of going forth and preaching faith, they will be practising good works; and by attempting to explain a new way to heaven by pustules, eschars, and the time for taking matter, they may be entirely lost."

Another conspicuous opponent of Jenner was Dr. Rowley, member of the University of Oxford, of the Royal College of Physicians of London, &c., &c.[1] He thus describes, with what truthfulness we know, the introduction of vaccination to public notice:—"The cow-pox was forced into the world with the utmost vehemence, pomp, and ostentation. It was too hot to hold: therefore, the refined artists struck briskly while the iron was hot. Many men of the strongest passions, but not, perhaps, of the strongest reflection or soundest judgment, were first siezed with the cow-pox mania." . . . . "Whoever had not taken the oaths of supremacy and allegiance to vaccination, were ignominiously treated as traitors to the Royal Vaccinating State, as rebellious subjects to the Jennerian despotic power. Threats and tyranny cleared away placid investigation. Their empire was to be universal." . . . "Earth trembled and heaven profusely shed tears at the wretched, servile, unhappy state of mankind. Reason was trampled on. Chimera rode in a triumphal car, surrounded by Parasites. Justice seemed paralysed with astonishment." . . . "Time coolly attended the result." Time, the *edax rerum*, the devourer of shams. And by the side of the avenger of the small-pox unmoved, amid this crash of elements, stood the philosophic Dr. Rowley. "It seems the vaccinators have been flying in the face of heaven in introducing a *beastly* disease, and heaven holds them in derision—the Lord laugheth them to scorn."[2] Dr. Rowley was not alto-

[1] "Cow-pox Inoculation no security against Small-pox Infection; to which are added the modes of treating the beastly new diseases produced from Cow-pox, explained by two coloured copper-plate engravings."

[2] Op. cit., p. 75.

gether unsupported in his opposition to the prevailing mad and impious delusion; for "to the honour of our College of Physicians in London, they did not countenance vaccination; that learned corporate body had too much discernment and good sense to precipitately commit themselves to future animadversions through want of sagacity and foresight." "Thank heaven!" exclaimed a conservative, "we have a House of Lords." "Thank heaven!" let the chorus be, "we have a College of Physicians!" Where would medicine be at this moment but for the persistent resolution of this venerable corporation not to patronize any novelty, but to follow the excellent advice given by Dr. Moseley to the clergy: "When any medical dispute arises in the world, wait until it is over before you join the wrong side of the question"?

Despite the violence of such opponents as Dr. Moseley and Dr. Rowley—some of whom went so far as to denounce vaccination as the veritable Antichrist which was to come in the latter days—and although the College of Physicians shook its wise head and discountenanced an innovation recommended by a country physician, and taken up by ignorant people, who could not be expected to understand the subject, the advantages of vaccination were so palpable, and the evidence in its favour so irresistible, that it rapidly spread, first over England, and then to America, Germany, Italy, France, and the world at large.

It was made known to America by Dr. Waterhouse, in an article published on the 12th of March, 1799, in the *Columbian Sentinel*, entitled, "Something Curious in the Medical Line." Thus, with characteristic eagerness, did the Americans grasp a discovery but just made known in the land of its birth; and at a meeting of the American Academy of Arts and Sciences, presided over by John Adams, President of the United States, the subject was attentively considered, and no time was lost in endeavouring

to procure vaccine matter. Most unfortunately, the first obtained was from the vitiated source at the Small-pox Hospital in London. The consequence was, that the dangerous hybrid was introduced into America. It was some time before the mistake was discovered and the mischief corrected.

The merit of introducing vaccination into Germany and the European Continent, is due chiefly to Dr. De Carro, who, in a letter dated the 14th September, 1799, detailing his success, thus describes himself: "I am from Geneva; I have studied and taken my degree at Edinburgh, and practise medicine at Vienna, since six years."[1] It is not without its significance, that the blessings of vaccination should have been introduced into the capital of the great German Empire by a Swiss who had studied under Cullen in Scotland. It suggests the realization of the poet's idea—the true confederation of States which the advance of science and humanity may be destined ultimately to obtain. Nor is it without its peculiar interest to the history of medicine, that this cosmopolitan, De Carro, was the channel by which the greatest medical birth of Time was brought from distant Britain and laid in the cradle of medicine,—the land in which, more than two thousand years before, the first impulse had been given to living medical thought, which now returned to its place of birth, completing the lesser European circulation, and was about to extend over the surface of the globe.

In the year 1803, De Carro writes to Jenner:—"Monsieur La Font, a French physician, established at Salonica, in Macedonia, has been one of the most active vaccinators I know on the Continent; his last letter, of the 3rd of June, mentions that he has, since the last autumn, vaccinated 1130 persons. He first heard of your discovery on the occasion of Lord Elgin travelling in Greece with Dr.

[1] Baron's Life of Jenner, p. 330.

Scott ; during which journey his Lordship and the Doctor took a particular care of propagating vaccination. The English Consul at Salonica went to Athens to meet Lord Elgin, where he saw a great number of young Athenians with vaccine pustules."[1] A statue of Jenner on the acropolis would be a beautiful historical pendant to the statue of Hippocrates at Oxford.

Jenner indulged in the delightful imagination that vaccination would eradicate small-pox ; that this dragon having got its death wound, would coil itself up in its lair and die, and be unknown hereafter in the world's history. Alas for the contrast between the ideal and the possible, in the execution of a project that involves human motives as the largest element in its practicability ! Jenner spoke truth when he said vaccination *could* eradicate small-pox. His statement is justified by the following facts :—" In Anspach, in Bavaria, in the years 1797, 98, 99, five hundred died yearly of small-pox, and in the year 1800 no less than 1009 ; whereas from 1809 to 1818—a period of nine years, there was not a single death from that disease ; although it prevailed epidemically in the neighbourhood. In Copenhagen, in twelve years before the introduction of vaccination, 5500 persons died of small-pox ; from the year 1802 to the year 1818, a period of sixteen years after vaccination had been peremptorily insisted upon, only 158 persons died of small-pox over the whole of Denmark. Lezay Manerzia, prefect of the Rhine and Mozel department, published in his report for the year 1810, that in his district not a single case of small-pox had occurred since vaccination had become general ; and, in consequence, the population had increased by the number of 9911. In Rouen, the mortality had decreased 500 annually from the effects of vaccination. In Glasgow, 15,500 persons had been vaccinated, and during the ten years previous to the

[1] Op. cit., p. 431.

date of the report, no individual of that number had taken the small-pox."[1]

If such facts are admitted—and even by those who are most despondent of the ultimate success of vaccination they are not impugned—how does it happen that small-pox still rages? The answer to this is given by Dr. G. Gregory, of the London Small-pox Hospital, and we refer it to the consideration of political œconomists, whose business it is to reconcile the greatest amount of human liberty with human happiness and progress. "Vaccination can be maintained only by having small-pox constantly before our eyes;"[2]—that is, in this free country, where it is the undisputed privilege of every Englishman to go to destruction and take his family with him, in any way he pleases. It is true that a recent Act of Parliament has sought to deprive him of this birthright; and for so doing, and doing it very ineffectually, it has been assailed by some of the friends of *our glorious constitution.*

It would be a pleasant task to recount the triumphant progress of vaccination all over the globe, but for this we have no space. We cannot, however, leave the subject without adverting to the fact, that in the "Dictionnaire des Sciences Médicales," an attempt is made to rob Jenner of the merit of his discovery. M. Husson, the very able author of this article, begins by observing, "It appears that it was in France, in the year 1781, that the first idea of the possibility of the transference of an eruption from the cow to man arose; that this idea, expressed by a Frenchman in the presence of an English physician, was communicated to Edward Jenner," who worked it out

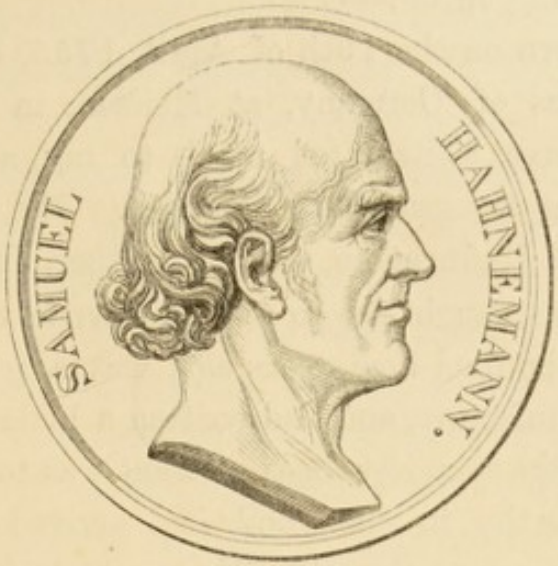
[1] The London and Edinburgh Monthly Journal of Medical Science, edited by J. R. Cormack, M.D., for the year 1842, pp. 522–25. I have taken slight liberties with the text of this quotation, which I consider myself at liberty to do, as I wrote the article at Dr. Cormack's request. It was *after* I had openly avowed my belief in Hahnemann, but *before* the decree of Ostracism had been issued against homœopathists.

[2] Cyclop. of Pract. Med. Art. Vaccination.

to such results as we have seen. The gifted Frenchman who suggested the idea, was the Protestant minister of Montpelier; the English physician a certain Dr. Pew, who was sojourning in the neighbourhood. The difficulties in the way of receiving this as the true *genesis* of vaccination, are numerous. The first is, that a year before the spark had been emitted, at which, on this hypothesis, Jenner kindled his torch, he (Jenner) had expressed his hopes to Gardner, in the memorable conversation referred to as having taken place on their ride along the Gloucester Road. The second is, that there is no evidence of any communication whatever having taken place between Dr. Pew and Jenner, and very strong probability that none ever did. And if it were freely spoken of in France in the year 1781, is it not the reverse of a compliment M. Husson pays to his clever countrymen, to let us infer that they had so little zeal for knowledge, so little interest in the mitigation of a plague, that not one of them took the trouble to act on this revelation, and to institute experiments to ascertain its truth, as was done in England? We believe M. Husson, in this article, is no less unjust to France than he is to Jenner.

Jenner died in 1823; he died, like Nelson, in battle with his country's foe, and in the arms of victory. It is meet that his statue should now for ever stand in the centre of the metropolis of the British Empire, and his name be associated with Trafalgar: it is well that England has learned to honour her heroes of peace as well as her heroes of war. "Pronounce meditatively the name of Jenner, and ask, What might we not hope, what need we deem unattainable, if all the time, the effort, the skill, which we waste in making ourselves miserable through vice or error, and vicious through misery, were embodied and marshalled to a systematic war against the existing evils of nature?"[1]

[1] Coleridge.



HAHNEMANN.[1]

CHAPTER XIV.

Hahnemann—His Birth—Early Education—Life at Leipzig—His Wanderings—Chemical Discoveries—Experiments with Cinchona—Medicines cure Diseases like those they produce—Arsenic—Ipecacuan—Sulphur—Tartar Emetic—Tea—First Trial of Homœopathy—Belladonna in Scarletina Fever—Compared with Vaccination—Action of Small Doses—Döppler's Theory—Jörg's Theory—Hahnemann's *Tripod*—Proving of Aconite—Testimony in favour of Aconite—The Organon—The word Homœopathic first used—Homœopathy defined—Opposed by the Druggists—Brunnow's Sketch of Hahnemann—His Domestic Life—Richter's Description of Hahnemann—His *Materia Medica*—Aconite proved by Dr. Gerstel—Camphor in Cholera—Dr. Quin at Tischnowitz—Dr. Fleischmann at Vienna—Hahnemann's Life at Coethen—Letter to Stapf—Insists on Purity of Doctrine—Death of his first Wife—Second Marriage—Life in Paris—Death—Diffusion of Homœopathy—In Germany—Discussed in Baden Parliament—In Austria—In Naples—Brought to England by Dr. Quin—Correspondence between College of Physicians and Dr. Quin—Opposition it encountered — Sir W. Hamilton's Opinion — Epilogue — Rasori — Broussais—Expectant Medicine—Baptism of Apollo—Water-Cure—Mesmerism—Clairvoyance — Movement-Cure—Alison on Specifics—Medical Education—Abercrombie's Opinion—A Liberal Education defined.

SAMUEL HAHNEMANN seems to have anticipated the interest which would be felt in the events of his life, before he had achieved such a reputation as to warrant his expecting his

[1] From a Medallion by David.

name to be placed on the roll of history; for among the papers he left behind him, was one, dated August, 1791, to the following effect:—

"I was born on the 10th of April, 1755, in one of the fairest regions of Germany, at Meissen, in Cur-Saxony. This may have contributed much to my admiration of nature during my growth to manhood. My father, Christian Gottfried Hahnemann, and my mother, Johanna Christina, *née* Spiess, taught me to read and write while at play. My father, who died four years ago, was a painter in the porcelain manufacture, and had written a little work on the art. He had the soundest ideas on what was to be reckoned good and worthy in man, and had arrived at them by his own independent thought. He sought to plant them in me, and impressed on me, more by actions than by words, the great lesson of life, 'to act and to be, not merely to seem.' When a good work was going forward, there, often unobserved, he was sure to be helping, hand and heart. Shall I not do likewise? In the finest distinctions between the noble and the base, he decided, by his actions, with a justness that did honour to the nicety of his sense of right and wrong. In this, too, he was my monitor. There was never the smallest contradiction between his conduct and the lofty sentiments he entertained of the origin, destiny, and dignity of man. From this I derived an internal guide.

"To speak of external circumstances, I passed several years in the *stadt schule*, and when I was about sixteen years old, began to attend the *Fürstenschule* of Meissen.[1] There was nothing unusual about my progress, unless it was that my much-respected rector, Magister Müller, who is still alive, loved me as if I had been his own

[1] In Saxony there are common schools (*stadt schule*) in all the parishes of the kingdom: in addition to these there are two Princely schools (*Fürsten schule*); one of these is that of Meissen, here spoken of. It was founded at the Reformation on what was the Afra Monastery.

son, and accorded me an amount of liberty in my studies, for which I am thankful; and that in acquiring German and the dead languages, I was always among the most diligent and conscientious. In my twelfth year, he selected me to instruct other pupils in the rudiments of Greek; and at his own house, among his private boarders, he used to make me translate passages out of old authors, and frequently took my translation in preference to his own. He permitted me—and I was the only one so favoured, on account of the delicacy of my health, which had suffered from over-study—to omit some of the regular tasks of the school, and to pass the hours they would have occupied in general reading. He permitted me to have access to him at all hours of the day; and, strange to say, notwithstanding the manifest preference my master showed me, yet I was a favourite with my fellow pupils." . . . "My father was altogether opposed to my studies; he wished me to pursue some calling more in accordance with his income, and frequently withdrew me from school. I was permitted, however, to remain for eight years at the request of my teachers, who permitted me to attend without requiring from me the usual fees paid by the scholars."

Hahnemann omits an anecdote of this period of his life that has been elsewhere preserved. His parents were very poor, and his father, objecting to the extravagant consumption of oil he burned when preparing his lessons, deprived him of the family lamp, except at stated hours. This set the boy's ingenuity to work, and he contrived to make a lamp of his own out of clay, and persuaded his mother to supply him with oil out of her stores; and so, with "stolen flames," he pursued his course.

"At the period of Easter, in the year 1775, my father allowed me to set out for Leipzig, and gave me twenty crowns—the last money I ever received from him. He

had, out of a hardly-earned pittance, other children to rear and educate—excuse enough for the best of fathers." In Leipzig he obtained his livelihood by translating books and giving lessons in French and German. During the two years he passed in Leipzig, besides diligently attending classes during the greater part of the day, and giving instructions to his pupils in the evening, he translated from English into German the following works:—"Steadman's Physiological Essays," "Nugent's Essay on Hydrophobia," "Falconer on the Waters of Bath," in two volumes, and "Ball's Modern Practice of Physic," in two volumes. The only time left him for this very considerable amount of work, was in the night; and he used to set up altogether every alternate night. Not only was he able to support himself in independence by his own exertions, but he actually contrived to lay by a sum of money sufficient to pay his journey to Vienna, and to have maintained him there, had he not been robbed of some of it. As it was, he studied with Dr. Quarin, of whom he speaks in the most enthusiastic terms. "To him," he says, "I owe my claims to be reckoned a physician. I had his love and his friendship; he singled me out to take with him to see his private patients. He loved and instructed me as if I had been his only pupil." Notwithstanding Dr. Quarin's kindness, having lost all that remained of his hard-earned capital, he was glad to accept an offer made to him by a Baron Bruckenthal to accompany him to Hermanstadt in the capacity of his medical attendant and librarian. Here he spent nearly two years, and seems to have been gratified with the way he passed his time, "acquiring some additional languages and collateral information, and arranging an unique collection of antique coins." From Hermanstadt he went to Erlangen, and took the degree of Doctor of Medicine on the 10th of August, 1779.

"The longing of a Swiss for his craggy Alps is not more irresistible than that of a Cur-Saxon for his fatherland." So he returned to his native country, and began his career as a medical practitioner in Hetstadt, a little town among the mountains of Mannsfeld. Hahnemann found the place untenable; for he felt cramped within and without; and so, in less than a year, he left it and settled in Dessau, a town of considerable size and importance. This suited him better, and he spent his spare time in working at chemistry. He was tempted to leave it within the year, however, by an offer which no German can resist —a Government appointment; and so he went to Gommern, near Magdeburg, as *District Physician*. Here, the foot of a physician had never yet trod; it was virgin-soil, and utterly unproductive beyond the Government salary; so he profited by his leisure, and fell in love with a certain Henrietta Bücklerin, whom he shortly afterwards married, and with whom he enjoyed for a short time the pleasures of a rural existence.

Ambition, however, was too strong a passion in his bosom, to allow him to rest satisfied with the obscure, still life of a village; like most men of his type, he pushed to the capital, and in the year 1784, at the age of thirty years, he found himself in Dresden. Here, he was taken by the hand by Dr. Wagner, a physician of considerable local influence, who got him appointed as his *locum tenens* at the hospital to which he was attached—"a wide field for the exercise of benevolence," as Hahnemann observes; but men don't live upon fields of benevolence—at least, doctors dont; and Hahnemann probably made more by his pen than by his prescriptions. He spent four years in Dresden, and wrote during that time eighteen treatises on various subjects, chiefly chemical: among these was the description of a new salt of mercury, called *Mercurius Solubilis*, which soon became a very popular preparation with

the medical profession in Germany, and was, and still is, known as *Mercurius Solubilis Hahnemanni*. Notwithstanding "the struggles for existence" he must have undergone, Hahnemann, writing in 1791, with his trials fresh in his mind, speaks of the years in Dresden as having passed rapidly and pleasantly in the quiet of his family circle, and in constant and honourable, if not in lucrative occupation. Among the friends he mentions as having contributed to this result, was the Director of the Royal Library, Adelung, who did what in him lay to make Hahnemann's residence in Dresden agreeable and instructive: for the magnet does not attract iron more certainly than minds imbued with a love of letters and knowledge attract one another; and wherever Hahnemann went he found friends. Still, all this would not do: he must live. And so from Dresden, the Court capital, he went to Leipzig, the literary metropolis of Germany in the year 1789, at the age of thirty-four, with a large experience, and a considerable reputation as an author and a chemist. In 1791, he was elected a member of the Leipzig Society of Economical Science, and of some kind of royal society, or academy, which went by the name of Kurfürstlich-Mainzische Academie der Wissenschaft.[1]

Hahnemann's diary ends at the point where his life in history begins. While pursuing the usual occupation of his leisure hours, translating English works into German, he performed that task upon *Cullen's Materia Medica*. The passage to which we referred in a previous chapter, where Cullen describes the action of Cinchona bark, excited Hahnemann's curiosity as to how this substance acted in curing ague. By way of experiment, he took four drams of it in successive doses, being at the time in the enjoyment of his usual health. In the course of a few days, he

[1] Christian Friederich Samuel Hahnemann: ein Biographisches Denkman. Aus den Papieren seiner familie, und den Briefen seiner Freunde. Von einer seiner Freunde und Verehrer. Leipzig, 1851.

experienced all the symptoms of ague.[1] As this happened in Leipzig where the disease is very common, the occurrence may have been merely a curious coincidence; such it has been pronounced to be, just as the belief in Gloucestershire, that the milkers who had had the cow-pox could not take the small-pox, was generally regarded as an example of popular credulity. As Jenner was not satisfied with this account of the tradition, neither was Hahnemann with such an explanation of his symptoms. They might be fortuitous, but they might also be the real effects of the Cinchona Bark. The latter conjecture was at least worth testing by farther experiment and observation.

There were two ways of doing so; the one to examine collections of reported cures, in order to ascertain whether among them any notice was to be found of instances in which the remedy employed was known to possess the property of exciting symptoms in the healthy similar to those which it cured in the sick; the other was, to ascertain, by experiment on himself or others, what were the effects of medicinal substances when taken by those in health, and then to administer them to those who were ill, and whose illness presented symptoms similar to those which these substances caused. Both roads were long and arduous; but Hahnemann was well prepared for the pursuit. He was master of all the languages in which the records of medicine are kept, and he had access to good libraries; and so by industry, of which he had no lack, he could investigate the traditional side of the question, and then wait for an opportunity of testing it experimentally.

The result of his historical researches is given in the "Introduction to the Organon of Medicine," and presents a curious illustration of erudition and ingenuity. He has collected, from an immense variety of sources, testimony in

[1] Hahnemann's Letter to Hufeland, published in 1808; republished in his Lesser Writings. Translated by Dr. Dudgeon, under the title of the "Lesser Writings of Samuel Hahnemann." London, 1851.

regard to this twofold action of upwards of thirty medicinal substances; one set of authorities proving the power of certain drugs to produce symptoms, similar to those reported by other authors to have been cured by the very same means. For example, in the "Cyclopædia of Practical Medicine," edited by Forbes, Tweedy, and Connolly, under the head "Fever," we meet with the following observations:—"Arsenical solution is the anti-periodic [or *ague-curing*] medicine on which, next to quinine, most reliance may be placed."[1] Assuming this as one fact, that arsenic cures ague, Hahnemann would ask, Is there evidence of arsenic causing any or all of the symptoms which go by the name of ague? If arsenic were given for nothing but ague, it might be difficult to obtain a reply to this question; but arsenic is given largely in medicine, especially for diseases of the skin. One of the recognized authorities upon the subject of ague is Dr. Boudin, who gives the following evidence about arsenic. After quoting a similar experience to that of M. Biott, he says:—"For my part I saw an intermittent quotidian fever supervene, which I was obliged to combat with quinine, in a patient to whom I had given for ichthyosis about five grains of arsenic in twelve days . . . This occurred when there was no ague in the place."[2] So that there is, on the one hand, abundant evidence of the efficacy of arsenic to cure ague; and, on the other, most respectable testimony to the effect that arsenic produces ague.

Let us pursue the quest, and ascertain what is believed by the best medical authorities about the action of ipecacuanha in asthma.

Dr. Copland says:—"Ipecacuanha is one of the best medicines that can be resorted to in asthma;"[3] and Dr. Pereira—no mean authority:—"In asthma, benefit

[1] Encyclop. of Pract. Med., Vol. II., p. 228.

[2] Traités des Fièvres Intermittentes, par J. C. M. Boudin. Paris, 1842.

[3] Dict. Pract. Med., p. 148.

is obtained from ipecacuanha, not only when given so as to occasion nausea, but also in small and repeated doses."[1] The most emphatic testimony, however, in favour of this medicine in asthma, is that of the accomplished Sir John Forbes, who writes :—"Akenside[2] was a great advocate for the employment of ipecacuanha . . . He says, the medicine proved equally beneficial, whether it produced vomiting or merely nausea." It is probable it would have proved still more successful had it produced neither. Ipecacuanha is certainly a remedy of considerable power in the asthmatic paroxysm ; but this seems altogether independent of its emetic properties. Practitioners of experience, without subscribing to the doctrine of *Homœopathy*, will certainly think more favourably of it (*i. e.* of ipecacuanha as a remedy in asthma), on account of its peculiar tendency to *induce* fits of asthma in the predisposed. Long before the time of Hahnemann, the main principle of his doctrine was recognized by practical men in the adage, "Nil prodest nisi leditur idem."[3] It would have been a great encouragement to Hahnemann, had he known that so intelligent and influential a physician as Sir John Forbes was thus to countenance his efforts. Of the power of ipecacuan to cure asthma, for a time at least, there can be no reasonable doubt, after such testimony in its favour. Ipecacuan relieves asthma in the same way that quinine and arsenic cure ague ; that is, directly or specifically, without exciting any other action in the system. It cures it by operating only on the affected organ, not on the rest of the body. Now this direct antidote to asthma, is well known to *cause* asthmatic attacks in many persons. "How singular," says Dr. Marshall Hall, "that ipecacuan, taken into the bronchia, should excite asthma."[4] "If I remain,"

[1] Dr. Pereira's Elements of Mat. Med., 2nd ed., Vol. II., p. 1429.

[2] Medical Transact., Vol. I., p. 93.

[3] Encyclop. of Practical Medicine, Article *Asthma*.

[4] Lectures in the *Lancet*, April, 1838.

writes Mr. Roberts, of Dudley, "in a room where the preparation of ipecacuan is going on, I am sure to have a regular attack of asthma. In a few seconds, dyspœna comes on in a violent degree, attended with wheezing, and great weight and anxiety about the precordia. The attack generally lasts about an hour."[1] We may give one more illustration of this generally-admitted effect of ipecacuan.[2] "A careless workman dropped the cloth that is hung over the mouth when pounding ipecacuan into powder, and inhaled the dust for three hours. After the interval of an hour he was attacked with suffocation, and closure of the larynx; he became of a death-hue, and fell into a state of fearful exhaustion from want of air. The paroxysms went on increasing every minute. His medical attendant bled him, and gave assafœtida, with temporary relief; but in five hours the attack returned, and he was in the most imminent danger of suffocation. He eventually recovered, but for some days was subject to asthmatic paroxysms."[3] After reading this, one can have little doubt that if ipecacuan *cures*, it also *causes* asthma.

That sulphur cures a very unpleasant complaint, which the detractors of Scotland pretend to be better known than liked in that favoured country, is a fact of general notoriety. That sulphur, when used in the form of baths, produces an eruption similar to the one alluded to, is equally well known to those who are in the habit of employing the German sulphureous waters; it is there known by the name of the Badefriesel.[4]

Of the value of tartar emetic in the cure of inflamma-

[1] Pereira, loc. cit., p. 1427.

[2] Die Wirkung der Arzneimittel und Gifte im gesunden thierischen Körper von Dr. Karl Wibmer München, 1832. An invaluable work for all students of the subject of which it treats.

[3] Rust's Magazine, Band 32, Heft 1. 1830.

[4] "Sulphureous baths often produce the very diseases which they are employed to cure."—Krimer Hufeland's Journal, p. 9. 1834.

tion of the lungs, there is no more doubt than of the relief given by ipecacuan in asthma. Dr. Williams—than whom, at present, there is in Britain no authority greater with the medical profession on affections of the chest—thus testifies: — "Next to blood-letting, tartar emetic is, perhaps, the most powerful remedy that we can employ for the cure of acute pulmonary inflammation." [1] And a greater even than Dr. Williams—Laennec, the discoverer of the stethoscope, and the first to ascertain, with scientific certainty, the character and course of diseases of the lungs—gives the following evidence:—"In general, the effect of tartar emetic is never more rapid, or more efficient, than when it gives rise to no evacuation." . . . after its administration, "at the end of twenty-four, or forty-eight hours at most, we perceive a marked improvement in all the symptoms. And sometimes, even, we find patients who seem doomed to certain death, out of all danger, after the lapse of a few hours only, without ever having experienced any crisis, any evacuation, or, indeed, any other obvious change, but the rapid and progressive amelioration of all the symptoms. In such cases, the stethoscope at once accounts for the sudden improvement, by exhibiting to us all the signs of resolution of the inflammation. These striking results may be obtained at any stage of the disease, even after a great portion of the lung has undergone the purulent infiltration." [2] This is an example of true and direct cure of a disease by a medicine. The operation of the drug is to arrest the progress of the morbid action in the lungs without producing any sensible effect upon the rest of the body—to arrange what is disordered without deranging what is right. Such cures come under the head of specifics, along with those effected by quinine, arsenic, and sulphur.

[1] Cyclop. of Pract. Med., Vol. III., p. 438.

[2] Forbes's Translation of Laennec, p. 255.

Let us now inquire what the effects of this same tartar emetic are when given to animals; and on this head we have the very best authority at our disposal, for the great French physiologist, Magendie, has made the action of this drug the subject of special experiment. He arrived at the following result, after describing other changes it produced in animals "which he poisoned with it." He goes on to say, "The lungs present the appearance of the greatest alteration; they are of an orange colour if the animal is young, violet if it is older; the tissue is *hepatized*,[1] gorged with blood at some parts, and at others very analogous to the tissue of the spleen." . . . In whatever way introduced, "*it acts specifically in inflaming the lungs.*"[2] M. Lepelletier, who has written the best monograph on this drug, says: "Its effect on the respiratory organs is to produce difficulty of breathing in dogs, which were in perfect health before its administration: the lungs were found hepatized. One would imagine that admitting its action in man to be similar, far from being useful, its administration would be *particularly pernicious* in the treatment of pneumonia."[3] After reading these dreadful effects of antimony, we feel inclined to agree with Guy Patin, when he exclaims, "Et voila comme MM. les Antimonieux se jouent de la vie des hommes et comme imprudemment il envoient en l'autre monde leur pauvres malades avec leur poison!!" No doubt, if Magendie and Lepelletier are to be believed, tartar emetic does produce pneumonia.

We cannot resist giving one more illustration, especially addressed to the "Domestic Englishwoman." Dr. Copland, the learned cyclopædist, relates the following cure effected by tea—that much-maligned herb:—"In the summer of 1820, I was requested by a practitioner to see the daughter

[1] This is the technical expression for the appearance produced on the lungs by inflammation.

[2] L'Influence de l'Émétique sur l'Homme. 1833.

[3] De l'Emploi du Tartre stibié, à hauti dose, par MM. Le Pelletier de La Scartha.

of a clergyman, residing in Westminster, labouring under most violent nervous palpitation, which had resisted the means advised by several physicians who had been consulted. . . . Finding that the usual remedies for nervous palpitation had been prescribed without any relief, I suggested that a strong infusion of green tea should be given three or four times a day, and continued for a few days. Relief immediately followed, and perfect recovery in two or three days."[1] Is it possible that Dr. Copland had read the following narrative?—"Dr. Newnham made experiments on himself and other two persons, to determine the action of green tea. He infused an ounce of it in boiling water for twenty minutes, and dividing it into three equal parts, drank one himself, and gave the other two to his friends to drink; the effects observed by all, were, oppression of the chest, palpitation of the heart, increased irregular pulse, anxiety, and general trembling."[2] Need we ask if Dr. Copland had read this? We all know that Dr. Copland has read everything; but is it not strange that, knowing so well as he did that green tea converts a strong man into a nervous girl, he should have sought, by giving it, to convert a nervous girl, if not into a strong man, at least into a healthy woman? It is strange, and it is not strange; strange, if he wholly disbelieves the fundamental doctrine of Hahnemann; not strange, if, like Sir John Forbes, he believes in it as a method at least partially applicable in practice.

Such are a few of the many instances that any one who examines the records of medical experience, with the object of testing the conjecture of Hahnemann, encounters as he turns over the pages of practical men; and, indeed, the facts had already suggested to at least one physician, of the name of Stahl (a Dane), an anticipation of Hahnemann's

[1] Dict. of Mat. Med., Part IV., p. 177.

[2] London Medical and Physical Journal, Jan., 1827.

doctrine. "The rule," he says, "generally acted on, to treat by means of contraries, is quite false, and the reverse of what ought to be: I am of opinion that diseases will be cured by remedies that produce a similar affection—burns by exposure to the fire," &c.[1]

It was not till seven years after he had made his experiment with Cinchona that Hahnemann published his first trial of the application of the method in practice in "Hufeland's Journal," the greatest medical periodical then in Germany. The case is of so great historic interest that we shall give it almost entire. "L——, a compositor, twenty-four years of age, lean, of a pale, earthy complexion, had worked at the printing-press a year and a half before he came to me; and then, for the first time, he had suddenly felt great pain in the left side, which obliged him to keep his bed, and which, after several days, went away under the use of ordinary medicines. Ever since that, however, he had experienced a dull, disagreeable sensation in the left hypochondrium. Some months afterwards, having overloaded his stomach with sweet beer soup, flavoured with caraway (let us remember he was a German), he was attacked with a severe colic, the violence of which he could not express; nor could he say whether it was exactly the same as the colicodynia which succeeded it. The attack passed off this time, I don't know how, but he observed that after it he could not bear certain kinds of food. The mischief increased unobserved, and the colicodynia, with its destructive symptoms, took firm root. . . . The course of a severe attack was as follows:—Four hours, or four hours and a half, after eating of such food (*i. e.* carrots, cabbages, and other vegetables, and fruits), having previously felt quite well, a peculiar movement was felt about the umbilical region; there then occurred suddenly,

[1] Jo. Hammel, Comment. de Arthrit. tam tart., quam Scorb. Buding. 1738. VIII., p. 40.

always at the same place, a pinching, as if by pincers, attended with the most intolerable pain, which lasted half or a whole minute, and each time suddenly went away with borborygmus extending to the right groin, about the region of the cœcum. When the attack was very bad, the pinching and borborygmus returned with greater frequency, and even in the worst attacks became almost constant. . . . The uneasiness and pains increased from hour to hour, and the abdomen swelled and became painful to touch. An inclination to vomit, and a sense of constriction of the chest, attended these attacks of pain, and respiration was short and difficult, accompanied by cold sweat, and followed by total exhaustion. When thus affected, he could not swallow even a drop of liquid, much less any solid food. Thus he lay, stupified and unconscious, with swollen face and protruded eyes, and without sleep for many hours. After from sixteen to twenty-four hours, the spasm and pain gradually subsided. It took three or four days to restore the strength, and then he complained only of the dull, fixed pain at the left hypochondriac region, but his appearance was sickly. . . .

"The case was now urgent, for the attacks occurred after the smallest quantity of vegetable food, and all the remedies I had prescribed had entirely failed. In these circumstances, I determined to give him as a remedy a substance which produced symptoms very like those he suffered from. This was *veratrum album*, which produces griping pain, anxiety, constriction of the chest, loss of strength, &c., and which I therefore thought calculated to give him permanent relief. I gave him four powders, each containing four grains, and I told him to take one powder daily, but to let me know at once if any violent symptoms appeared. This he did not do. He did not return until five days afterwards. He had taken two powders a-day. After the second powder, without his having

eaten anything to bring on a paroxysm, he was attacked with a regular fit of his old colic. Notwithstanding, he took the other two powders (taking thus sixteen grains of veratrum in less than two days), upon which this artificial colic, if I may so express it, increased to such a dreadful extent, that, in his own words, he wrestled with death, covered with cold sweat, and almost suffocated. He required three days to recruit, and then called upon me. I reprimanded him for his imprudence, but at the same time I expressed my hopes of a happy issue. The result confirmed my prediction. . . . . For six months he has had no attack, and can eat with impunity the articles which used to bring on the pain. He has taken no other medicine since the veratrum, and he also lost the pain at the hypochondriac region."[1]

This is the first example we have met with in the History of Medicine, of the direct cure of a disease by a medicine selected with reference to a rule arrived at by induction, not in accordance to tradition or analogy. And the process Hahnemann pursued was this. Having conjectured that the symptoms of ague which he experienced after taking Cinchona were due to that substance, and that possibly it was owing to this ague-producing power that the Bark cured ague, he collected "instances" of other *direct* or *specific cures*—that is, of *cures effected without the interposition of any chemical or mechanical change in the body, —of any crisis* or *evacuation*. He arranged these "instances" side by side, to ascertain whether the medicines that had cured the diseases in this way were known to have caused, when given in other circumstances, symptoms similar to those they now relieved. Having satisfied himself that the cures all agreed in this feature, while differing in every other, he made the *induction* that the diseases so cured by the medicines were cured in virtue of the same

[1] Hahnemann's Lesser Writings.

power in the medicines which produced symptoms like those they cured. He then converted the *induction* into a *deduction*, and said, Medicines will cure affections like those they cause. This deduction or rule he applied to the solution of the problem of this case of colicodynia. He carefully observed the symptoms, and sought out a drug which he knew produced a similar concatenation of morbid phenomena: this drug he administered, and the result was a rapid, permanent cure, without any critical discharge—*but with a frightful temporary aggravation.*

This case was published in the third volume of "Hufeland's Journal;" and in the fourth volume of the same celebrated periodical, Hahnemann published an essay entitled, "Are the obstacles to certainty and simplicity in practical medicine insuperable?" "Dare I confess," he says, "that for many years I have never prescribed but a single medicine at once, and have never repeated the dose until the action of the former one had ceased; a venesection alone,—a purgative alone, and always simple; never a compound remedy, and never a second until I had got a clear notion of the operation of the first? Dare I confess that in this manner I have been very successful, and have given satisfaction to my patients, and seen things which otherwise I never should have seen?" From this, it appears that Hahnemann was for years groping, as it were, among specifics, before he discovered the key to their successful administration.

Two years later, an opportunity occurred of testing the rule on a much larger scale; and on this occasion Hahnemann advanced a step further, in two directions. He gave a much smaller dose of the medicine, and he administered it both with the view of curing the disease, not only in those whom it had already affected, but giving security likewise to those exposed to its attacks. This time the disease was an infectious one, being no other than the

much-dreaded scarlet fever. Hahnemann gives the following account of his trial. In July, 1799, when the scarlet fever was most prevalent and fatal at Königslutter, where he was then in practice, the mother of a large family had a counterpane sent home by a sempstress who had a boy in her room just recovered from scarlet fever. A week afterwards, she fell ill of sore throat, and other threatening symptoms. Several days afterwards, her daughter, ten years of age, was seized in the evening with severe pain in the stomach, and shivering. She passed a restless night. "In the morning I found the following symptoms: pressive headache, dimness of sight, tongue coated with mucus, some ptyalism; submaxillary glands hard, swollen, painful to the touch; shooting pain in the throat, both when swallowing, and at other times; no thirst; pulse quick and small; respiration hurried and anxious; although pale, the skin was burning hot; she complained of a sense of fatigue and of dejection; her eyes had an odd expression, being wide open and staring, but dull; her face was pale, with sunken features. Knowing, from experience, how little good was done by ordinary treatment, I sought," writes Hahnemann, "in accordance with my new synthetic principle, a remedy whose peculiar mode of action was calculated to produce in the healthy body most of the morbid symptoms which I saw combined in this disease. My memory, and my written collection of the peculiar effects of some medicines, induced me to select Belladonna as the substance which, more than any other I knew, produced the counterpart of the symptoms presented by this formidable disease. . . . I gave this girl of ten years old, who was already affected with the first symptoms of scarlet fever, a dose of this medicine." The dose he gave this time was not, as of the veratrum, two grains, but 1-432,000th of a grain of the extract. She slept tranquilly, and on the following morning most of the symptoms had disappeared without a critical

discharge. The sore throat alone remained, and it, too, gradually went off. She had a second dose of belladonna the second day, and an occasional dose during her convalescence, which went on favourably, and terminated in perfect recovery. Two other children were attacked by scarlet fever in the same house. Being anxious to preserve the other children, he fell upon the following plan, as expressed in his own words:—"I reasoned thus: a remedy which can check a disease at its outset must be a preservation from that disease; and the following occurrence corroborated this idea. Some weeks before, three children of another family lay ill of very bad scarlet fever; the eldest daughter alone, who, up to that period, had been taking belladonna for an affection of the fingers, to my great astonishment did not catch the infection." So he gave a dose of belladonna every third day to the remaining five children of the family, and they all remained well, although exposed to the emanations from their sisters, who lay ill of the disease. "In the mean time, I was called in to attend another family, where the eldest son was ill of scarlet fever. I found him in the height of the fever, and with the eruption on the chest and arms." There were other three children, four years, two years, and nine months old respectively; to these belladonna was administered, and none of them took the fever. "A number of other opportunities presented themselves to me to try this specific preventive, and I never found it to fail."

It is a curious coincidence that, in the very year Hahnemann discovered the virtues of belladonna in giving security against scarlet fever, De Carro should have introduced vaccination to the notice of the European Continent. Knowing, as we do, the difficulty that Jenner encountered in getting his discovery tested, we cannot be surprised that even greater obstacles lay in the way of Hahnemann. Notwithstanding all difficulties and obstructions, a very

considerable number of medical practitioners in Germany put this remedy to the test; and the result arrived at was, that out of 3747 persons exposed to the infection of scarlet fever, and who had taken Belladonna as a preventive, only ninety-one took the disease.[1] In this country belladonna is now generally administered in schools where scarlet fever appears. It is not so certain a preservative from this disease as vaccination is from small-pox, for several reasons. One is, that scarlet fever is not nearly so sharply defined in its specific or individual character as small-pox is. The word covers a considerable group of diseases, presenting many varieties. For example, in its most deadly form, the scarlet eruption from which it derives its name is often wholly absent. Small-pox is like a species; scarlet fever like a genus. It varies according to the conditions of time and place, and includes many species,—at least, many varieties. And so also with the medicine: the action of belladonna is not nearly so specific as that of vaccine matter. Vaccinia is a *little* small-pox; not so is *Belladoninia*, to coin a word, a *little* scarlet fever. The morbid action of belladonna includes a *little* scarlet fever—that is all. However, there is a disposition, both with the public and the medical profession, to give belladonna a fair trial; and eventually its reputation as a preservative against scarlet fever, when properly administered, may become as well-established as that of cow-pox against small-pox. In the year 1960, an Act of Parliament may be passed, enforcing, with suitable penalties, the administration of belladonna to all children exposed to the infection of scarlet fever. Thus it may come to pass, that, one after another, the heads of the Hydra-miasm will be crushed, and the

[1] See Hufeland's Journal for 1812, 1820, 1824, 1825; Biblioth. Med., t. LXV.; Revue Méd., t. II.; Bullet. des Sciences Méd., t. II.; Journal des Progrès, t. I.; Dr. A. T. Thomson's Materia Medica; Journal Complém., t. XXVIII.; Rust's Magazin., bd. XXV.; Edinburgh Med. and Surgical Journal for 1843.

skilful Æsculapius eventually be recognized as more powerful with his wand, than Hercules with his affrighting club.

Hahnemann's experiments with belladonna in scarlet fever were published at Gotha, in the year 1801, in the form of a treatise, and excited much interest, and no little opposition in Germany. In the same year, he replied to the objections raised against his statements on the ground that so small a dose of belladonna must be powerless, in an article in "Hufeland's Journal,"[1] to the following effect: "*You ask me what effect can* 1-100,000th *of a grain of belladonna have?* The word 'can' is repugnant to me, and apt to lead to misconceptions. Our compendiums have already decided, dogmatically, what certain doses of medicine can do; and yet it is well known that our *Materia Medica* owes its origin to anything but scientific experiments, and well-sifted experience. Instead of the *Materia Medica,* let us ask Nature *what effect has* 1-100,000th *of a grain of belladonna?* But this is too vague a question to obtain an answer: we must state the *ubi, quomodo, quando, quibus auxiliis*—that is, all the conditions in which the proposed dose is administered. A hard dry pill of extract of belladonna produces in the strong and *perfectly healthy* labourer *no effect.* But it does not follow that a grain of this extract would be too weak a dose to affect the same man, if, instead of being in health, he were ill, and if the grain, instead of being given in the form of solid extract, were dissolved. The most robust man will be violently affected by one grain of belladonna thoroughly dissolved in two pounds of water, with a little alcohol to prevent its decomposition. These two pounds will contain about 10,000 drops; now, if one of these drops be mixed with other 2000 drops (six ounces) of water, and a little alcohol, one teaspoonful of this mixture, given every two hours, will produce manifest effects in the same man, if, instead of

[1] Hufeland's Journal, Vol. VI., part 2. 1801.

being in health, he is in a state of disease, and has a morbid sensitiveness to the action of belladonna."

"To the ordinary practitioner it is incredible that a person when sick is violently affected by a millionth part of the same drug that he swallowed with impunity when he was well. Will physicians ever learn how infinitely small may be the dose that is sufficient for cure, when the system of the patient is raised to a condition of intense and morbid sensitiveness? So powerfully do such small quantities act then upon the over-sensitive frame, that the most serious disease is sometimes quenched in a few hours."

Although it is now sixty years since this paper was published by Hufeland, during which period a multitude of treatises upon the subject has appeared, yet the observations of Hahnemann contain the cream of the whole matter. For the effective operation of minute doses on the animal frame two conditions are requisite,—the one, the mechanical subdivision of the substance; the other, the exalted sensitiveness of the patient. The effect of mechanical subdivision forms the subject of a curious paper by Professor Döppler of Prague.[1] His argument is, that the question of size is relative to the kind of operation under investigation. "Nothing created is either small or great, except comparatively. Hence, in reference to medicinal action, we encounter at the threshold of our inquiry the question, Does a medicine act on the frame by its ponderable quantity, or by its superficial extent? If the latter, then Hahnemann may really in his millionth of a grain have given a larger dose than his colleagues, who prescribed whole grains. A cubic inch of sulphur, broken into a million of equal pieces, each as big as a grain of sand, instead of exposing six square inches, exposes six square feet of surface; and if the operation be continued, at the third stage the surface of this inch will be two square miles; at the

[1] Baumgartner's and Holger's Journal of Physics. 1837.

fifth, the size of Austria; at the ninth, the size of the sun and all his satellites."[1]

So much for the influence of the mechanical distribution of the particles of a medicine—its preparation. This is, as we see, a calculable power; but the other condition is incalculable. Who can tell the degree to which sensitiveness may be exalted? Another German Professor, Dr. J. Jörg, one of the most distinguished opponents of Hahnemann, touches the point of the argument when he says, "Medicines operate most powerfully on the sick when their symptoms correspond with those of the disease. A very small quantity of arnica will produce a violent effect upon persons whose œsophagus and stomach are in a morbidly irritable state. When there is inflammation of the intestines, a very minute dose of mercury will produce pain and other symptoms. Yet why," he exclaims, "should I waste time by adducing more examples of the similar operation of drugs, *since it is in the very nature of things that a medicine must have a much greater effect when it is administered to a person already suffering under an affection similar to that which the medicine is capable of producing.*"[2]

Had photography been invented when Hahnemann wrote this famous essay, it would have afforded him a striking illustration of the condition of sensitiveness. He might have compared the healthy body to the metal plate before it has been washed, when it reflects the rays of the sun without its surface being at all affected by his influence; and the unhealthy body to the same plate, when, by a chemical process, its surface has been rendered so sensitive to light, that the faintest ray makes on it an indelible impression. An army well fed, and marching to battle in the

[1] On the Theory of Small Doses. In the second volume of Essays Scientific and Literary, by Dr. Samuel Brown. Edinburgh: Constable. 1858.

[2] Materiellen zu einer künftigen Heilmittellehre, &c., von Dr. J. Jörg, Professor an der Universität zu Leipzig. 1825.

confidence of victory, passes the night in a marshy district, and every man rises with the sun, strong for the conflict. The same lessened band returns—defeated, dejected, and famished; spends another night on the very spot, and resumes its retreat, a prey to the fever which will lay many low.

Let us observe that, in these earliest papers, in which Hahnemann first stated the principles of his new method of cure, there was nothing either in the sentiments or the language calculated to give offence to the medical profession. And yet he had already paid the penalty of fame, and had found that, in the words of Jenner, he was "a gilded butt, for ever pierced by the arrows of malignancy." At least, the novelties he had promulgated had made him unpopular with the profession. In the same year in which the pamphlet we have just referred to was published, there appeared in "Hufeland's Journal," a review on John Brown's "Elements of Medicine." The editor, the celebrated Hufeland—surnamed in Germany, the Nestor of Medicine—prefixes to the article, which was Hahnemann's, the following note:—"These observations are by *one of the most distinguished physicians in Germany*, who, however, as he himself expresses it, 'so long as literary *chouanerie* makes the highways unsafe,' will not permit his name to appear; which, in my opinion, is a good plan, in cases where reasons and not the authority of names are to decide."[1] This is the answer to those who defend their vituperation of Hahnemann by the rather heathenish excuse, that he was the first to use violent language. Whatever may have occurred at a later stage of the controversy, incontrovertible dates establish, that Hahnemann's early writings, which contain the greater and the most obnoxious part of his opinions, were entirely free from such a blemish; and, indeed, the fact of Hufeland standing godfather to them is

[1] Hufeland's Journal, Vol. V., part 2, p. 52.

ample evidence for all acquainted with the position of that eminent and popular physician, that there was nothing beyond the novelty of the statements and of the doctrines in the writings of Hahnemann to arouse the antagonism, much less to excite the resentment, of the profession of which he was at that time "one of the most distinguished members."

It is interesting to observe, at this stage of Hahnemann's progress, that his acquaintance with the action of medicines was derived from his "written collection" of their peculiar effects. He had spent much time in accumulating the treasures supplied by history. He, too, was to have a *tripod.*[1] His system required an exhaustive and critical search through the whole domain of the old therapeutics; out of which he extracted one of his pedimental pillars, which in ancient times would have been called, technically, *History.* Two more were required to complete the tripod. One was *experiment*, the other *observation.* History supplied him with a large number of facts bearing upon the specific action of remedies, and enabled him to select Belladonna for the cure of scarlet fever. But for the instances recorded by the generations that had preceded him, he could not have undertaken, much less executed, the task of a reconstruction of therapeutics; for he would have had no materials to work with. So that Hahnemann, whether his method be right or wrong, is essentially a builder and not a destroyer. The past was sacred to him —as it is to every man who has a future. Although not discontented with the glorious inheritance to which we of the present are his co-heirs, he was unsatisfied with the possession he had thus received, and resolved to increase its value by experiment. It was not enough for him that others had observed and recorded the effects of Belladonna and other medicinal substances; he was resolved to submit

[1] See p. 44.

the matter to the test of his own personal experience. Accordingly, four years later, that is in 1805, he published a little work on "The *positive* effects of medicines; (*i. e.*) the effects produced by them in the healthy body."[1] In this volume are the observations on twenty-five substances, most of them powerful vegetable medicines; for example: Aconite, Belladonna, Camphor, Digitalis, Hyocyamus, Hellebore, Nux Vomica, Opium, Veratrum, &c.

To illustrate what is technically called *proving* a medicine, we may take the history of Aconite, and show the successive steps by which it has risen from obscurity and insignificance to its present distinction. In the *Materia Medica* of Dioscorides, which was the authority for about 1500 years, there are two plants described under the name of ακονιτον. The title of Chapter LXXV. being περι ακονιτου, and of LXXVI. περι ἑτερου ακονιτου,[2] all that is recorded of its powers is: "Aconite kills panthers, swine, wolves, and all wild beasts, when mixed with their food." This holds good, both of *the* aconite and of *the other* aconite.[3] In a commentary on Dioscorides, published in the year 1598,[4] Mathiolus relates that, in the year 1561, two robbers were given up to him to experiment upon. Such was the use *then* made of criminals. He gave the first robber a drachm of the root, but without any result; so he gave a preparation of the leaves, flowers, and seed, and in three hours he had the satisfaction of perceiving most decided effects. There was general lassitude, feebleness, anxiety, and a weak pulse. Mathiolus then gave him an antidote, upon which he ex-

[1] Fragmenta de Viribus Medicamentorum positivis, sive in sano corpore humano observatis, a S. Hahnemann. Edidit F. F. Quin. London, 1834.

[2] P. Dioscorides Materia Medica. Coloniæ, 1529, p. 516.

[3] Is it possible that this can have suggested to Sir Alan McNab when, as commander of the forces in Canada, a card was left for him inscribed THE McNAB, to leave in return his card as THE OTHER McNAB?

[4] Mathiolus Comment. in Dioscor. Basil, 1598.

hibited convulsive movements of the eyes, mouth, and head, and fell into a faint. Upon this, he had some wine. He then turned on his side, and died. Mathiolus gave a similar dose to the other robber, in whom, too, it produced convulsions, and great agitation of mind. He recovered, however, after seven hours, and was probably reserved for further experiments, as are the dogs and frogs of the physiologists of our day, who fly at lower game than their predecessors.

The next writer quoted by Hahnemann is Claud Richard, who wrote a description of the Bezoard stone. He, too, gives an account of the effects of a drachm of aconite upon a robber. The symptoms were much the same as those observed by Mathiolus.[1]

The next authority is Vincent Bacon, who, in the thirty-eighth volume of the "Philosophical Transactions for the year 1734," published a case of poisoning with aconite. He read the following narrative to the Royal Society :—"On Monday night last, being February the 5th, about ten, I was called in haste to one John Crompter, a silk weaver in Spitalfields. When I came into the room, I found him lying on the bed, his head supported by a bystander, his eyes and teeth fixed, his nose pinched in, his hands, feet, and forehead cold, and all covered with cold sweat; no pulse to be perceived, and his breath so short as scarce to be distinguished. After the administration of sal volatile and some other medicines, he vomited, and said his head was so heavy that he must needs lie down; his pulse was then a little returned, though very much interrupted and irregular, sometimes beating two or three strokes very quick together, and then making a stop of as long, or a longer time, than the preceding strokes altogether took up. On the following day he was much better, and had been relieved by a sweat. The account he gave of the order of

[1] C. Richard, ap. Schenk, lib. VII., obs. 136.

his sufferings after swallowing the aconite, which he had eaten by mistake in a salad, was as follows:—Tingling of the tongue and jaws, sense of looseness of the teeth; this tingling then spread over all the body, especially the extremities; unsteadiness of the joints, particularly of the knees and ancles; twitching of the tendons, with a feeling of interruption of the circulation in the extremities; giddiness, with misty, wandering eyes."[1]

Then comes Rödder, quoted by Albert in his work on Jurisprudence.[2] Rödder observed pain in the arms, and cardialgia, difficult breathing, heat, and thirst, from aconite, introduced into a wound in a man's thumb.

Moræus[3] relates how a man ate some of the fresh plant, and soon afterwards became insane. The surgeon who was called in, to show his superior knowlege, ate a quantity of the leaves, and paid the heavy penalty of death for his ignorance and presumption. Another person to whom he gave it was affected with sickness and thirst.

Baron Stoerck, who was the first to write a monograph upon aconite, describes the dry leaves as producing an enduring sense of burning, stinging pain on the tongue, and other similar symptoms.[4]

Gmelin[5] is the last of Hahnemann's authorities. All he adds is, "Great prostration of strength."

It is a proof of the diligence and accuracy of Hahnemann, that beyond these sources of information, the only ones which Wibmer,[6] who has left no stone unturned where the smallest fragment of knowledge about poisons is to be obtained, adds, are three quite insignificant observations,

[1] Cure of a man who was poisoned by eating Monkshood or Napellus, communicated to the Royal Society, by Mr. Vincent Bacon, surgeon, F.R.S.

[2] Alberti Jurisprudentia Med., 1736. t. VI., p. 724.

[3] In K. Vet. Ac. Handl. 1739. No. 6.

[4] On the Use of Stramonium, Hyoscianus, and Aconitum. London, 1763.

[5] Nov. Act., N.C., Vol. VI., p. 394.

[6] Die Wirkung der Arznei-Mittel und Gifte im Gesunden Thiereschen Körper, von Dr. Karl Wibmer. In 6 volumes. Munich, 1832.

contained in eight lines—the one from some Dutchman, of the name of Doddon, who wrote a work on *Materia Medica;* the others from Hain and Willis. Possibly Hahnemann may have seen these observations, and thought them not of sufficient importance to be incorporated in his book.

Such were all the materials that existed for ascertaining the *positive* action of aconite upon a person in health. To this meagre catalogue, Hahnemann added the effects of the substance upon himself. He arranged his observations in a certain order,—beginning with the effects upon the head and brain, then passing to those of the face, the organs of sight, hearing, &c.,—and so on, throughout the whole of the body, till he came to the feet; after which he states what he calls its general effects, such as cramps, syncope, fever, &c. These effects he denominated symptoms—using this term in a somewhat novel sense.

Of these *symptoms* he noted down one hundred and thirty-eight more and less important. Among the former were the first *four* symptoms, which might have been called one single group of effects—"Coldness of the whole body; coldness of the whole body, with heat of brow and ears, and a dry internal burning; cold, stiffness of the body, one cheek burning-hot, the other pale and cold; shivering, and dread of cold." This group of four symptoms might read *fever*; at least, it presents many of the first indications of an attack of fever. To these are added several symptoms resembling a feverish condition of the body, as for example, "Perspiration, with febrile shivering."

The utility of aconite in subduing the fever of inflammation, has become a popular notion in this country. It is some time now since it was acknowledged by several of the orthodox school, and the obligation to Hahnemann handsomely avowed, by Professor Maly in the year 1845, as follows:—"Dr. Kinderwater says of aconite, that, according to the prevailing ideas, it is contra-indicated in inflammatory febrile affections, but that he cannot agree in

this opinion, as he has found its utility in various acute diseases. In regard to this observation, while we recommend it to the notice of every physician who has at heart the good of suffering humanity and the advancement of the art of medicine, we feel ourselves compelled to observe, *first*, that he did not always employ aconite quite pure (that is, uncombined); *second*, that he omits all mention of that man to whom we owe the true knowledge and right use of this medicine. It was Hahnemann who first recommended the use of aconite in pure inflammatory fevers, with or without eruption, as well as in inflammatory diseases generally, in obedience to his principle, *similia similibus*, by which the effusion of blood, except in certain exceptional cases, is wholly obviated. Even were we under no other obligation to Hahnemann, by this single discovery he would, like Jenner, deserve to be ranked among the greatest benefactors of suffering humanity."[1]

When Hahnemann published this little book, he was living in the small town of Torgau, the peculiarities of which, according to Brook,[2] are the possession of a tower so constructed that a carriage can drive to the top of it, and that the inhabitants brew excellent beer. So that we can hardly be surprised that, after the publication of his first considerable work, entitled, "The Organon of Specific Medicine," he should have returned to Leipzig; for it must have been manifest to him that the experiments, of which his "Fragmenta" were specimens, were altogether incomplete; and that to render them trustworthy, he must repeat them on various persons, so as to ascertain not only how he, Samuel Hahnemann, was affected by Aconite, Belladonna, &c., but what the effects of these substances were on the average of people. Such an average could only be obtained by multiplying the experiments, and noting the effects produced upon each of the experimenters,

[1] Medicinische Jahrbücher des K. K. Œster. Stadt., 1845.

[2] Brook's Gazetteer

comparing one series with another, and so ariving at a knowledge of what were peculiar to the individual, what common to all. To do so, he required to live among those who would co-operate with him; and Leipzig was clearly the place best adapted for securing all his objects.

Before proceeding with the description of the great fabric Hahnemann gradually erected and designated "*Materia Medica Pura*," we must direct attention to his "*Organon*," both on account of the influence it has exerted generally upon medicine, and because its publication entirely changed the position of its author. Hahnemann has been severely blamed for presumption in choosing the word *Organon* for his book, as if he wished to present himself as the Bacon of medicine. This charge is unjust, as a little attention to the meaning of the word will easily show. Bacon introduced a new organ, or instrument, *Novum Organum*, for the reconstruction and advancement of science. Hahnemann believed that he, too, had found out a new instrument for the discovery of specifics. There was, therefore, nothing improper in his calling this new method the organ of rational, or specific medicine; meaning, that he wished to introduce this as a system for the better discovery and administration of specifics. The novelties of this method had been all made known in a series of articles published in "Hufeland's Journal." They may be summarily described as—

1. Never to give any substance as a medicine which had not been made the subject of experiment for ascertaining its action on the healthy body. This position was quite a novelty. It is true, in advancing it, he seeks the shelter of the great name of Haller, who expresses his belief "of the diversities of powers which lie hidden in plants, whose faces we know, but whose souls, as it were, we are ignorant of;" but this is rather one of those "fairy tales of science" with which Haller nourished his sublime and perpetual youth, than a direction for the guidance of discovery.

2. Always to give but one medicine at a time; and never to repeat even that until the action of the first dose is exhausted. The hope of arriving at greater simplicity in medicine had been expressed before; especially, as we have seen, by Lord Bacon, and, at a much later period, in one of the first articles in "Hufeland's Journal;" but it was rather a vague aspiration than a distinct purpose.

3. Always to select a remedy *homœopathic* to the disease. This was the first time Hahnemann used a term which has now become "familiar to our ears as household words." He meant by it, as he fully explains, that the drug selected for the cure of a disease, should possess the power of exciting a series of phenomena similar to the symptoms of the disease for which it was administered. We have already amply illustrated this proposition. It cannot be said that before Hahnemann it was ever recognized as the method for ascertaining specifics. So that, whether it be the right plan or not, its author was fully entitled to designate it by the name of a new organ, or instrument, in medicine. It has given its name to his system, and to much else besides.

4. The last proposition is, that, when we have selected a medicine which is homœopathic to a disease, we must give it in a dose so minute that it shall only act on the part morbidly susceptible of its action, raised to a condition of idiosyncrasy by the disease whose likeness is represented by the *pathogenetic* effects of the drug.[1]

That medicines were often given in too large quantities, and that medicines selected according to the homœopathic formula should be given in much smaller doses than when intended to produce a physiological action, such as sweating or vomiting, was obvious enough; but that the million-millionth of a drop of the expressed juice of a compara-

[1] The word pathogenetic is of frequent occurrence in the writings of Hahnemann and his school: it means the power of a substance to excite a morbid condition in a person in health.

tively inactive plant, such as crocus, should have the power of quenching a disease, seemed as improbable as that Drury Lane Theatre, when in flames, should be extinguished by a sixpenny squirt. Here was Hahnemann's great offence; it was this that made his whole system the derision of Europe.

Such is the outline of the fundamental propositions contained in the "Organon of Rational Medicine;"—a book translated into most modern languages, and on which there have been more commentaries and criticisms written, than upon any medical work that has appeared for many centuries. Its publication placed Hahnemann at the head of a school; he became a heresiarch; his disciples clustered round him, and were called Homœopathists. From this time Hahnemann's style became more dogmatic, and he returned the attacks made upon him by the profession with a bitterness of invective that widened the breach created by the novelties of his doctrines, and the peculiarities of his practice, which differed from that of all his colleagues in this—that he dispensed with the assistance of the apothecaries. It was plain that a war of mutual extermination would take place between Homœopathy and druggists, who, with the keen sense of self-preservation, finding themselves in the same plight as the goldsmiths of Ephesus when Diana was attacked, naturally enough had recourse to similar weapons. Hahnemann, from the first time he made known his resolution to preach a minimum of drug administration to the sick, had to run the gauntlet of these enemies, who had the satisfaction of making him flee from city to city, until he found refuge at last under the wing of a reigning duke at the residence-town of Colthen. This is parenthetical; for, notwithstanding the petty vexations he had to encounter, he spent eleven years in Leipzig, and so won the affections of its inhabitants, that when his statue was erected there, some years ago, by his disciples, the Town Council attended in due form,

granted a site, and did the honours—as their way is to well-authenticated heroes.

The following lively sketch of Hahnemann, after he had been six years resident in Leipzig, is given by Baron Brunnow :[1]—"It was on a clear spring morning of the year 1816, that I, a young and fresh student of law, was sauntering with some of my companions along the cheerful promenade of Leipzig. Many notables and not a few originals were then to be found among the professors and teachers attached to the famous University ; and it was their custom to walk out of an evening in their antique costume—their head-dress a peruke and bag, silk-stockings on their legs and buckles on their shoes, while the youngsters swaggered past them, in Hessian boots and pantaloons well specked out with lace-tassels, or in military jack-boots with tremendous spurs. 'Tell me,' said I to another student, 'who is that old gentleman walking with his wife on his arm, and followed by his four rosy-cheeked daughters ; his countenance strikes me as remarkably intelligent.' 'That is the celebrated Dr. Hahnemann, who takes a walk with his family every evening.' 'What is there about this Hahnemann, that makes him celebrated?' 'Why, he is the discoverer of the Homœopathic system, which is turning old physic up-side-down.'" After mentioning his own special reasons for being interested in medicine, connected with a weakness of the eyes of long standing, and saying that he had studied the writings of this medical reformer, he goes on to describe his personal appearance and habits.

"Hahnemann was, at that time, in his sixty-second year. His hair was white, and hung in clusters round a high and thoughtful brow ; his eyes were of piercing brilliancy. His gait was upright, his step firm, and his movements as active and lively, as if he were a man not above

[1] Ein Blick auf Hahnemann.

thirty years old. The long pipe was seldom out of his hand. His drink was water, milk, or white beer; his food of the most frugal kind." Very unlike Paracelsus in all this! "He received me with extreme cordiality, and we became more intimate day by day, so that in a few months a close friendship sprang up between us. Gratitude for the benefit I received from him, and veneration for his character, attached me to him."

"A very peculiar mode of life prevailed in Hahnemann's house. The members of his family, his patients, and the students of the University who frequented his society, lived and moved in only one idea; that was—*Homœopathy*. They all actively assisted him in testing the effects of the medicines he was engaged in *proving*, as it is called. His adherents were at this time the butt of ridicule, and all the more, as a persecuted sect, did they hang together and cling to their head. After a day spent in labour, Hahnemann was in the habit of recruiting himself from eight to ten o'clock, by receiving a circle of intimate friends. All his pupils then had access to him, and were welcome to their glass of Leipzig beer and their pipe of tobacco. In the midst of their group, the presiding genius reposed, with a long Turkish pipe in his hand, telling stories of the incidents of his life, and conversing freely upon all the topics of the day. He had a curious fondness for the Chinese, chiefly because it was recorded of them that the children in China were educated in the strictest obedience to their parents. On this point Hahnemann had very strong opinions, and his children afforded a pattern of the old German fashion of training, and were devotedly attached to their father. From his pupils, too, Hahnemann exacted not only diligence and intelligence, but the most rigid abstinence from all forms of vice. In one instance which came to my own knowledge, he forbade the house to

a young and clever medical student, on account of an improper intimacy he had formed."

Such is a graphic picture by Baron Brunow[1] of the external life and habits of Hahnemann at this period of his career. We have, by another and more celebrated hand, a sketch of his mental peculiarities. Jean Paul Richter, like Hahnemann, had known the privations of a scholar's life at Leipzig. "His old schoolmaster, Schwarzenbach, himself a Leipziger, had been wont to assure him that he might live for nothing at Leipzig, so easily were "free tables," *stipendia*, private teaching, and the like, to be procured there by youths of merit." In this he was disappointed, for "on all hands he heard the sad saying, *Leipsia vult expectari* (Leipzig preferments must be waited for). Now waiting was of all things the most inconvenient to Richter."[2] Richter went to Leipzig first as a penniless student, in the year 1780, five years after Hahnemann; afterwards, as Jean Paul *der einzige* (the only), he returned thither, a star of the first magnitude in the constellation of Weimar. So it is possible he may have met Hahnemann; at all events, he must have been deeply impressed by the writings of the reformer, for he says of him: — "Hahnemann, this extraordinary double-brain (*doppelkopf*) of philosophy and erudition, whose system must eventually lead to the ruin of the common recipe-crammed brains (*Receptirköpfe*), but which as yet has been little accepted by practitioners, and is more detested than examined."[3]

We have now the group of workmen: in the centre was the *seltener Doppelkopf* of philosophy and erudition, around him his enthusiastic friends and pupils. Let us

[1] Brother of the present Russian Ambassador at the Court of St. James's.

[2] Carlyle's Miscellanies.

[3] Jean Paul Richter, Gesttreute Blätter, 11 bd., 520. "Hahnemann, dieser seltener Doppelkopf von Philosophie und Gelehrsamkeit dessen System am Ende den Ruin der gemenien Receptirköpfe nach sich ziehen muss, aber noch wenig von den Practikern angenommen und mehr verabscheut als untersucht ist."

examine their work, and resume the fragment of 1806. In this the detail of the experiments and observations upon aconite consists of 200 symptoms, 138 contributed by its action on Hahnemann, and 66 derived from the records of poisoning. In the *Materia Medica* translated by Dr. Quin, in which the symptoms of Hahnemann are incorporated with those of his disciples, they number 280; more than double, and the symptoms derived from other sources amount to 109.[1] In the first and second publications there is no very great difference in the proportion of the symptoms discovered by experiment and those recorded by previous observers. In both the element of *tradition* or *history* is large, though not equal to that of *experiment;* the two pedestals of the tripod are both there; by-and-by we shall have the third added.

If we continue the examination of what we may call *our thread*, we shall find the phenomena which present a resemblance to fever much more prominent in the *Materia Medica* than in the *Fragmenta*. In the latter work they do not exceed seven or eight symptoms, while in the former, in the German edition of 1830,[2] they amount to thirty-three. The way in which Hahnemann managed his experiments was to distribute portions of the substance he was testing among those who were assisting him, and to require that they should take a succession of doses, and record their effects; while he did so too. In this way he accumulated the evidence of independent witnesses, comparing one set of observations with another, and all with his own, omitting what he thought accidental and trivial, and arranging those he considered trustworthy in a regular order. It became a question of vital importance to his school to determine how far these first experiments of

[1] Hahnemann's Materia Medica, translated by Dr. Quin.

[2] Reine Arznei-mittellehre von Sam. Hahnemann. Dritte Vermehrte Auflage, 1830.

Hahnemann and his pupils were deserving of confidence; and some years ago a society was instituted at Vienna for testing, critically and experimentally, the so-called *provings* of Hahnemann.

One of the first substances this society chose for examination was *Aconite*. A committee was formed, consisting of Dr. Gerstel, a learned as well as highly-philanthropic physician, who acted as chairman and reporter. Along with him were associated thirteen physicians, one of them a professor in the University.[1] Each of these thirteen received a bottle of tincture, not knowing what it was, and took it in various doses from one drop to four hundred drops; they carefully wrote down all the effects they observed, and sent in their reports to Dr. Gerstel. He arranged them, and published them, each, for the most part, in the very words of the experimenters, giving his name, so that any one who chooses may verify for himself the authenticity of the record, as those who engaged in the work are, or quite recently were, in practice in Vienna, and were, so far, public men. It would be difficult to conceive of an experiment made under more satisfactory conditions for obtaining reliable evidence. The conclusion this society arrived at was that, among the results of their experiments one of the most striking was, "that almost every one of the observations of Hahnemann upon aconite was confirmed by them." The Report occupies 227 pages, and is the most satisfactory monograph upon any medicinal substance that we are acquainted with in medical literature.[2] The experiments extended over a period of several months; they were attended by great discomfort, and frequently by severe positive pain and sufferings of all kinds; and, on reading them through, it is im-

[1] Dr. Zlatarovich. I am not sure whether he is professor in Vienna or Prague.

[2] Œsterreichische Zeitschrift für Homœopathie. Editors, Drs. Fleischmann, Watzke, Hampe, and Wurm. Vol. I.

possible not to be impressed with a respect for the zeal displayed for science by the experimenters. This is a very different way of setting about the discovery of the effects of a medicine, from that pursued by Mathiolus, who poisoned robbers, or by Magendie, who poisoned dogs; or even by those physicians who tested aconite upon their patients; for, however great our sympathy with the sufferings of others may be, it is not to be compared with the actual endurance of pain in our own person. And besides the positive distress that this system of self-poisoning occasioned, it required of the experimenters a life of great self-denial, and abstinence from everything in their diet and occupations which could in any way interfere with the operation of the drug under investigation. If we are constrained to render homage to those patient and self-denying physicians of Vienna for their labours in testing the effects of aconite and two or three other medicines, what shall we think of Hahnemann, who has left a record of experiments with no less *than one hundred and six* medicinal substances? In fact, he spent his life, from the time he was forty-five years of age, in this systematic self-sacrifice. For it he gave up everything. Hahnemann may be accounted a fanatic, who devoted his life to a delusion; but it is very difficult to imagine how he can appear to any honest mind to have been "an immoral and licentious scoundrel," as some of his adversaries have described him. Knowing, as we do, how he spent almost every day in his long life, we are at a loss to find the time for the prosecution of debauchery and vice — putting aside all other objections to this singular reading of his character. Paracelsus, with whom it is the fashion with some to liken him, has left no work behind him which bears evidence of long, sober, patient labour. So of him we say, it may be true that he was a drunkard; but Hahnemann has left ten volumes of *Materia Medica*, every page of which

contradicts the extravagant supposition of his being a victim to low indulgence of any kind. A life of labour, of honest, self-denying toil, is, according to the adage of the monks, a life of prayer—*Orare est laborare.* Such a life was Hahnemann's. A great writer has said, "The origin of all thought worthy of the name, is love." [1] Love, we may add, is the origin of all work, of a self-sustaining kind—of all work which ministers to the well-being of mankind, and not merely to the gratification of the workman; to originate and to execute such work demands love for the object—so strong as to make the sacrifice of self a pleasure as well as a necessity. In Hahnemann's own words, "The man who undertakes and carries through with steadfast resolution to benefit humanity—for in my case there could be no other motive, since beyond the miserable remuneration given by the booksellers, which was no compensation for such a life of self-sacrifice, I met only with persecution—a man that so lives and works must be a good man at bottom." [2] Whenever we find that a man has been capable of such love as results in great achievements, even of a purely intellectual character, like those of Bacon or Hahnemann, we are disposed to look with extreme suspicion on all who attempt to detract from his character, especially when the accusations are made with an air of triumph, and not of humility. Some regard is due to the feelings of those who, after a careful examination of a man's character, have arrived at the conclusion that it is noble and no ways base, for nothing so saddens a pure mind as the discovery of unworthiness, in any degree, in the object of its respectful admiration.

> "In love, if love be love, if love be ours,
> Faith and unfaith can ne'er be equal powers;
> Unfaith in ought is want of faith in all.

[1] Carlyle's French Revolution.

[2] In a private letter to Dr. Stapf, not intended ever to be published

It is the little reft within the lute,
That by-and-by will make the music mute,
And, ever widening, slowly silence all.[1]

The day is probably not far off when the character of Hahnemann shall, by its acknowledged purity, put to shame his detractors, who are more given, as Jean Paul observes, to detest the man than to study his works.

Two pillars of the tripod—*History*, or the recorded experience of the past, and *Experiment*, or the authentication and enlargement of the knowledge transmitted by tradition,—we have now examined, and have found Hahnemann worthy of our confidence, both as a scholar and as an experimenter. There remains the third pillar of the *tripod*, known of old as *Observation*—which we should now describe as the practical application of a theory based upon facts of tradition and experiment. Let us suppose all that is written in these ten volumes of *Materia Medica* to be gospel truth: how shall we make any use of it? The number and variety of symptoms thus recorded is so great, that, like a land-bird at sea, we grow weary, and long for some ship to rest on. At the first perusal, it seems an infinite series of short disconnected sentences, which defy our ingenuity to construe, our patience to read, and our memory to recollect them. It is more like a fount of types out of which books are printed, than an ordinary volume. It almost required genius to spell words out of this heap of letters. After the *word* is once pronounced, it is not difficult to recognize that it existed there *in posse;* but before it is "syllabled" its discovery seems hopeless. It is this that deters many from the study of these records; and there is no possibility of ever presenting a rigidly-scientific detail of the poisonous or pathogenetic effects of medicinal substances in an attractive literary

[1] Tennyson's Idylls.

form. It is a lexicon for study and consultation, not a romance for idle hours.

A certain human interest is given to the work, however, by the few brief hints that Hahnemann gives as to the use of the medicines he has tested—the inferences he has drawn on the strength of his general theory, that this or that substance will be of value in affections presenting symptoms, perceived or fancied, similar to these recorded actions of the drug, as felt by himself, or described from the experience of others. In his preface to aconite, he says, "Although the following symptoms do not express the entire signification of this most precious plant, yet they open to the thoughtful homœopathic physician the prospect of curing that class of diseases for which the Old School employs its whole process of blood-letting and depletion, often fruitlessly, and always with bad consequences to the constitution of the patient. Aconite, in the smallest doses, will cure pure inflammatory diseases, &c."[1] Hence it is now popularly called the Homœopathic lancet, and its use is gradually superseding those sanguinary measures which were the fashion in the reign of the Georges.

The most remarkable *hit* Hahnemann ever made, or that ever was made in medicine, was his recommendation of camphor in cholera—remarkable as displaying his intuitive faculty of apprehending the type of disease from its description, and its *fac simile* in the action of a drug; remarkable, too, historically, as having afforded an opportunity of putting his system to the test in hospital under the inspection of a despotic Government.

It was in the year 1831 that the cholera first invaded Europe; it came, like all invaders and epidemics, out of the East, and the destruction it committed was terrible. In

[1] Hahnemann's Arznei-mittellehre, Vol. I., p. 436.

Moscow there were 6305 cases, and of these 3533 were fatal. In Hungary, above 8000 died out of 19,000 who were seized.[1] The consternation was universal; medicine was paralyzed. All systems and methods seemed equally unavailing to arrest a disease of unexampled rapidity in its course; whose victims passed from health to death in a few hours.

The adherents of the Homœopathic school proposed various medicines, as, for example, arsenic and veratrum.[2] In the mean time, Hahnemann had been studying his Sibylline books, and on the 10th of September, 1831, he wrote a letter to the editor of a Homœopathic Journal containing the following *order*:—"Every one, the instant any of his friends take ill of cholera, must immediately treat them with *Camphor*, and not wait for medical aid, which, even if good, would be too late." *Camphor*, then, was the counter-sign to cholera, if these books of Hahnemann were true, and his interpretation of them correct. The very year, 1831, in which Hahnemann made his announcement of the use of camphor, Dr. Quin was in Moravia, whither he had gone to study the disease, and assist in the treatment of those who were attacked with cholera. He, along with Dr. Gerstel (whose name we have already mentioned) and two surgeons, had the charge of all the cholera cases in the town and neighbouring villages of Tischnowitz. His experience of the efficacy of camphor he thus relates:—"Je dois moi-même, la vie à l'esprit de camphre. Je fus subitement atteint du cholera pendant le diner, et sans symptômes précurseurs. Je tombai sans connaissance. Immediatement transporté dans un lit, dès que j'eus repris mes sens, je recourus à ce médicament, et dès la sixième dose, les crampes, les efforts pour vomir, la

[1] Treatise on Epidemic Cholera, by Dr. Rutherfurd Russell. London, 1849.

[2] Dr. Peu, of Nüremberg.

sensation de brûlure à l'estomac, le sentiment d'anéantissement, les vertiges, la lenteur des pulsations du cœur, étaient sensiblement diminués. Les borborygmes, le froid de la face et des extrémités, leur couleur marbrée, ne cédèrent pas si promptement; cependant ils disparurent peu à peu. . . . . Bien que mes souffrances ne fussent que peu violentes relatives a celles qu'on observe chez les cholériques, cependant le début fut si subit, que j'ai la conviction intime que si je n'avais pu avoir recours de suite à l'esprit de camphre, j'aurais succombé en peu d'heures. Pendant plusieurs jours, j'ai conserves un cercle livide peu marqué autour des yeux; un grand état de faiblesse, des nausées légères avec vertiges, céphalalgie, constriction de poitrine, qui m'obligeaient à prendre le grand air ou à m'étendre sur un lit. Je dois observer qu'alors j'étais occupé depuis le matin jusqu' au soir à soigner des choleriques, tous les autres médecins étant alités." [1]

In reference to this, Hahnemann wrote to Dr. Quin:— "I am much obliged to you for the details of your researches upon the nature of the cholera and of the appropriate homœopathic treatment. You are right in the opinion you express, and it is one borne out by my own observations, that the worst form of cholera is presented by cases of degenerated cholerine. . . . I have already heard from Dr. Gerstel of your attack of the epidemic, and your cure by camphor. I congratulate you on your restoration, and I render thanks to Almighty God for having preserved you to give aid to the unfortunate victims who so sadly require your assistance. Your success in the treatment of cholera is more remarkable from your ignorance of the Moravian language. . . .

"May the gracious God conduct you safely to your own

[1] Du Traitément Homœopathique du Cholera, par F. F. Quin, Médecin Ordinaire de Leopold, Roi des Belges.

home, and bless your efforts to instruct your countrymen in the art of healing in conformity with the laws of Nature.

"Your sincere and affectionate friend,

"SAMUEL HAHNEMANN."

"Coethen, 4th February, 1832.

The Chief Magistrate of the Tischnowitz sent Dr. Quin the following address :—

"At the time of Dr. Quin's arrival here for the purpose of observing the epidemic of cholera, it had reached its greatest malignancy in the villages that surround the town and castle ; this was shown, not only by the numbers who fell ill, but by the shortness of the interval between the commencement of the attack and its fatal termination—often only a few hours. It happened that at the time Dr. Gerstel and Surgeons Hanush and Linhart were all three confined to bed by illness." These were the only medical men in the place. "Although you yourself, upon your arrival, were attacked with cholera, you nevertheless, during your convalescence, with the most humane zeal, undertook the treatment of those ill of cholera during the period when Dr. Gerstel was obliged to keep his bed, and this you did with such success that *not one* patient died.[1] The authorities feel themselves under the obligation to make their respectful acknowledgments to you for the assistance you afforded, with such generous humanity, to the inhabitants of this district. "ERNEST DIEBLE, *Chief Magistrate.*"

"Tischnowitz, 30th November, 1831."

The following Table was sent to Dr. Quin by M. Dieble, along with the letter just quoted.

	Inhabitants.	Cases of Cholera.	Cured.	Died.
	6671	680	540	140
Under Allopathic treatment		331	229	102
Under Homœopathic treatment		278	251	27
With Camphor alone		71	60	11

No one who is acquainted with the onset of cholera can

[1] This was an accident—three died the day after the report was signed.

doubt, after reading Dr. Quin's graphic narrative, that had it not been for camphor, most probably his career would then and there have terminated.[1]

The same epidemic of cholera, in which Dr. Quin had so nearly perished in Moravia, was not long in advancing upon Vienna. Among the hospitals prepared for receiving cholera-patients, was one which had just been opened by the Sisters of Charity of the order of St. Vincent de Paul. The physician, Dr. Mayerhofer, was so impressed by what he had heard of the value of the homœopathic medicines, that he gave them, although only partially. In the year 1835, Dr. Fleischmann, whose long services to his country have been recently recognized by the Emperor's conferring upon him an order equivalent to our C.B., or knighthood, was appointed physician to this hospital. When the cholera returned, in the year 1836, he resolved to give the plan of treatment recommended by Hahnemann a fair trial. The hospital was visited daily by a Government inspector. The number treated was 732; of these, 488 recovered, and 244 died. He embodied his observations in a report prepared at the desire of Government, and presented it in person to Count Kolowrat.[2]

"Upon comparing," says Mr. Wilde, "the report made

[1] An interesting corroboration of the statements given in the text may be here cited, taken from an extract of a letter published in the *Revue des Deux Mondes*, written by Baron de Montbel (who was Minister of the Interior to Charles X. of France) to Dr. Guyon, one of the Commissioners appointed by the Government of Louis Philippe to go into Poland to investigate the cholera. The letter is dated Vienna, February 26th, 1832. "Vous savez combien de prosélytes a fait à Vienne le système homœopathique d'Hahnemann. On assure que cette méthode a amené plusieurs guérisons; ses antagonistes en citent au contraire des funests résultats. Quoiqu'il en soit, jai vu M. le docteur *Queen* (sic), médecin Anglais, homme d'esprit, s'exprimant en français avec une facilité rémarquable. Il revenait de Tisnowitz, ou il s'était rendu au moment de l'invasion (du cholera) pour étudier la maladie dans sa première intensité et dans ces diverses periodes." Baron de Montbel then repeats, almost word for word, the account of Dr. Quin's attack and recovery, as given by himself in the quotation in the text.—*Revue des Deux Mondes* for April 15, 1832, p. 246.

[2] Notizen über das Spital der Barmherzigen Schwestern in Gumpendorf, von Dr. Fleischmann.

of the treatment of cholera in this hospital with that of the same epidemic in other hospitals in Vienna at a similar time, it appeared that, while two-thirds of those treated by Dr. Fleischmann recovered, two-thirds of those treated by the ordinary methods in the other hospitals died." [1]

It will be observed that, in the adoption of camphor for the treatment of cholera, there was no violence done to the feelings or prejudices either of medical practitioners or of druggists. Hahnemann advised that it should be given in several drops at a time for a dose. This, however, was quite the exception to his general rule of practice. As we have already seen, he gave and recommended doses *descending* from the millionth of a drop or a grain as a maximum to the decillionth as a minimum. We can hardly wonder that, seeing the very existence of the most lucrative part of their profession threatened with extinction, the druggists should use their utmost endeavours against Hahnemann. These efforts were so far successful; it was found to be illegal for a physician to dispense his own medicines; and as Hahnemann could not consent, by prescribing through the druggists, to trust the fate of his practice in the hands of his sworn foes, he came to the conclusion that he must quit Leipzig; and the rest of his life was spent in exile from his dear Saxony. In the year 1821, he took advantage of the invitation given him by the then reigning Duke of Anhalt Coethen to take up his abode there. His relations to his patron appear, from a correspondence which has been published, to have been of the most intimate and friendly character; [2] but, except for this, his life at that period was one of pure toil, without almost any alleviation in the way of society or recreation.

Hahnemann, when he went to Coethen, was already

[1] Austria: its Literary, Scientific, and Medical Institutions, by W. R. Wilde, M.R.I.A., Vice-President of Royal Irish Academy, Author of "Narrative of a Voyage to Madeira," &c., &c. 1843.

[2] Hahnemann ein biograph. Denkmal. 1851.

well advanced in years, being sixty-six; he seems to have been pervaded with the conviction that there was a great work given him to do, and that every hour not spent upon it was wasted. He had the feeling that he was *the prophet of medicine*—that to him had been revealed a discovery of infinite importance, and that he was responsible for the way the truth should be made known to the world. "I acknowledge," he wrote to Dr. Stapf, "with lively gratitude, the never-ending grace with which the only Giver of all Good has upheld me, amid all the attacks of my enemies, in strength and fresh courage; and my only wish here below is, that I may be permitted to display, in a worthy manner, the good which God enabled me to discover—or rather, I should say, *revealed* to me—for the mitigation of the suffering of mankind. When this is done, I will gladly die." The letter from which this is extracted is dated April 15th, 1827; so that he was then seventy-two years of age. As the expressions he used are in entire correspondence with his actions, we may give him the credit of perfect sincerity. He lived the life of one absorbed in an idea to which he had devoted himself body and soul. That idea was, the *proving* of medicinal substances and the cure of the sick by their operations. This idea so entirely possessed him, that every other consideration, all the new discoveries of medical science, by which greater accuracy was given to diagnosis,—as for example, the whole art of auscultation—were as nothing. The task given him to do was to ascertain the precise action of substances which might be of use in therapeutics; to experiment with them himself, and to induce others to do the same. But, severed as he was from all his medical associates, the only way in which he could carry out this great object of his life, was correspondence; and the labour thus imposed was so great, that for years he never left the house, except for some extraordinary reason. His

house was a very humble abode, with a garden attached to it, in which he spent his whole day in summer, copying and comparing the observations of his assistants, and putting the newly-discovered, or supposed virtues of the contributors, to the test of experiment, by giving them to patients when their symptoms seemed to him to resemble with sufficient accuracy the effects he had noted down as characteristic of the medicines. His fame had now become so great, that patients consulted him from all parts of Europe, and members of the medical profession made pilgrimages to his shrine. On one occasion he received a visitor who had heard a great deal of Hahnemann and his garden, and who had imagined the garden to be as great as its owner. When he was ushered into the presence of the "prophet of medicine," and found him seated at a table in a summer-house, only a few yards from the house, he exclaimed, "But where is *the garden?*" To which Hahnemann replied, "*This* is the garden." "Surely," rejoined the visitor, "not this narrow patch of ground?" "True it is very short and very narrow; but observe," said the sage, pointing upwards to the blue sky overhead, "*it is of infinite height.*"

It will be seen from this that Hahnemann had a good deal of poetic feeling. Indeed, his letters are full of a sort of mystic piety, a continual reference to the Supreme and Eternal; and this may account for some of his physical speculations tending in the direction of Spiritualism. He found, in the prosecution of his experiments, that substances wholly inert in their ordinary form, such as carbonate of lime and charcoal, become powerful medicinal agents after having been triturated for a length of time with sugar of milk. This led him to believe that, by the minute subdivision of particles and long-continued friction, the hidden immaterial forces became developed, and hence he named the process *Dynamization* — the liberation of

what Lord Bacon called the spirit, or *body pneumatical*, which he represents as enclosed and covered with the tangible parts.

He was led to another bold speculation in regard to the origin of certain diseases, by observing a difference, not only in degree, but also in kind, between chronic and acute. This difference he attributed to the action of a poison, which he called *psora*; and he held, that to cure this class of morbid affections, it was necessary to give a substance which not only corresponded with the actual manifest symptoms of the particular attack of disease under which the patient suffered at the time of examination, but a medicine which had the power of radically changing the constitution, and of directly antidoting the poison it contained; and to this class of medicines he gave the name of *Anti-psorics*, or of antidotes to *psora*, or the hidden virus.

The letters Hahnemann wrote to one of his most intimate friends and earliest disciples, Dr. Stapf, of Nüremberg, and which are evidently of the most confidential character, afford a good idea of his views and occupations during his residence at Coethen.[1]

Dr. Stapf invites Hahnemann to visit him; to which the latter replies, after due acknowledgment of the kindness,—"I cannot accept your invitation, for it is impossible for me to travel even a mile; the short share of existence I have yet to live must be spent with rigid punctuality, from which I cannot swerve a hairbreadth. All journeys are, from henceforth, impossible. I cannot even go to visit my married daughter at Leipzig"—some thirty miles off. This quotation is given to exhibit what Bacon commends in Hippocrates, "*his serious diligence.*" His time was so

[1] The following letters are selected from a great number which I have in my possession, sent me chiefly by Dr. Hering, of Philadelphia, and obtained by him from Dr. Stapf. Dr. Hering was an old intimate of Hahnemann's, who, throughout the correspondence, speaks of him in the highest terms of esteem and respect.

entirely occupied, that he looked forward to no journey but the last, to the "land of the leal." The nature of his occupations we learn from other letters; as, for example, from the following, written likewise to Dr. Stapf:—"I am pleased that you are going to take a fatherly interest in *Conium Maculatum;* I have already done so, and will do so still more, and I hope something of more value will come out of our experiments than the hundred volumes written about Stoerck's treatise *De Cicuta.* I should like you to ask Dr. Rhul to take one of the three powders, marked *a, b, c,* every second morning. Each powder contains four globules of the important antipsoric medicine, *Natrum Muriaticum.* I do not wish him to know this, lest he should not observe the effects with sufficient attention, from not believing it possible so common an article of food could produce any pathogenetic action. It is also of consequence that Dr. Rummel and you should keep the medicine to yourselves until we have made some important cures with it." This letter is dated June, 1829, so that Hahnemann, when he wrote it, was in his seventy-fifth year. Some years earlier, he wrote:—"I am much pleased with Dr. Gross's refutation of the Anti-Organon. Gross seems to me to grow in strength and courage. I regret, however, that he should spend so much time and headwork on these sophistries. Believe me, all these attacks only weary the assailants of truth, and, in the long run, are no obstacle to its progress. We do well to let all these specious, but nugatory articles alone, to sink of themselves into the abyss of oblivion, and their natural nothingness. . . . All these controversial writings are nothing but signals of distress—alarm-guns fired from a sinking ship. To me, they are simply ridiculous, and not worth the time spent on their perusal." Of another attack, he says:—"That those who find their toes trodden on by the new system should utter cries of rage and malice, is perfectly natural; the only remark

a dispassionate man of sense makes upon such outcries is, that they show the case to be serious, and that they wish to overwhelm a better system than they practise, because they are too indolent to study it, or too proud to admit that they are in the wrong. Besides, the passion displayed in the attack, and the obvious inaccuracies and falsehoods, prevent the public accepting such writers as competent judges in the cause."

"Be not dismayed by the bullets that are discharged against us; they do not hurt us if we consider them in a proper point of view; still less can they injure the good cause. Those who believe in the truth of our doctrines, see in the attacks only the blindness of a zealot; our opponents, on the other hand, enjoy it without any advantage to themselves, for the public does not read it; so that I do not see why anyone should vex and worry himself about it. What is true cannot be minted into a falsehood, even by the most distinguished professor." At a later period, in 1836, he writes:—"When it is necessary for the defence of our divine art, or personal honour, to engage in controversy, my disciples will take this duty upon them. *For my own part, I require no defence.*"

Hahnemann, while endeavouring to meet the assaults of his opponents, with the magnanimity of silent endurance, was stung to the quick by what he looked upon as the perverseness of his disciples. In one of his letters, after giving an account of his attendance on the death-bed of his wife, he says:—"Some days before her death, I fell ill, *in consequence of R.'s* letter—and, indeed, very severely—so that I could neither speak a word to any one, nor read or write a line. It was all I could do, twice a day, to creep from my den up to 'the mother's' bed-room (otherwise, she would have missed me), without allowing *her* to see anything was the matter with me. The agitation of the funeral, &c., brought back a kind of nervous fever; then

came the accumulation of unanswered letters, and the importunity of patients." The letter of R. which so agitated him, contained, doubtless, some Homœopathic heresies. Of these, he says, in another letter, after having spoken slightingly of the attacks made by the opponents of his system :—"I am much more afraid of the adulteration of the Society, [*i. e.* the Homœopathic Society], by the admission into it of persons only half-informed. I greatly fear that inaccuracy and confusion will prevail, and I beg of you, in every possible way, to stem and circumscribe the mischief; for if our art once loses its scientific precision—as it must do when these *dii minorum gentium* press into the place of better men—then I am in the greatest anxiety for the future of our system, for it will lose that certainty on which alone we depend for our success. For this reason, I beg of you to reject from your *Archiv*[1] all superficial observations of easy cures. I beg of you to publish only the most accurate and careful experience of well-tried Homœopathists; nothing should appear there but specimens of good practice."

In another letter, he reiterates the same admonition on the necessity of carefulness :—"I beg of you, in the forthcoming Latin volumes, to be more particular in the selection of the symptoms, especially those derived from allopathic sources. Besides, it is *absolutely indispensable* that you give the most particular reference to the text from which the symptoms are taken; for otherwise, a reviser will not be able to find them out for his own use."

It is impossible for Hahnemann to conceal his feelings, when he speaks of what he conceives the wrongs done him by his own followers. He does his best to preach philosophy, but it is manifest he wishes others to be more callous than he is himself. Thus, of two very able, ener-

[1] *Archiv fur die Homœopathie*, was the name of the journal of which Stapf was editor.

getic, and independent physicians, who had adopted Homœopathy, but departed from his directions in regard to some minor points of practice, he writes to Dr. Stapf:—"I see you are very much vexed by the behaviour of —— and ——. Now, in Heaven's name, be not so. Towards myself, I feel it as ungrateful, assuming, and egotistical, and it might cause us much annoyance; but we will not, and shall not let it. We must pass it all before our intellect, and not suffer it to touch our feelings, if we are wise. The more despicable and shocking it is, the less do I allow it to grieve me; because this would injure me, and would not alter the facts. It is a trial sent from above, by the All-wise and All-good, who directs everything for the best, if we will only accept the lesson it teaches, and shape our course for the future accordingly. Do not let your annoyance be expressed, lest our foes should proclaim a schism among ourselves, to the injury of our good cause." It is the fashion to charge Hahnemann with intolerance. He was tolerant of attacks against the system from without, but not tolerant of what he considered errors that compromised the integrity of his doctrines or the success of his method. Had he been more tolerant, he would have been less powerful. He would then have been rather a politician than a prophet, and he might have affected the general development of medicine indirectly, but he never would have founded a school, and established the greatest medical secession on record.

We have already alluded to the death of Hahnemann's wife. This happened in 1830, and made no change in his habits of work. She had been a faithful partner to him in all the vicissitudes of his career, for forty-nine years. Had she lived one year longer, they might have celebrated their *goldene Hochzeit*. But other nuptials awaited him. Five years later there came to Coethen, to be under his care, a lady of the name of Melanie d'Hervilly-

Gohier, the adopted daughter of Louis Jerome Gohier, formerly Minister of Justice, and "President du Directoire Executif de la République Française." Notwithstanding the great disparity in their ages, she formed a true attachment to the old man, which ended in their marriage. Soon after, in the year 1835, they removed from Coethen to Paris, where Hahnemann passed the remainder of his life in the same earnest toil that he had pursued in his retirement, but relieved and enlivened by the pleasant and refined society that capital afforded. He writes to his old friend Dr. Stapf, in 1838, "I find myself better and gayer here than I have been for the last twenty years, owing to my wife surrounding me with distinguished friends of the circle to which she belongs. Many Germans who knew me formerly, find me many years younger, which I attribute to my loving nurse —my faithful spouse—who desires to be kindly remembered, along with myself, to your esteemed family."

True to himself, he could not prove false to any man. Nor did he: to the last he was faithful in all human relations,—

> "And that which should accompany old age,
> As honour, love, obedience, troops of friends,"

were given him in ample measure. Withal he was not unmindful that his departure was at hand. "It is perhaps time," he observed to a friend, in the spring of 1843, "that I quit this earth, but I leave all, and always, in the hands of my God." On the 2nd of the following July he lay on his death-bed, and his wife, by way of comfort, whispered, "Surely some mitigation of suffering is due to you, who have alleviated the sufferings of so many?" To which Hahnemann, with his latest breath, made this reply: "Every man on earth works as God gives him strength, and meets from man with a corresponding reward; but no man has a claim at the Judgment-seat of God. God owes me

nothing: I owe Him much,—yea all." So he died, and was buried with the utmost privacy at the cemetery of Montmartre.

It has been the fate of many a medical system to pass into utter forgetfulness, so soon as it lost the support of its inventor; nay, it has not unfrequently happened, that the architect of some imposing structure, which for a time was the admiration and glory of all the schools, has had to endure the mortification of seeing the fabric which he fondly imagined was to perpetuate his name, crumble into ruins before his eyes. The fate of Homœopathy is almost the reverse of this. Its progress during the life of Hahnemann was as nothing compared to its diffusion after his death; and the system aspires to an independent history of its own. It is curious to observe that its career in different countries has been marked by features of great similarity. At first it has generally been taken up by some bold and intelligent physicians, who have been rather shunned than persecuted by their colleagues; then, as it attracted notice, the mutual animosity between the innovating minority and conservative majority has increased. This majority, having for the most part had some power in its hands, used it to oppress and injure the minority, which, not a whit the worse, proclaimed its wrongs to the world, and brought the public to its rescue.

To illustrate this: In Germany, in the year 1825, Hufeland, the most influential medical writer of the day, published an article upon Homœopathy, and gives the following reasons for doing so:—"I consider it wrong and unworthy of science to treat the new doctrine with ridicule and contempt. It is in my nature to lend a helping hand to the persecuted. Persecution and tyranny in scientific matters are especially repugnant to me. . . . . In addition, *there was the esteem, which*

for many years I have entertained for the discoverer, and which I owed him for his former writings, and his important services to the medical art: besides, several estimable and unprejudiced men had testified to the truth of the system; among whom I may allude by name to President Von Wolff, of Warsaw; Medical Councillors Rau of Giessen, and Widmann of Munich." Hufeland, although opposed to Homœopathy, wished to treat it with the courtesy due to a scientific error advanced by men of learning, reputation, and high moral character. The attention of this *Archiater*—this Duke of Medicine—was directed rather to the theory of like-curing-like, than to the minute doses inculcated by Hahnemann. An aged physician, occupying the exalted station enjoyed by Hufeland, ran no risk by the introduction of Homœopathy, and so he could afford to treat the subject with equanimity, and his opponents with respect. It was very different, however, with οἱ πολλοι—the *plebs medica*—the lower grades of the profession, who made common cause with the medical tradesmen—the druggists. To them it was destruction. All they saw was, that if Homœopathy spread, instead of having to supply an unlimited amount of very costly medicines, from which a prodigious profit was derived, that one druggist would not be able to live where ten now fattened. It was not in human nature to submit tamely to be thus extinguished without an effort; and we cannot wonder that, in their eyes, Homœopathy should seem nothing but a fraudulent system of giving no medicine. The popular aspect of Homœopathy is the smallness of the dose it administers, and hence the term *Homœopathic* has become synonymous with the *ridiculously small.*

The proverb says that "any stick is good enough to beat a dog;" and the first stick the German apothecaries took up was a legal one. There was an enactment which prevented

physicians from compounding their own medicines; this was brought to bear against Hahnemann, and, although he pleaded that he never mixed even two medicines, and that the law was never intended for such a practice as his, yet the stick came down on his back, and he had to leave Leipzig in consequence. In order to avoid such blows, the adherents of his system, when they gave advice to the patients who sought their aid, made a free gift of the medicine. Even this, however, would not do; for on the 13th of June, 1832, an order to the following effect was published at Darmstadt:—"There is no permission granted to the homœopathic physicians to dispense their own medicines. The law can make no difference between homœopathic and other physicians; both must alike prescribe out of the apothecaries' shop." Dr. Weber, physician to the Prince of Solms-Lich was fined thirty dollars for giving medicine gratuitously to his patients.

This was the *action*, and to it succeeded, in the course of nature, the *reaction*. A petition was signed on the part of 1300 families, praying the Government to interfere. The Government declined. This increased the agitation; and the matter being brought before the Baden *Land-tag*, or Parliament, was the subject of an animated debate. The speeches of some of the members would do no discredit to St. Stephen's. Deputy Höffner thus stated the case:—"The grievance complained of is undoubtedly one of the most important subjects for the consideration of this Parliament; for it affects the question whether a new medical system, which threatens wholly to overturn the old ones, shall be allowed to afford the evidence of experience as to whether it deserves the preference or not. The decision of the matter before us must rest upon the answer to two questions; *first*, Has homœopathy a claim to be a real scientific system? and *second*, Does it suffer from a law which stands in the way of homœopathic physicians dispensing their own me-

dicines? Both these questions must be answered in the affirmative. The first admits of no difference of opinion: even the allopathic physicians admit the affirmative. It is, indeed, very natural that they and the apothecaries should employ every means in their power to arrest the storm; but that is no reason why the question of grievance should not be fairly discussed by the Parliament." The next speaker was Count Lehrbach, who observed:—"In the Middle Ages it was the fashion to burn witches; and if a steamboat had then made its appearance, it would doubtless have been consigned to the flames as a wizard of gigantic size. If Homœopathy be charlatanrie, it will soon fall to the ground of itself. How many poor people are now deterred from seeking medical advice for fear of the long apothecaries' bills? What an advantage to them to be cured for nothing! That the physician should be controlled by the apothecary is absurd. The physician's highest interest is to cure his patient; the interest of the apothecary, on the other hand, like that of any other tradesman, is to make money by patients being long ill. The public voice calls loudly for this new system, and it is the duty of the Chambers to see that it is not swamped."

The result of the debate was the passing of the following resolution:—

"It shall be allowed to physicians to dispense homœopathic medicines gratuitously."

The matter, however, was not allowed to rest at this stage, but came before the Upper Chamber, of which the Prince of Solms-Lich, whose physician had been fined, was a member. The prince observed, with much point, "It is said that medical colleges alone can decide this matter, and that it is not for either homœopathic physicians or the public to do so. This is very plausible, and would be perfectly true if the said colleges were equally composed of homœopathic and allopathic physicians. As long, however,

as this is not the case, so long will these colleges decide in their own favour; and one may expect that their prejudice more than their reason will influence their judgment." The Second Chamber confirmed the sentence of the first.

Emboldened by their success, the adherents of the new system of medicine pushed forward, and actually obtained a commission to inquire into the propriety of securing public instruction in Homœopathy. The commission concluded its Report by the following recommendations:—

"1. That a committee of physicians, experienced in both the allopathic and homœopathic systems, be appointed to determine the best way of giving instruction in the new method.

"2. That physicians be allowed to give their medicines gratuitously.

"3. That only licensed physicians be allowed to practise the homœopathic method; and that those who propose to do so be examined by the State authorities, to ascertain their competence."

The reasons given for these resolutions are, the increase in the number of the adherents of homœopathy, and the right of the citizen to be protected against incompetent practitioners.

It is signed by the President, Mitter-Mayer; the Secretary, Rutchmann, and Dr. Nordes v. Durrheimb.[1]

While, in Northern Germany, the rod was taken from the hands of the apothecaries by Parliamentary action, in Austria, the redress of the grievance was due to the late Emperor and his Minister. We have already alluded to the incident when speaking of the cholera; but the facts connected with the establishment and management of the most im-

[1] Vollständige Sammlung aller Verhandlungen und Aktenstüche der Kammern Badens und Darmstadt's über die Ausübung des homœopathischen Heil-verfahren. Von Dr. Griesselich Carlesruhe. 1834.

portant homœopathic hospital in Europe, are of such historical importance, that we shall avail ourselves of an address delivered by Dr. Fleischmann at Vienna, in the year 1855, entitled, "A Contribution to the History of Homœopathy."[1]

Since the year 1818, the practice of Homœopathy had been forbidden to Austrian physicians. "In 1836, the cholera broke out, and the Hospital of the Sisters of Charity was required by the Government to be opened for cholera patients. A requisition was made to me to undertake their treatment. I gladly accepted the charge, but previously obtained from Count Kolowrat, the Home Minister of the day, a permission to employ Homœopathy openly in the hospital. Out of 732 of the patients 488 were cured, and 244 died. When the epidemic was over, I prepared a report upon its course, and the plan I had followed in its treatment. This report I presented to the Minister, and I petitioned at the same time for the abolition of the prohibitions against the practice of Homœopathy, which had very much fallen into disuse. Very shortly afterwards, there appeared an ordinance, signed by the Emperor, granting to every duly-qualified physician the right of freely practising according to the Homœopathic method. Thus, at one blow, were struck off the fetters which had for eighteen years confined the Homœopathic physicians in Austria. From that time, young physicians began to study the new system more, and to attend the hospital. The number of pupils so increased, that on account of want of room they had to be limited: and there is scarcely a province in Europe where there is not some one Homœopathic physician now in practice, who first learned to appreciate the truth by seeing its results in my hospital." There follow some details of the number of patients, and the classes of diseases, treated by Dr. Fleisch-

[1] Allgem. Hom. Zeitung, Vol. L. p. 158.

mann in this hospital. Besides cholera patients, there had been admitted 17,313 cases; of these, 15,734 were cured, 447 dismissed uncured, and 1,078 died. Of the total, 466 were considered incurable. Besides the full tabular view of all the cases treated in his hospital for twenty years, Dr. Fleischmann gives a few examples of common dangerous diseases, and the results he obtained. Among them we find the following:—"Erysipelas, 514 cases; of which 510 were cured, and 4 died of gangrene: Rheumatic fever, 1,417; of which 1,416 were cured, and one remained in the hospital when the report was made: Intermittent fever, 1,066 cases, of which 1,058 recovered, and 8 died. Inflammation of the lungs, 1,052 cases; 1,004 of which were cured, and 48 died."

The value of these statements depends entirely upon the trustworthiness of Dr. Fleischmann as an observer and narrator of facts. However, practising, as he does, a new system in public, and one now exciting no small degree of curiosity, he is, we may be sure, pretty sharply looked after. At his hospital may be met, any day in the year, a good many English physicians, who are spending their professional honeymoon on the Continent, before settling down to the quiet routine of practice. These travellers always carry their note-books about with them, and woe be to any foreign hospital-physician, if he be detected in giving a wrong name to a disease.

Sir John Forbes, a great opponent of Homœopathy, in an article in the "British and Foreign Medical Review,"[1] tells us that a friend of his, a physician, and no Homœopathist, attended Dr. Fleischmann's hospital for three months, and carefully watched the progress of the cases of pneumonia, &c. So far was he from detecting error or deceit, that he corroborated all Dr. Fleischmann said.

[1] Homœopathy, Allopathy, and Young Physic. 1846.

Nor is there a keener critic than Mr. Wilde,[1] who bears similar testimony to that adduced by Sir John Forbes. "Whatever the opponents of this system," he writes, "may put forward against it, I am bound to say—and I am far from being a homœopathic practitioner—that the cases I saw treated in the Vienna Hospital, were fully as acute and violent as those that have come under my observation elsewhere; and the statistics show that the mortality is much less than in other hospitals of that city. Knoltz, the Austrian *protomedicus*, has published those for 1838, which exhibit a mortality of but five or six per cent.; while three similar institutions on the allopathic plan, enumerated before it in the same table, show a mortality as high as from eight to ten per cent.[2]

Thus we see that in Germany, the country of its birth, Homœopathy has gone through the orthodox stages of external development. First it was laughed at and ignored by the profession; then it was to be put down as a nuisance; by-and-by, it was recognized as too important for the former method of treatment, and too powerful, on account of the popular favour it had received, for the latter; and now, it has become one of the institutions of Germany, being taught in the University of Munich and elsewhere.

It would not be in accordance with the plan of this work to narrate the history of Homœopathy, how it spread from one country to another, the opposition it encountered, the enthusiasm of its friends, and its various fortunes. To do justice to this theme, would require as many chapters as there are pages left at our disposal; for there is hardly any portion of the habitable globe where the system has not made its way—and it is said to flourish best in the freshest and most remote regions. In America, for example, ho-

[1] Mr. Wilde is now employed for the second time by Government to superintend the Irish census. A proof of his character for accuracy.

[2] "See general table of the Vienna hospitals at the conclusion of this article."—Wilde. Op. cit., p. 277.

mœopathic practitioners are numbered by thousands; and in the State of Michigan, a few years ago, the Legislature passed an act requiring the Board of Regents of the University to institute a chair of Homœopathy. In Australia, it is said to be almost the prevailing system. That these young countries should take it up in this zealous way, conservatives may consider "no great argument for their wisdom;" while liberals may conclude the quotation of Benedict's words, by adding, "nor any great proof of their folly." The facts are referred to in order to show how hopeless it would be, in our short space, to enter into the narrative of the propagation of the new system. We shall therefore content ourselves with briefly describing its introduction into England.

In the fifth volume of the *Archiv*,[1] there is an extract of a private letter addressed by Dr. Necker to Dr. Müller. The letter is dated, Naples, 10th March, 1826. After acknowledging that he owed his life to Hahnemann, Dr. Necker goes on to say, that for four years he had been practising the system of Homœopathy successfully at Naples; where he went in the suite of Baron Koller, General Intendant of the Austrian army; that among his medical colleagues, who had been in the habit of watching his cases for *two years*, was Dr. D. de Horatiis, physician to the queen, and Dr. Romano: besides Dr. Quin and Dr. Watson, two English physicians, also attended. So that we may safely assume that, so far back as the year 1824, homœopathy was much talked of at Naples. Indeed, we are not left to conjecture in this matter, for we are well supplied with the Naples gossip of this period by Dr. Madden, in his Memoirs of Lady Blessington.[2]

One of the leaders of the English circle there was Sir

[1] Archiv für die Homœopathische Heilkunst, p. 45, part 3. Leipzig.

[2] The Literary Life and Correspondence of the Countess of Blessington, by R. R. Madden, M.R.I.A. 1855.

William Gell. He had gone out to Italy in the year 1814, in the suite of the Princess of Wales—the too-celebrated Queen of George IV. Sir W. Gell was one of the witnesses for the defence, and he swore before the House of Lords that he left Her Majesty's service on account of being attacked by gout. In all the allusions made to him by Moore, Bulwer, and other celebrities, he is represented as very gouty, accomplished, and remarkably pleasant. On the 1st of January, 1823, Sir Wm. Gell writes to Dr. Quin from Rome, "I arrived here, notwithstanding my malady and all the prophecies that I should not set out. . . . I now stumble over my garden, with two canes as supporters, for without them, and particularly without high heels, I walk in the shape of the figure 7, *in spite of the German doctor* and his remedies." Again, on the 19th of March, he writes, "My medicine is now come to an end, and that brute of a doctor Necker will not send any more, so that I am at present reduced to the *ledum palustre;* and, I suppose, in consequence, have the gout in both my elbows, a knife in my knee, and a nail in my instep." Two years afterwards, on the 4th of January, 1825, he writes, "Don't imagine I neglect my Doctor (Necker), whose poisoned sugar I take every five days, with great success, and the most innocent results."

Dr. Quin, we learn from these memoirs, was travelling in Italy in 1820, whither he returned the following year, 1821, with the Duchess of Devonshire, who died in the spring of 1824.[1] He resided, and practised for six years, in Naples, where he seems to have enjoyed the professional confidence and private friendship of a large and influential circle. Among the notables, was the late Mr. T. Uwins, whose correspondence has been recently published, from which the following extracts are taken.

[1] Letter of Sir W. Gell to the Countess of Blessington, April 5th, 1824.

In a letter to his brother, Dr. Uwins, he says:—"Necker's practice, or rather, Hahnemann's, occasioned so much talk in the medical world, that Dr. Quin found it necessary last summer to go into Germany to study it."[1] Somewhat later, Mr. Uwins writes:—"Quin has come back (from Germany), if not a convert to the doctrine, at least so far impressed with its importance as to continue his study with much perseverance and ardour; and Quin is anything but a trifler. I am not sure whether this system has yet reached England. All the medical men here, with the exception of Quin, are loud against it. Your friend R——, who, by the way, has a good deal of the old woman about him, gets red in the face, and almost foams at the mouth whenever it is made a matter of conversation. *They all predicted that the entertainment of it for one moment would ruin my little friend*, and they were already shouting in triumph over his fallen reputation. So far from this being the case, however, Quin's popularity has greatly increased this season, and he has done more than all the rest of them together. Naples, March 8th, 1827." Again he writes on the 3rd of May:—"You will soon have Quin in London, and I shall soon follow him. . . . . After a season of the greatest success, in which he has practised almost exclusively in families of the highest rank, he has been invited by the Prince Cobourg to become his physician, and he is now attached to the royal household, with a handsome salary, to which no conditions are annexed but the necessity of living at Marlborough House, dining at the Prince's table, and travelling in his *suite* whenever he chooses to visit the Continent. The Prince has behaved in the most noble manner to him; he lays no restriction on his practice, and puts no bounds on his opportunities

[1] Memoir of Thomas Uwins, R.A., late Keeper of the Royal Galleries and the National Gallery, Library of the Royal Academy, &c., by Mrs. Uwins. London, 1858.

of study; but, on the contrary, promises to do all he can to increase his reputation, and encourage his pursuits. For a young physician of six-and-twenty, this is a piece of no ordinary good fortune; but it must be recollected that Quin is no ordinary man, and I can assure you the Prince is as much congratulated here on his acquisition—on his taste and judgment in selecting such a councillor and companion, as Quin is in having obtained so honourable an appointment."[1] "The late Duke of Cambridge," writes Dr. Madden,[2] "left no means untried to induce him to accept the post of physician to his family on Allopathic principles, but these efforts were in vain. Yet I remember when Dr. Quin made a *burla* of Hahnemann and his infinitesimal dose system. At an early period of his career in Naples, professing to write against this Homœopathy, he went to Germany to inquire into the system; and he who went to scoff remained to study, and to become a convert to the new theory of medicine." Thus, in the year 1827, as physician to the Prince Leopold of Saxe Cobourg, the present King of the Belgians—not as a disciple of Hahnemann, but with very decided predilections in favour of his doctrines, which he had studied at the fountain-head—Dr. Quin returned to England, and began to practise Homœopathy. He has continued to do so from that time, with occasional absences, when travelling with the King of the Belgians, or induced to go abroad for some special object, as in pursuit of the cholera in the year 1831, which adventure had nearly cost him his life, as already told.[3]

As early as 1832 he had acquired so large a practice and reputation as to attract the attention of the College of Physicians, and this citadel of orthodoxy fired a gun across his bows in the following fashion :—

[1] Op. cit., Vol. II., p. 40.
[2] Mem. of Lady Blessington, Vol. II., p. 112.
[3] P. 427.

"Jan. 4th, 1833. College of Physicians, Pall Mall East.

"We, the Censors of the Royal College of Physicians, London, having received information that you are practising physic within the city of London, and seven miles of the same, do hereby admonish you to desist from so doing, until you shall have been duly examined and licensed thereto, under the common seal of the said College, otherwise it will be the duty of the said College to proceed against you for the recovery of the penalties thereby incurred."

"The Board for examining persons who have the requisite qualification, is holden at the College on the first Friday in every month.

"To Dr. Quin, &c."

Then follow the signatures of the Censors.

As this produced no effect upon the course of the lively adventurer, so impatient was the College, that before there was time for a compliance with the notice, another shot was fired on the 1st of February, 1833:—

"Sir,—I am desired by the Censors of the Royal College of Physicians to express their surprise that they have received no answer to their letter of Jan. 4th, admonishing you to desist from practising physic until you have been duly examined. The Censors' Board meets for the purpose of examinations on the first Friday in every month.

"I am, Sir, your obedient servant,

"To Dr. Quin." "———— ————, Registrar.

Thus importuned, Dr. Quin replied:—

"King Street, St. James's, Feb. 3rd, 1833.

"Sir,—Your letter of the 1st current was only delivered to me yesterday, and I hasten to beg that you will lay before the Censors of the Royal College of Physicians, that it was out of no disrespect to them that I did not answer their communication of Jan. 4th ult., but because I did not conceive that a document of the nature sent to me required an answer. I have now the honour to acknowledge its receipt, as well as that of your letter containing a repetition of the information conveyed to me in their communication.

"I have the honour to be, Sir, your obedient and humble servant,

"FREDERIC F. QUIN."

Strange as it may seem, this answer appears to have entirely satisfied the Royal College of Physicians; for, from that day to this, a period of nearly thirty years,

they have "*not* proceeded against" the offender, nor against any one of the many who have followed his course, "for the recovery of the penalties," as they pronounced it *their duty* to do.[1] Hahnemann's system was so great a novelty in Britain about this time that its orthography was unsettled. "*Homœopathie*," wrote Sir D. Sandford in 1830, "for the last twenty years has caused no little sensation among our Teutonic neighbours, though its *very name* has as yet hardly penetrated into our insular regions.[2]

For about ten years the medical profession remained in the same quiescent state as the dignified representatives of their sensibilities. The accession of several young energetic physicians to the new school, the publication of a quarterly journal devoted to the cause,[3] and the conversion

[1] It was prophesied by one of the Censors, a physician of great eminence, that as Homœopathy would not last above two years, it was unnecessary to take steps against Dr. Quin. This was nearly thirty years ago. Now there is a Homœopathic Hospital in the Metropolis, and between two and three hundred legally-registered medical practitioners practising Homœopathy throughout Great Britain.

[2] Edinburgh Review for Jan. 1830.

[3] Dr. Arnett, who now holds some professorial chair in Vienna, published in 1848 the first number of a periodical entitled, "Jahresbericht über die Fortschritte und Leistungen der Homœopathie in In-und-Auslande," from which the following extract is taken :—"Mit dem, 1 Januar, 1843, sollte für die Homœopathie in England eine neue æra beginnen. Drei junge Männer, *Drysdale*, *Russell*, und *Black* schaarten sich mit frischem Muthe zusammen, und wurden von da an die Träger der neuen Fahne. Sie grundeten das '*British Journal of Homœopathy*,' dessen ersten Zweck war die besten Aufsätze der homœopathischen Literatur . . . ihren Lesern vor zu führen . . Die Schriften und Lehren der obgenannten Trias—aus der bald *Black* verschwand, um später *Dudgeon* platz zu machen—trugen unstreitig am meisten zur Verbreitung der Homœopathie in alle Gegenden bei, während das Journal für ihren Wohnorten weiter entfernten wirkte, bildeten sie selbst in ihren *Dispensaries* zu Liverpool und Edinburgh nach und nach einen Kreis von Schülern und ein homœopathisches gesinntes Publicum."—P. 336.

In reference to the Edinburgh Dispensary, we have the testimony of another foreign physician, Dr. Malan, son of the celebrated pastor of Geneva. In a pamphlet entitled "Homœopathie est une Vérité ou les faits, tels qu'ils sont," published at Geneva, the following passage occurs :—"A *Edinbourg* les progrés de l'Homœopathie ont été encore plus surprenants. Apportée, il y à peu de temps, par de jeunes médicins [*i.e. Drs. Russell* and *Black*], elle compte aujourd'hui un nombre croissant de praticiens nouveaux, et le dispensaire, ouvert tous les jours pendant trois heures, et desservi par

of one of the most eminent professors in the great medical University of Edinburgh, roused the defenders of orthodoxy into activity, and made them resolve upon a more decided policy. In the year 1846, Sir John Forbes wrote an article in the "British and Foreign Medical Review," which excited immense sensation. It begins thus:—"Although the subject of homœopathy has been but little adverted to, and never formally noticed, in the pages of this journal, we have not been unaware of its claims to attention, not regardless of its remarkable progress in every country in Europe, both as a system of medical doctrine, and a system of medical practice. We ought, probably, to have noticed the subject long ago,—at any rate, we can refrain no longer from doing so now, when one of the publications, whose title heads this article, shows that the new doctrine has found its way into the halls of one our most estimable Universities, and is openly advocated and promulgated by its Professor of Pathology."[1]

This article acted as a sort of challenge to the two parties to engage in open controversy. It was accepted by them both. The adherents of homœopathy were limited to the use of literary weapons, and they discharged a brisk fire of pamphlets and "detestable little books," addressed, like those in the seventeenth century, to the popular understanding.[2] The orthodox party, on the other hand, having command of all the strongholds, the colleges, the universities,

quatre médicins ne peut plus suffire au grand nombre des malades. C'est la que, poussé par les circonstances, je dus mettre en pratique la théorie qué j'avais de l'Homœopathie, et c'est la aussi que les faits nombreux dont j'ai été journellement tèmoin pendant plus de cinq mois, m'ont entièrement converti à la vérité en médecin."—P. 28. Dr. Malan here refers to the year 1843–44.

[1] An Inquiry into the Homœopathic Practice of Medicine, by W. Henderson, M.D., Professor of Medicine and General Pathology in the University of Edinburgh. London and Edinburgh, 1845.

[2] The circulation of these is very large. Some of "Sharp's Tracts" have reached an eighth edition, and "Laurie's Domestic Medicine" has gone through not much short of twenty editions!

&c., resolved to try the effect of force as well as argument. In Scotland, where the banner of insurrection had been raised by a Professor and a Quarterly Journal, this resolution took the form of an attempt to expel the Professor from the College of Physicians, and to deprive him of his chair in the University; and, impressed with the truth of the maxim, that "prevention is better than cure," the examining medical bodies went so far as to exact from the candidates for degrees a profession of no-faith, present or future, in Homœopathy, as a condition of granting a degree or diploma. The extravagance of this proceeding called down upon them the censure of the greatest ornament of Scotland—Sir William Hamilton,—whose system of metaphysics is now setting English philosophers by the ears. His reproof is conveyed in the following severe words:—"I see that the medical examiners have been publicly accused of rejecting a candidate, not for incompetence, but on the confessed ground that he was supposed favourable to a medical theory rising dangerously in opinion, and not in unison with the medical theory of his examiners. On such a step—*such an injustice—such an absurdity*—the old sectional examiners would not have ventured. If the charge be well founded, an Edinburgh Medical graduate *may* now be an ignorant, unable to spell his mother tongue, but *must not* be a proficient, professing to think for himself. So certain, also, are now the opinions of a majority touching the very practice, and in the very body where heretofore medical scepticism was always in proportion to medical wisdom! Our Gregorys and Thomsons—what would they now say to this?"[1]

As the Scotch Colleges and Universities were deaf to the voice of their great teacher, the folly and injustice of their conduct had to be checked by the British Legislature; and a Bill, which passed in the year 1858, contained the following enactment:—"In case it shall appear to the

[1] Discussions on Philosophy and Literature, by Sir William Hamilton, Bart.

General Council that an attempt has been made by any body, entitled under this Act to grant qualifications, to impose upon any candidate offering himself for examination, an obligation to adopt or refrain from adopting the practice of any particular theory of medicine or surgery, as a test or condition of admitting him to examination, or of granting a certificate, it shall be lawful for [*i. e.* it shall be the duty of] the said Council to represent the same to her Majesty's Most Honourable Privy Council, and the said Privy Council may thereupon issue an injunction to such body so acting, directing them to desist from such practice; and in the event of their not complying therewith, then to order that such body shall cease to have the power of conferring any right to be registered under this Act, so long as they shall continue such practice."[1] Acts of Parliament are not celebrated for the perspicuity of their language, and generally require an interpreter. The meaning of what we have just quoted is simply this—that if the Scotch Colleges or Universities persevere in refusing degrees to candidates who will not abjure homœopathy, these colleges shall be deprived of their power of granting degrees, until such time as they learn to move in accordance with enlightened public opinion. So long as they constitute a part of the great British army of progress, they must march in step, and cannot be allowed while in rank to dance the Highland fling.

This was felt not only by philosophers and legislators, but by their own colleagues in England, who anxiously discountenanced this northern extravagance, as is shown by the following resolution, published by the Royal College of Surgeons of England :—"That the Council have attentively and repeatedly considered the various communications which they have received on the subject of homœopathy; and, after mature deliberation, have resolved, that it is *not*

[1] An Act to Regulate the Qualifications of Practitioners in Medicine and Surgery. 2nd August, 1858. Clause XXIII.

expedient for this college to interfere in the matter." Possibly the College of Surgeons had enjoyed the advantage of a consultation with the College of Physicians, and had been informed by the "learned, grave, and potent seignieurs," who constitute that venerable body, that the utmost length it was safe to go, in regard to this popular medical heresy, was to shake the head at it with mysterious emphasis, as they had done five-and-twenty years before. But there is a class of persons who are described by the poet as rushing in "where angels fear to tread;" and those who prefer the moderation of broad England to the intolerance and extravagance of Scotland, will probably be of opinion that the contrast to angelic hesitation is well illustrated in the subjoined resolutions passed by "The Provincial Medical and Surgical Association;" which called forth, as such things do, a rejoinder. The comparative merits of the two historical documents is left to the judgment of the reader.

THE BLAST.

RESOLUTIONS OF THE PROVINCIAL MEDICAL AND SURGICAL ASSOCIATION.[1]

The following Report was brought up, and unanimously agreed to.

"Your committee have, after consultation with numerous members of the Association, maturely considered the subject referred to them, and beg respectfully to suggest the adoption of the following resolutions:—

"That it is the opinion of this Association that Homœopathy, as propounded by Hahnemann, and practised by his followers, is so utterly opposed to science and common sense, as well as so completely at variance with the experience of the Medical Profession, that it ought to be in no way or degree practised or countenanced by any regularly-educated medical practitioner.

THE COUNTER-BLAST.

COUNTER-RESOLUTIONS OF THE BRITISH HOMŒOPATHIC MEDICAL SOCIETY.

A Series of Resolutions on Homœopathy passed by the Provincial Medical and Surgical Association, at Brighton, on the 14th of August, having been read, it was resolved—

"That this Society deeply regrets that a body of gentlemen belonging to a liberal profession should resort to invective in place of argument.

"That the merits of Homœopathy being a subject of dispute between two parties in the medical world of equal professional standing, it is impossible that a resolution of one of these parties, that the views of the other 'ought to be in no degree countenanced,' can have any influence in facilitating the settlement of the question in dispute.

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[1] Passed at a meeting held at Brighton on the 14th of August 1851, and published in all the principal newspapers of the day.

"That Homœopathic practitioners, through the press, the platform, and the pulpit, have endeavoured to heap contempt upon the practice of Medicine and Surgery as followed by members of this Association and by the Profession at large.

"That for these reasons it is derogatory to the honour of members of this Association to hold any kind of professional intercourse with Homœopathic practitioners.

"That there are three classes of practitioners who ought not to be members of this Association; viz.—1st, real Homœopathic practitioners; 2nd, those who practise Homœopathy in combination with other systems of treatment; and 3rd, those who, under various pretences, meet in consultation, or hold professional intercourse with those who practise Homœopathy.

"That a committee of seven be appointed to frame laws in accordance with these resolutions, to be submitted to the next annual meeting of the Association.

"That the thanks of the Association are eminently due, and are hereby given, to the Presidents and Fellows of the Royal College of Physicians and Surgeons of Edinburgh for their determined stand against Homœopathic delusions and impostures.†

"That the thanks of the Association are also due, and are hereby given, to the Universities of Edinburgh and St. Andrew's for their resolution to refuse their diplomas to practitioners of Homœopathy, but the Association feel imperatively called on to express its disapproval of any School of Medicine which retains among its teachers any one who holds Homœopathic opinions.

"That these resolutions be printed and transmitted to all the Medical Licensing Bodies and Medical Schools in the United Kingdom, and that they likewise be inserted in the *Times* newspaper, the *Morning Post*, the *North British Advertiser*, *Saunders's News*

"That, in stigmatizing Homœopathy as an 'irregular practice,' as a 'delusion,' and an 'imposture,' the Provincial Medical and Surgical Association resorts to terms of abuse which are at the command of every one; and which, while they are in every case inexcusable, unless accompanied by proofs, are especially valueless when employed to silence a new doctrine in opposition to the preconceived views of the persons by whom such terms are used.

"That the differences between Homœopathic practitioners and their brethren of the old school being simply differences of opinion, a resolution not to hold professional intercourse with them is nothing more than the announcement of an inability on the part of the members of the Provincial Medical and Surgical Association to tolerate in others the same independence of judgment they claim for themselves.

"That, while the legislatures of two of the most important States of the American Union (Pennsylvania and Ohio) have granted charters of incorporation to Homœopathic Universities—while the Chambers of the Kingdom of Bavaria, of the Grand Duchy of Baden, and other German States, have authorized professorships of Homœopathy in the public Universities—while the Imperial Government of Austria has sanctioned the establishment of Homœopathic hospitals in different parts of its dominions—while, in Berlin and Moscow, similar hospitals exist—and, while one hundred beds in the Hospital of St. Marguerite (a branch of the Hôtel Dieu in Paris) are devoted to patients who are openly treated in accordance with the Homœopathic system by Dr. Tessier and his hospital assistants,—it is to be deplored that so large a portion of the medical body in England and Scotland should not only commit themselves to personal animosities against all who may entertain the system, but should record

Letter, all the British and Irish medical periodicals, and in such other journals as the Council may sanction upon the recommendation of the branch Associations.

"In proposing these resolutions for the adoption of the Association, your committee are anxious to state that they are actuated by a strong sense of the importance of the subject in its relation both to humanity and morals. They most conscientiously believe that the countenance afforded to the form of charlatanry herein alluded to is detrimental to the true interests of the public, as it is subversive of that strict integrity which ought to characterise practitioners of medicine, and which has ever distinguished the profession in these kingdoms."

"John Rose Cormack, M.D. Edin., Fellow Royal College Phys. Edin., of Putney.

"James Tunstall, M.D. Edin., of Bath.

"H. H. Ranking, M.D. Cantab., of Norwich."

their thanks to the Royal College of Physicians of Edinburgh for having endeavoured to expel from their body those of its members who practise Homœopathy, and to the Universities of Edinburgh, Aberdeen, and St. Andrew's, for having indicated an intention to deny their diploma to every student who shall refuse to give a pledge that he will not publicly profess himself a convert to its truth.

"Finally, that the British Homœopathic Society has never, as a body, either 'through the press, the pulpit, or the platform,' endeavoured to heap contempt upon their allopathic brethren, their conviction being that nothing could tend more to retard their cause than the use of taunts and imputations, in lieu of the calm statement of such evidence as from time to time it may be in their power to furnish."

"For and in the name of
The British Homœopathic Society,
"FREDERICK F. QUIN, M.D., President. Physician to the London Homœopathic Hospital," &c., &c.

EPILOGUE.

It was the fashion with dramatists at the end of their piece, when the masks had withdrawn from the stage, to terminate the performance by a few explanatory sentences, spoken in their own proper person. In like manner, after having endeavoured to represent, with dispassionate accuracy, the successive acts of the great drama—let us not call it tragedy—of medicine, I propose, in the few pages that are left, to explain, with all possible brevity, why I have brought this history to what to many will appear an abrupt, and to some, even, a grotesque conclusion. How comes it, for example, that no mention is made of the systems of Rasori or Broussais? for both these distinguished men were born long after Hahnemann, and both exerted, for a time, a powerful influence upon medicine. It is true that Rasori introduced a modification of Brunonianism into Italy. Like Brown, he attributed all human maladies either to an excessive or defective amount of excitability. The former he encountered with depletion, chiefly by means of the lancet; the latter, by stimulants. Unlike Brown, however, he conceived the vast majority of diseases to be due to an excess of excitement; and so he sent forth his disciples, to the number, according to Thommasini,[1] of three hundred, to shed the blood of their unhappy countrymen to an amount never before known in the records of even the most sanguinary periods of medical history. Let one example of his practice suffice:—"A

[1] Sullo stato attuale della nuova patologia italiana considerazione. Milano, 1827.

robust man was admitted into the hospital the second day of his illness. He had considerable fever and sharp pain in the right side of the chest; the pulse was strong, the breathing short. *Prescription:—Two pounds* of blood to be drawn from the arm, and 18 *grains of digitalis* to be taken. On the third day, the pain continued, pulse 112: 18 *ounces of blood* to be drawn, and 24 *grains* of digitalis to be taken. *The same evening, other* 18 *ounces of blood* to be drawn. On the fourth day, the *same symptoms:* 18 *ounces of blood* morning and evening, and 36 *grains of digitalis.* On the fifth day, *no change:* to be twice bled, and to have two scruples of digitalis. On the sixth day, all the symptoms were worse; pulse 100; great weakness: *a pound of blood* to be drawn, and two scruples of digitalis to be taken. On the seventh day, no change. Repeat the bloodletting and the digitalis. On the eighth and ninth day, worse: repeat the bloodletting to one pound. After this operation the patient—*died.* In fourteen days he had lost 15 pounds of blood, and taken 220 grains of digitalis!"[1]

Rasori treated 652 cases of pneumonia after this fashion. Of these 147 died, giving a mortality of 22 per cent. Fleischmann treated 1058 cases of pneumonia. Of these 48 died, and the rest recovered, giving a mortality of less than 5 per cent. This was in the Homœopathic Hospital at Vienna. At Paris, Dr. Tessier treated 40 cases of the same disease, on the principle of Hahnemann, *not* of Rasori. Of these 40, 2 only died, and the rest recovered. Dr. Tessier was attached to the Hôtel Dieu, and he has published a full narrative of his cases; so that the professional reader can judge for himself how far his general conclusions are to be relied on. Some of these are very striking. He says:—"I have thus related 40 cases of pneumonia. It might be observed, perhaps, that I ought to have related all the cases which I have treated, in order to furnish a com-

[1] Eble Geschichte der Practischen Arzneikunde, Vol. II., p. 52.

plete statistical series. I have not adopted this method, for the simple reason that I have not yet felt authorized to place the old-school treatment of pneumonia in such an evident position of inferiority, as it would undoubtedly have occupied if I had related every case. For it would have been found that all the patients who came to my wards before suppuration had set in were cured—except one."[1]

Rasori is excluded because his system has perished without leaving a trace of its existence, except in the re-action it gave rise to against the use of the lancet. This reaction has taken a positive and a negative direction. The positive we have already largely described under Homœopathy; the negative we must notice, after explaining the absence of Broussais.

Broussais, like Rasori, started from the school of Brown. The first of the six hundred and seventy-eight propositions which constitute the chief part of his famous work is, that "the life of an animal is only maintained by external stimulants (*Brown*) and whatever exalts the vital phenomena is stimulating."[2] He soon broke away from Brown and Rasori, however; for while they both regarded disease as an action pervading the whole frame, Broussais, on the contrary, proclaimed that the seat of almost every human malady, from small-pox to bronchitis, was the mucous membrane of the intestines. Inflammation of this, he called, *Gastro-enterite.*[3] This single word represented almost the sum total of his pathology. The art of the physician consisted in detecting a *gastro-enterite.* The consequences that result from not recognizing this *fons et origo mali,* Broussais thus indignantly deplores:—"Qu'on se figure dans toutes les parties du monde civilisé des légions de médicins qui ne

[1] Clinical Remarks on the Homœopathic Treatment of Pneumonia, by J. P. Tessier, M.D. Translated by C. J. Hempel, M.D. New York, 1855.

[2] Broussais Examen des Doctrines Médicales. 1829.

[3] Small-pox begins as an acute gastro-enterite. Prop. 142. Measles and scarlet-fever likewise; and catarrhal inflammation of the eyes, nose, throat, and bronchia, begin in *gastro-enterite.* —143.

soupçonnent pas même l'existence des inflammations gastriques, ni l'influence de ces phlegmasies sur le reste des organes; qu'on se les représente versant à flots des vomitifs, des purgatifs, des remèdes échauffants, du vin, du l'alcohol, des liqueurs impregnées de bitume et de phosphore sur la surface sensible des estomacs phlogosés; que l'on contemple les suites de cette torture medicale, les agitations, les tremblements, les convulsions, les délires frénétiques, les cris de douleur, les physiognomies grimçantes, hideuses, le souffle brûlant de tous les infortunés qui sollicitent une goutte d'eau pour étancher la soif qui les dévore sans pouvoir obtenir autre chose qu'une nouvelle dose du poison qui les a réduit à ce cruel état . . . . et que l'on prononce ensuite si la médicine a été *jusqu'ici* plus miserable qu'utile à l'humanité."[1]

As Bonteke saw scurvy lurking at the root of every human ailment, so Broussais detected *gastro-enterite*. The panacea for this was not, however, the mild Virginian weed of the fantastic Dutchman, but the lancet and the leech. Brown killed hundreds by over-feeding, Broussais slew thousands by bleeding and starving. But after he came to Paris, and had an opportunity of putting his system to the test on a larger scale, he seems to have had his eyes opened to the danger of such desperate measures, and to have tended, like all wise practitioners, towards specific medicines, given, too, in small doses. We find a striking illustration of this, in his treatment of a severe case of cystitis, which he treated with the *Tincture of Cantharides*, giving of this substance, whose action on the organ affected with inflammation is notorious, *one drop for a dose* in the course of a day for the first three days, and then two drops for the next five days, when the patient

[1] Broussais, last chapter, entitled "De la Certitude en Médecin," quoted by Renouard, in his Lettres Philosophiques et Historiques sur la Médicin an 19me siècle.

was dismissed cured.[1] Broussais, in this instance, acted as a disciple of Hahnemann might have done; he abandoned the system he had invented, which, except in engrafting on the popular mind the notion that when a person is ill it is from "an affection of the *mucous membrane*," except by introducing this vague and senseless expression, and exciting, by the fatal consequences of his sanguinary measures, a violent reaction in the direction of expectant medicine, Broussais may be said not now to exert any influence upon the art. Indeed, to his credit be it said, that Broussais, in his later days, made no secret of his predilection in favour of the system of his great rival Hahnemann. Expectant medicine, however, has found believers; and it deserves attention, for this reason, were there no other, that it has been popularly expounded by Sir John Forbes, whose character, as one of the most highly cultivated physicians of his day, entitles all he writes to our serious consideration.[2]

Expectant medicine is well illustrated by Sydenham, in the following passage:—after having described how he was baffled in the treatment of an epidemic, he says, "I watched what method Nature might take, with the intention of subduing the symptoms, by treading in her footsteps. Now, whilst I so watched the disease, it departed. From thence, therefore, I considered that this method should be applied to all such cases as I might henceforth have to treat."[3] To watch the course that diseases run when undisturbed by any medication; to observe, on the one hand, the conditions which promote recovery; and on the other, those which retard that desired end, and further a fatal termination of the case; having made a careful inves-

[1] Broussais Clinique. Journal Hebdom. Nos., 40 and 43, 1835.

[2] Of Nature and Art in the Cure of Disease, by Sir John Forbes, M.D., D.C.L., Oxon., F.R.R.S., &c., &c. London: Churchill. 1857.

[3] Vol. I., p. 212.

tigation of these conditions, the duty of a physician is to secure for his patient all that are favourable, and to remove the unfavourable,—this is all medicine can do, for the experience of treating diseases with drugs has given as its final result the conclusion thus forcibly expressed by Bichat:—"Incohérent assemblage d'opinions elles mêmes incohérentes, elles est peut-être de toutes les sciences physiologiques celle où se peignent le mieux les travers de l'esprit humain: que dis ji? ce ne point une science pour un esprit méthodique, c'est un ensemble informe d'idées inexactes, d'observations souvent puériles, de moyens illusoires, de formules, aussi bizarrement conçues que fastidieusement assemblées. On dit que la pratique de la médicine est rebutante, je dis plus; elle n'est pas, sous certain rapports, celle d'un homme raisonnable, quand on en puise les principes dans la plupart de nos matières médicales."[1]

Strong as these expressions are, they are not stronger than the opinions expressed by Sir John Forbes, who says: "In a large proportion of cases treated by allopathic physicians, the disease is cured by Nature, and not by them. In a lesser, but still not a small proportion, the disease is cured by Nature in spite of them; in other words, their interference *opposing* instead of *assisting* the cure. Consequently, in a considerable proportion of diseases, it would fare as well, or better, with patients, in the actual condition of the medical art, as more generally practised, if all remedies, *at least all active remedies, especially drugs,* were abandoned."[2]

We have seen how, eight hundred years ago, medicine was divorced from the Church because of the failures—the disgraceful failures—of medical men. The *Therapeutæ,* the healers, men supposed to *cure* diseases, had failed to do so, and were rejected as a scandal upon Christianity. One of

[1] Bichat Anatomie Générale, tome I., p. 9.

[2] British and Foreign Medical Review, Jan., 1846, p. 257.

the successors of these *Therapeutæ*, these men of healing, after the lapse of eight centuries, revives the charge, and reproaches his brethren as not being men of cure at all, but as hurting instead of healing the sick! He proposes that they should, therefore, abandon all their efforts in that direction, and content themselves with the humbler sphere of nursing, not healing. The non-medical public take Sir John at his word: "You abandon medicines," they say, "you cease to be what we call doctors, so we abandon you, and go off to water-cure establishments, where all the appliances you advocate for the restoration of health are to be had in perfection." Here is another recoil from the sanguinary and depleting systems pursued by old physic, and one which deserves further notice.

Before examining the claims of Priesnitz, we must take leave of the medical nurses and their expectant system, parting from them in perfect amity: for why should we —who believe with Bacon, with Locke, with Sydenham with Hahnemann, and with Alison (of whom more anon) that it is possible to *heal* the sick—quarrel with those who unhappily do not possess this encouraging faith, and bestow all their ability in devising auxiliaries towards the same end? Let us accept their aid; let us learn from them the best plan of diet, of exercise, of clothing, and of everything that contributes to the welfare of the body; but, at the same time, let us administer the remedies which experience has taught us to trust. Their unbelief in Medicine is their misfortune; their belief in Nature is our gain. If they are satisfied with this negation, we may be surprised, but we cannot complain that they should be thus enamoured of—nothing. One truth will be rudely told them—that whatever medical sceptics may say, men will not give themselves up to death without an effort at recovery; and if their pilots desert the helm, and lie down on their backs to gaze at the stars, and predict from them the weather and

the probable—or *natural*—course of the ship-full of human life, the passengers will have little forbearance with these *soi-disant* philosophers, but will be very apt to pitch them overboard, as John Knox did the painted image of the Virgin, as a useless incumbrance, a discomfort—even an impertinence.

If we deny the methods of Priesnitz, of Mesmer, and of Ling, a place among the systems of medicine, it is because, however useful each may be in its own province, no one of them singly, nor all of them combined, are prepared to occupy the position of old physic, against which they protest, but the functions of which, if it were overthrown, they could not replace. Admirable they may be as chapels, but they are not qualified for what we may call parochial purposes. As exceptional allies to regular medicine, whether Hippocratic or Hahnemannic, they are to be esteemed, besides possessing interest on other grounds.

The Water-cure is so well-known, and has been so ably advocated by physicians of credit—both with the public and their own profession—for intelligence, cultivation, and candour,[1] that it needs no defence or exposition here. Valuable as a curative method in a considerable class of intractable and distressing maladies, it is even more important as displaying the advantages of activity and temperance in giving a new life to constitutions exhausted by too much mental exertion, too many cares and anxieties, or too luxurious and indolent habits. Besides, it gives an impulse to the revival of bodily purity, and thus might be called the

[1] Dr. Gully, as he was one of the first, so he is one of the most celebrated, apostles of the Water-cure in this country, and his well-known treatise is considered a standard work on the subject. A book by Dr. Edward Lane, entitled "Hydropathy, or Hygienic Medicine," shows the author to be a man of cultivation and candour, and he occupies a somewhat peculiar position in holding by the Hippocratic school, while most of the other adherents of Priesnitz have cast in their lot with the minority who constitute the school of Hahnemann.

Baptism of Apollo; that is, the recognition of physical culture as a part of Christian duty—the recoil from the monkish error of mistaking degradation of the body for victory over the flesh. How far this movement has been assisted by the increased interest taken in the history of Greece, from the power, learning, and eloquence, which have combined to make this generation better acquainted with the people from whom we have derived so much, is a question not to be decided here. We may learn from it, however, that human progress is no delusion, that all real *good* is alive and never becomes entirely extinct, though it be, like the seed, buried out of sight; but that at its appointed time, when the world is fit for its reception, it will revive. Perhaps, we shall yet see the Rose of Pericles bloom in the Garden of Paradise restored.

On the same ground that we exclude Prieznitz, must we deny to Mesmer a place in the text of the "Book of Medicine." Even were we to admit the claims of Mesmerism in their fullest extent, we should refuse to accept it as more than an auxiliary to Therapeutics. It will hardly pretend to cure scurvy, small-pox, and ague. It may perform wonders, and may answer in wonderful cases; but it is unequal to cope with the common ailments of men, which require less ghostly medication than it offers. Although we cannot receive Mesmer in the character of a reformer of medicine, we may grant him an audience as an ambassador—or, at least, a pilgrim—from a strange country, towards which the eyes of many earnest, cultivated, and thoughtful men are now directed; a land of shadows and of dreams, which we may call *the kingdom of sleep*, where, if we are to believe the poet's fancy, our spirits took their rise, and in which they are to set.

> "Our birth is but *a sleep* and a forgetting;
> The soul that rises with us, our life's star,
> Hath had elsewhere its setting,
> And cometh from afar;

Not in entire forgetfulness,
And not in utter nakedness,
But trailing clouds of glory do we come
From God, who is our home." [1]

"This little life of our's," says Shakespeare, "is rounded with a sleep." These words Goethe considered so pregnant with deepest significance, that he says they grew into books in his mind. "Sleep," says Tennyson, "knows not death." [2] Have these expressions any specific meaning, or are they vague movements of these poets' minds, like the tones of an æolian harp played on by the sighing wind? Science might reply to this question somewhat in the following fashion. Sleep, by some of our best writers on physiology,[3] is regarded not as a negative, but a positive condition; in sleep, the first months of the existence of man and all mammalia are passed; many animals, when they arrange themselves for repose, are observed to resume the posture they occupied during the pre-natal period; sleep has its own consciousness; it receives impressions, and stores them up; it has its own memory. It has been suggested that possibly some of the marvels of clairvoyance may depend upon a window being opened into the chamber of this sleeping imagery. During the sleep, the will of the sleeper is, as it were, off guard; and its place may be taken by the will of a person awake; who may on the one hand, by speaking or otherwise, command and control the character and succession of the images that flit like realities across the sleeper's purely passive consciousness, and induce the state known by the absurd name of "Electro-Biology," in which the patient acts the dream which the operator suggests; and may, on the other hand, be the recipient of the emotions that agitate the mind, or the thought that occupies the attention, of the sleeper. These thoughts and feelings will naturally take their colour from the actual world of

[1] Wordsworth.
[2] In Memoriam.
[3] See Burdach's Physiology, Vol. V., p. 185.

events; and imagination, freed from the bridle of will and reason, will "body forth the form of things unseen, and give to airy nothings a local habitation, and a name." This process may be called Clairvoyance.

It may turn out, that between the extravagancies of some Mesmerists, who allow themselves to be whirled away by the illusions of an over-indulged fancy, and the absolute scepticism of most scientific physicians, there is a middle path, where the *philosopher* — the lover of wisdom, one who acknowledges that wonder, though the child of ignorance, is the parent of knowledge —may with caution pick his steps, receiving nothing as true, except upon most ample evidence, and rejecting nothing as false, however improbable it may be, unless it contradict—not our poor experience alone—but some fundamental principle of the moral or physical government of the universe. In the mean time, while we stand aloof, and await the final verdict, we may indulge the hope that the day may be at hand, which, by disclosing the mysterious relations of one human being to another, and increasing our knowledge of the influence of certain natural objects and atmospheric phenomena upon highly-sensitive persons, will bring about a nearer alliance than yet exists between science and poetry, as well as the more perfect reconciliation of these with a well-grounded faith in the revelation of the supernatural, more endangered, perhaps, by the timidity of its defenders, who often shrink from looking facts in the face, than by either the open or stealthy assaults of its opponents. If Mesmerism succeed in establishing its claims as a perfectly harmless *hypnotic*, or sleep-producing power, it is difficult to over-estimate the benefit it will confer upon humanity. The only agents hitherto known to possess the property of inducing profound somnolence and extinguishing sensibility to suffering, are, like opium and chloroform, of an intoxicating character, unpleasant in

their immediate action, and deranging, if not dangerous, in their subsequent operation; whereas, by general admission, Mesmerism, if it relieve pain and produce sleep, does so by directly soothing and not exciting the nervous system; and may have been the remedy celebrated by Pindar as the gift of Uranos (Heaven) to Æsculapius, entitled—"Freedom from pain that strengthens the limbs," —by which he rescued the dead man from Pluto, and thus incurred the anger of the gods.[1]

The last of the three auxiliaries is the "Movement-cure" of Ling. This is an interesting revival of the processes of regulated or systematic exercise practised by the Greeks in some of their gymnasia, and approved both by Hippocrates and Galen, as an important method for preventing morbid congestion of blood in certain organs. "When we wish to make a derivation from the upper and middle parts of the body, we rub the extremities," are the words of Celsus. For "we rub the extremities," probably, had he written more carefully, he would have substituted, "we prescribe that the lower extremities should be rubbed;" for it requires a particular training to acquire the art of manipulating the body, so as to produce all the desired effects. The problems connected with muscular action, the amount of force exerted to raise the arm or the leg, the direction of the forces, and the influence communicated by the contraction of the muscles to adjoining or underlying blood-vessels, were investigated by the Physicians of the School of Mechanical Medicine, Borrelli, Bellini, and others, to whom we have already referred; but this important branch of medication soon afterwards fell into comparative neglect. Its investigation was revived, at the close of last century, by Peter Henry Ling, a Swede by birth, and a man of entire devotion to his object. On his death-bed he gave the following account of his struggles, his hopes, and

[1] See page 8.

his fears:—"Often misunderstood, and often without means, for thirty-five years I have devoted my life to the subject, without any hope of reward, immediate or ultimate. The King and Diet have assisted me in my struggles from time to time, but my health was unfortunately sacrificed before the hand of encouragement was held out; and even now, I have only a few assistants to aid me in carrying out my original idea. Death is about to put an end to all my activity, and what I have done may vanish like a bubble, should the King and Diet refuse to listen to my dying request, and deny their support to the enlargement of the Institution, according to the scheme I have laid down. Out of nearly a hundred pupils whom I have endeavoured to educate as gymnasiarchs, there are only two who are able to carry out my true scientific idea; and these two are in delicate health." [1]

The foundation of Ling's system appears to be the axiom, that no change can be made in the position of any one member of the body without an effect being produced upon the whole frame. For example, if the arm be raised above the head, less blood will be sent through it, than

[1] Ling's Educational and Curative Exercises, by M. I. Chapman, M.A., Cantab., M.D., Edin. The author says in his preface, that "he believes *homœopathy* is the law of curing disease by drugs given in accordance with that law; but he admits, to the full, that there are other curative agencies, of which the *mechanical* is one. . . ." He is "indebted to *Professor Georgii*," —one of the two pupils referred to in the text—"for his knowledge, such as it is, of the subject." Dr. Chapman gives an interesting notice in this pamphlet of the relation of Ling's system to that practised in the Gymnasia of Athens—a subject on which he is well qualified to speak; for before his adoption of homœopathy—now twenty years ago—he published a translation of the Greek poets, Theocritus, Bion, and Moschus, with annotations. Of the manner in which he accomplished this task, Sir Daniel Sandford—than whom there was no more competent authority—thus expresses his opinion:—"Art is an apt and adequate representative of art. The quaint pathos of Bion's 'Lament for Adonis,' the neatness of 'The Teacher Taught,' the perfect grace of 'The Runaway Love' of Moschus, the romantic beauty of his 'Europa,' may be enjoyed as well in Chapman's English as in their Greek." — *Edinburgh Review*, Vol. LXIII., p. 336. Mr. Bohn seems to be of a similar opinion, for he has republished the work in his Classical Library.

when the arm is in a horizontal or depending position; the blood which does not go to the upright arm must go somewhere, and thus the total distribution of the remainder will be necessarily affected; and the quantity of blood in any organ determines the activity of its functions. Besides the power obtained by "the command of the pipes," so to speak, it must not be forgotten that every muscular contraction is attended with a certain development of nerve-force, and that this excites a train of sympathetic action along the wires of the animal telegraph. Thus it happens, that if we only knew the exact results of every motion, we might so regulate the movements of the body as to produce either an excited or diminished action in any part at pleasure. If we could succeed in this endeavour, one of the greatest problems in medication would be solved, by enabling the physician to relieve local congestion without general depletion on the one hand, and rouse local torpidity without the administration of general stimulants, on the other. But, fair as the system is in theory, we fear it is most limited in practical application as a method of cure; for we learn from the lips of its founder, that he could only communicate the dexterity required for its successful use to two per cent. of his pupils. Small comfort to a man ill of rheumatism at Vienna, to be told, that if he goes to London or Stockholm, he will there be rubbed into health. He would naturally exclaim, "How can I get to either of these places, when I can't move across the room?" "Aye, there's the rub" for him.

For the successful application of Ling's system as a method of cure, as great an amount of study and natural aptitude may be required as is needed to make a man a first-rate musician. But infinitely short of this is requisite for the employment of judicious gymnastic exercises in the development of the growing body. "In respect of

education," says Dr. Chapman,[1] "all thinkers and observers know the influence the mind and body exercise on each other; and, therefore, the due development of the physical powers exercises an immense influence upon the due development of the mind. If, then, exercises should be a part of education, they should be applied according to a system in accordance with the sciences of anatomy and physiology. The principle on which they act is obvious. They stimulate equally to healthy action all the parts of the body; the circulation is made free and vigorous; all the functions are performed with proper activity; the normal health is maintained; and the material for a healthy longevity is fully supplied. Such exercises are especially called for in the education of girls, who should not be wasp-shaped and indolent, with tender or twisted spines; but should be able to run races, and 'hold their own' in the course of life. Sir John Forbes has mentioned a school which came under his own observation, in which '*there was not one girl who had been there two years that was not more or less crooked.*' . . . . Youth should be the period of the exuberance of young life; observing, and yet frolicsome, health-getting, and grace-obtaining, and strength-winning; whereas, girls' youth is imprisoned in buckram, set fast in stays, straight-laced, and sour-visaged. This is altogether wrong. Let Nature, and their nature, have free play, and let them have all the enjoyments, recreations, and exercises that are suitable at their period of life, and are consistent with virtue and modesty. Take their feet out of the stocks, and their hands out of the gyves, and their waists out of the prisons in which your false method of education has placed them; and your daughters will grow up in health, and strength, and beauty, and their sons and daughters will have a healthy infancy and childhood; and so the human stock

[1] Op. cit., p. 16.

will be improved generation after generation."[1] "Whoso is just" (*to his children*, we may interpolate)

> "though his wealth, like a river,
> Flow down, shall be scatheless ; his house shall rejoice
> In an offspring of beauty for ever."[2]

We have unconsciously drifted towards the great problem of the day—Education ; and I will conclude this rambling Epilogue with some observations on that question, in its bearing upon the future prospects of the art of medicine and its practitioners.

Among modern physicians there is no one who, by his zeal and philanthrophy, secured the love of his fellow-citizens in a higher degree than the late Professor Alison, of Edinburgh ; and few whose opinions on any subject connected with the future prospects of medicine, carry more weight with the public and the profession. In concluding a sketch of the history of medicine, he wrote as follows :—"In looking forward to the farther improvement of the art, we can hardly expect that the most numerous class of remedies, those which produce sensible effects on the body,"—*i. e.* what are called allopathic,—"can either be made to exert more power, or be directed with more accuracy towards the objects which they are capable of accomplishing, than they may be at present by well-informed and judicious practitioners. Our hopes of the increasing usefulness and efficacy of our art must depend, partly *on the improvement of medical education*, and the more uniform diffusion through the members of the profession of the knowledge which we already possess ; and partly, also, on the progress which may yet be expected in two lines of inquiry, in which our success has been as yet only partial. *First, in the discovery of specifics*, which may counteract the different diseases and

[1] Let me direct attention to the admirable tracts published by the Ladies' Sanitary Association upon this all-important subject.

[2] Agamemnon of Æschylus, translated by Professor Blackie.

actions of which the body is susceptible, as effectually as the cinchona counteracts the intermittent fever, citric acid the scurvy, or vaccination the small-pox; and *secondly*, in the investigation of the causes of disease, whether exernal or internal—*i. e.* of the conditions under which either the vital actions of the solids, or the vital properties of the fluids, of the body, become liable to deviations from their natural state."[1] Dr. Alison looked forward to improvement in the art of which he was so great an ornament, by a more perfect acquaintance with the *external* causes of disease—that is, what makes certain places unhealthy—a subject that falls within the province of the National Association for the Promotion of Social Science; and the *internal*, or the changes produced by disease upon the body itself—morbid anatomy, a comparatively new branch of accurate study, but one which has made surprising progress within the present century, and towards which the labours of the Vienna school, under Rokitansky, have largely contributed. His greatest expectations, however, in common with Bacon, Boyle, Sydenham and Hahnemann, are from the discovery of specifics. As this is the text which it is one of the chief designs of this volume to expound, nothing more need be said about it now. So all that remains is, to consider his third and last ground of hope for the future of medicine—the *improvement of medical education*, and its greater diffusion among all the members of the profession. It is generally reckoned that there is one medical man to every thousand of the population. Let us suppose that the census now[2] making will show the people of England to be twenty millions. On this computation, we shall have a body of twenty thousand men occupying the whole country. There is not a village in England which is not visited by some medical man; this medi-

[1] History of Medicine; prefixed to the Encyclopædia of Practical Medicine, p. cx.

[2] April, 1861.

cal force penetrates all grades, enters the dwellings of men of all habits, all persuasions—comes to them, at their request, in the hours of their suffering and trial. Is it possible to over-estimate the influence for good that might be exerted by this perpetual and universal power? Is it too much to say, that the civilization of a people, their bodily and spiritual elevation, might be as much affected by what we may call the medical element, as either by the laws or the Church? I believe that this is not an extravagant "magnifying of our own office." I believe it is a truth which will some day be made manifest; and, if it be even only partially true, can any question be more important than the preparation of this army of medical missionaries for their great task?

The general opinion on the best method of elevating the practitioners of medicine is thus expressed by Dr. Abercrombie, whose reputation as a philosopher and physician is second to none of the present century. It is endorsed by Dr. John Thompson, late Professor of Pathology of the University of Edinburgh, the accomplished author of various well-known works, among which is the "Life of Cullen," to which we have had occasion to refer. I shall quote the whole passage. It is as follows:—

"Dr. Abercrombie, in a letter to Professor Russell,[1] dated 12th November, 1824, remarks—'In making a complete revisal of the curriculum of medical study, it appears to me that the improvement which is chiefly wanted, and by which the senatus may contribute, in a most essential manner, to raise the character of the medical

[1] My father; who, during his whole life, took the deepest interest in the subject of this letter, and was one of the foremost in the University of Edinburgh—where he was long a distinguished and respected teacher—to insist upon the necessity of a preliminary training in classics and science, before a student began his strictly-professional studies. As I venture to differ in some measure from the opinion of those whom I am bound to respect, it is the more incumbent upon me to state this fact.

profession, is some provision for securing a liberal and extensive previous education in literature and science: such an education as shall enable the student to commence his medical studies with a mind stored with scientific knowledge, and in particular, with a mind well trained to habits of correct reasoning and philosophic enquiry. The branches most likely to contribute to this purpose appear to be the Greek and Latin languages, mathematics, moral philosophy and logic, natural philosophy and natural history.'" In short, that before a student begins his medical or professional studies, he shall take his degree in arts. This is now the prevailing opinion, and such a curriculum is dignified with the name of a *liberal* education, while the acquisition of so-called medical knowledge is contrasted with it as merely professional, and in its nature inferior. Dr. Abercrombie, it will be observed, does not insist on the necessity of these preliminary acquirements upon the ground that without them the student could not *understand* the subjects of medical study: were this his position, it would be unassailable, except by denying it to be a fact. A student must know enough of language and of the elements of science to comprehend his teachers; this is a matter of course, but not here the question. The design of this preliminary course is, *to train the mind to habits of correct reasoning and philosophical inquiry.* To this I object, that the exigencies of existence require the great majority of the medical profession to have acquired such a knowledge of their profession as enables them to turn it to practical and remunerative purposes, at an age before which there is not time to have gone through this course of training. At the age of twenty-two, we may assume, it is necessary for a youth to be independent of his parents. To be so, he must have acquired a knowledge of what?—Of anatomy, physiology, botany, chemistry, surgery, the theory of medicine, the practice of medicine, materia

medica, medical jurisprudence, and many other subjects; besides a familiarity with the technical part of his future profession, by attending hospitals and assisting at operations. All this he must know at two-and-twenty, else he cannot live. Suppose we allow five years for acquiring all these knowledges, and that is little enough, this would give seventeen as the age at which a physician finished his liberal education—the age at which boys leave Eton and Harrow![1] We thus arrive at this alternative—either the liberal education of the practitioner of medicine must be a mere farce, or it must be prolonged into his technical studies. And why not be thus prolonged? What are we to understand by the term *liberal* education? Is it not such an education as *liberates*, or frees the mind? "He is a free man whom the truth makes free." "The mind of man is not like a plane mirror which reflects the images of things exactly as they are, but is like a mirror of an uneven surface which combines its own figures with the figures of the objects it represents," writes Bacon.[2] That is a liberal education which gives freedom to the mind, discharging its *prejudices*—its imperfect representation to itself of the external world, giving it at once materials on which to exercise its judgment, and cultivating its power of forming a just judgment upon what is submitted to it. Will Greek and Latin only or at all insure this liberality, or liberalizing efficacy? The question is not, whether the study of the classics is the best training for the opulent youth who passes his time, from the age of eighteen to twenty-one or twenty-two, at Oxford or Cambridge. That is a subject it would be entirely out of place to discuss here; but the question is, whether the mind of a young man may not be trained "to reason correctly, and to inquire philosophically," as well by the study of a bone or

[1] Although it was the age at which Lord Bacon finished *his* University education.

[2] Advancement of Learning.

a flower, as by that of a Greek verb. That it may be so, is proved by the history of Cullen, Abercrombie, and Adams. To Cullen, as a philosopher, Sir W. Hamilton bears testimony, as we have already noticed. Abercrombie's works on the Intellectual and Moral Powers are highly esteemed at Oxford. Adams, the translator of Hippocrates, was, beyond all question, the most learned medical man of his day in Britain. And none of these men had as some would say *a liberal education.* They all began their medical studies in early youth, and had to support themselves, from their entrance into the profession, by their own exertions. So that it seems to me that it is a secondary, and comparatively indifferent matter, what the subject of study is, so long as it affords sufficient scope for the exercise of the faculties of the mind, of observation, memory, imagination, and above all, judgment; but what is of primary and paramount importance is, the spirit in which the study is pursued. It is this that distinguishes between a liberal and an illiberal education. That is *liberal* which the mind pursues from love of wisdom for its own sake—not as a bondwoman or slave, to acquire gain for her master; but as a spouse, a partner for life, temporal and eternal. That is *illiberal* which is pursued for lucre and profession, however dazzling or imposing: though it conduct to the Woolsack or to the Bishop's Palace, it is not the less illiberal if it be pursued for the sake of emolument of any kind.[1]

But how shall we make the medical a liberal as well as a professional education? *By securing proper teachers.* Education is more than a science; like medicine, it is an art including many sciences. The first condition required to make a good teacher, let it be of anatomy, of botany, of chemistry, or of any other, the most purely technical subject—the essential requisite is, that he should be *a good*

[1] Paraphrased from Bacon's Advancement of Learning, p. 54.

man; that he should feel himself responsible, not only for imparting accurate knowledge, but for exerting a healthy influence over the mind of the youths under his tuition. If every country surgeon had such an idol as John Hunter, one whom he could entirely respect not only for his knowledge but for his lofty and disinterested aims, we might have more men like Edward Jenner.

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