

**Galen : a bibliographical demonstration in the Library of the Faculty of Physicians and Surgeons of Glasgow, December 9th, 1891 / [James Finlayson].**

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**Publication/Creation**

[Place of publication not identified] : [publisher not identified], [1892]

**Persistent URL**

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## GALEN.<sup>1</sup>

[A BIBLIOGRAPHICAL DEMONSTRATION IN THE LIBRARY OF THE  
FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW,  
DECEMBER 9TH, 1891.]

At our last bibliographical demonstration I showed you, in the various editions we possess in this library, the works of Hippocrates<sup>2</sup>, who is often styled the "Father of Medicine." To-night we have on the table before us the works of Galen, who is sometimes termed the "Prince of Physicians." His name is given in various languages as ΓΑΛΗΝΟΣ, Galenus, Galen, Galien. The chronology, or dates of his life, unlike those of Hippocrates, are not involved in any great doubt, for in his own writings there are very numerous autobiographical and historical details,<sup>3</sup> which allow of considerable accuracy in tracing his course. As mere dates afford to many of us but slight indications of the period when a man flourished I give here certain dates as landmarks to guide our ideas on this subject :

Claudius Galen, born A.D. 128 or 130, died about A.D. 200.

Lucian (the Greek writer of *Dialogues*, etc.), born about A.D. 120, died about A.D. 200.

The Emperor Marcus Aurelius (the Stoic philosopher), reigned A.D. 161-180.

Polycarp (the Christian martyr), died between A.D. 168-175.

### PERGAMUM—"SATAN'S THRONE" THERE.

Galen was born at Pergamum, and so the adjective "Pergamenus" or "Pergamensis" is often affixed to his name,

<sup>1</sup> The following have been found specially useful : Dr. W. A. Greenhill : *Art. Galenus*, in *Smith's Dictionary of Greek and Roman Biography*, vol. ii. London: 1870. M. Laboulbène : *Histoire de Galien, sa vie, ses œuvres*, son dernier traducteur, Charles Daremberg, *Gazette des Hôpitaux*, pp. 1041-1188. Paris: 1882. Dr. T. K. Chambers : *The Bloodletting Question in Olden Times*, *British and Foreign Medico-Chirurgical Review*, vol. xxii. London: 1858. Dr. J. Kidd : *A Cursory Analysis of the Works of Galen*, so far as they relate to Anatomy and Physiology, *Transactions of the Provincial Medical and Surgical Association*, vol. vi, part 1. London: 1837. Dr. R. Gasquet : *The Practical Medicine of Galen and his Time*, *British and Foreign Medico-Chirurgical Review*, vol. xl. London: 1867. Puschmann (Th.) : *A History of Medical Education*, translated and edited by Evan H. Hare. London: 1891. Works on the History of Medicine and on Medical Biography should also be consulted by those desiring to study the life and works of Galen, such as Le Clerc (D.), *Histoire de la Médecine*. Amst.: 1723. I am indebted to Mr. Duncan, our Librarian at the Faculty, for writing out some translations for me from the Latin version in Kühn's edition of Galen's works.

<sup>2</sup> See *Glasgow Medical Journal*, April, 1892.

<sup>3</sup> M. Laboulbène says these references have been collected by M. Goulin, but I have not had an opportunity of referring to his book.



as in the reproduction of Linacre's Latin translation of one of his works printed in Cambridge in 1521. We know that Pergamum was a great medical centre, for it was the seat of an important temple dedicated to the god of healing; we also know that a large statue of Æsculapius, with the figure of a serpent, was a prominent feature of this building. I have not been able to find any representation of this particular statue, but the illustration of a statue of Æsculapius in Pettigrew's *Biographical Memoirs*, vol. i, London, 1838-40, may serve to indicate the prominence given to the serpent in such representations of this god. This figure of the serpent at the temple in Pergamum has been generally supposed by writers on the history of medicine, to afford an explanation of the reference to Satan in the message to the Church at Pergamum, in the Book of Revelation (ii, 13); the words (in the Revised Version) "where Satan's throne is" and "where Satan dwelleth" being understood as referring to the image of this serpent on the great temple there. In another chapter we find a similar association of ideas in the phrases "that old Serpent called the Devil and Satan" (xii, 9); and again, "that old Serpent which is the Devil and Satan" (xx, 2).

Æsculapius with his serpent was undoubtedly a leading divinity in Pergamum, although there were temples there to other deities also; moreover, it seems certain that Pergamum was regarded as one of the principal seats of this god; both of these relationships are indicated by Æsculapius being named "Pergameus Deus." Biblical critics, however, are not quite clear that this reference to "Satan's throne" is indubitably applicable to the serpent on the temple there, although it would seem that no better interpretation is available (see art. "Pergamos" in Smith's *Dictionary of the Bible*).

#### REFERENCES TO CHRISTIANITY.

This allusion to Pergamum, in the book of Revelation, leads one to ask what opinion, if any, did a learned and acute man like Galen express regarding the growing body of Christians, who were then beginning to influence the history of the world? From the Life of Galen prefixed to Kühn's edition, I find two references to the Christians.<sup>4</sup> On referring to these, the first is found to occur in the treatise *De Pulsuum Differentiis*, lib. ii, where in the course of an argument he says: "Unless one, from the very outset, were to imitate the school of Moses and Christ, and listen to principles laid down without any demonstration, and that too when it is least becoming to do so" (Kühn, vol. 8, p. 579). The idea in the other reference is somewhat different; it refers to the tenacity with which the Jews and Christians held to their principles. In resenting the obstinacy with which his opponents in argument refuse to admit his conclusions, he says: "For sooner would the disciples of Moses and Christ depart from their own system than those who have been given over to sects, and been constituted philosophers and physicians" (lib. iii, Kühn, vol. 8, p. 657). Another passage has been quoted from Galen, by his Arabian biographer Abu-l-Faraj.<sup>5</sup> The passage is stated

<sup>4</sup> The writer there says: "Acerrimus est Galenus contra Christianos et Judæos eisque succenset, quod legibus nullâ earum demonstratione factâ obtemperant." Kühn, vol. i, p. xlii.

<sup>5</sup> Aboul Faradj (Gregory), often called "Pharajius" and "Bar-Hebraeus," lived in the thirteenth century; he was a "Jacobite Christian." See *Dictionnaire des Sciences Médicales: Biographie Médicale*, Paris, 1820; also, Leclerc (Lucien), *Histoire de la Médecine Arabe*, tome i, Paris, 1876, p. 191.



by him to be from a commentary by Galen (now lost) on Plato's *Republic*. It occurs in this beautiful volume, presented to our University by the King of Spain—Casiri: *Bibliotheca Arabico-Hispana Escorialensis*: Matriti, 1760; tomus prior, p. 253. The following is a translation from the Latin rendering there:

We have known that that sect, called Christians, founded their religion on parables and miracles. We believe, moreover, that they are very little behind the philosophers in moral discipline; that they practise celibacy, that even many of their women do so; that they love abstemiousness in food and drink; that they are assiduous in fastings and in prayers; that they injure no one; so that they far surpass the philosophers both in their endeavours after virtue and in their exercise of it. We view with admiration their pre-eminent excellence in equity, in moral probity, in chastity, and in the true accomplishing of miracles."<sup>6</sup>

Passing from Galen's opinions as to Christians and Christianity, let me carry you onwards 1300 years to the earliest translator of his works in this country; I mean the learned Linacre, who founded the College of Physicians in London. I show a facsimile reproduction of his translation into Latin of Galen's treatise *De Temperamentis*, published in Cambridge in 1521. To this reproduction (London, 1881) Dr. J. F. Payne prefixes an interesting account of Linacre himself, from which the following extract is taken:

Linacre when advanced in life, his health broken by study and disease, and near his end, took the New Testament in his hand for the first time (although he was a priest), and read the Gospel of St. Matthew to the end of the 7th Chapter (that is to the end of the Sermon on the Mount). Having read it, he threw the volume away with all the strength he could muster swearing, "Either this is not the Gospel or we are not Christians." It is possible [says Dr. Payne] that the striking contrast between the teaching of the Sermon on the Mount and the practice of the Christian world has inspired many readers with the same feeling, and it will continue to have the same effect on many more, though they may not happen to give vent to their surprise with the same petulance.

One can scarcely speak of Linacre without thinking of Caius who, somewhat later, also translated into Latin some of Galen's works. Dr. Caius, who founded a College in Cambridge, was confessedly one of the most learned men of his time, although his name is perhaps most generally known as a character in Shakespeare's play of the *Merry Wives of Windsor*, where he is held up to ridicule as a French simpleton.

#### GALEN AS A PHILOSOPHER.

Galen, we must remember, was a philosopher as well as a physician. Indeed one of his treatises is entitled "*Quod optimus medicus sit quoque philosophus*." He wrote many philosophical works, and his name is perpetuated in Logic in connection with the fourth figure of the syllogism. Some doubt has indeed been expressed as to his being the inventor of this figure, but M. Daremberg says that it is certain that it

<sup>6</sup> In *Historia Compendiosa Dynastiarum*, Authore Gregorio. Abul-Pharajio, *Malaticensi Medico*, edited by Ed. Pocock, Oxon., 1663, p. 78, we find almost the same words quoted from Galen, but referred to his commentary on the *Phaedo* instead of the *Republic*: "Ait etiam in explicatione sua libri *Platonis* de moribus cui titulus *Phaedo*, Videbis populum istum qui *Christiani* appellantur, disciplinam suam ænigmatibus et miraculis superstruxisse, neque Philosophis veris operibus cedere, continentiam amare, in jejuniis et orationibus continuos esse, ab injuriis abstinere atque esse inter ipsos homines qui se mulieribus non polluunt."



occurs in Galen's *Introductio Logica*.<sup>7</sup> Galen was evidently a man of great natural ability, versed in philosophy, an expert anatomist, an experimental physiologist, and a physician of great experience. He was also a writer of enormous industry, as the portions of his works which have survived, now placed on the table, may show you at a glance; but further, his writings extend over such a wide range in medicine as to be of an encyclopædic character, the whole welded together into a consistent system by a master mind. No wonder, therefore, that Galen's name held an undisputed sway till Paracelsus attempted to overthrow his authority; and indeed long after that time he was virtually regarded as infallible.

#### EDITIONS OF GALEN.

The editions of Galen's works which I place before you are amongst the best and the most useful. We have not in this library a copy of the celebrated "Aldine" edition, with the Greek text only, published in five folio volumes, at Venice, in 1525. I show, however, the one published in Basle in 1538, also in five folio volumes, with the Greek text alone. It may interest some to know that the initial letters in this edition are supposed to have been carved by Holbein, who was in Basle about this time, and whose work lay very much in this direction. Although Galen practised his profession for many years in Rome, he wrote exclusively in Greek, as, indeed, it was common at that time for philosophers there to do. The Latin translation, in three large folio volumes, now before you, was published in Basle in 1562; it contains a preface and life by the learned Conrad Gesner. On the title page of the first volume there are some curious and interesting illustrations of certain passages in Galen's experience, to which I will refer by-and-by.

The edition which for many years has been principally referred to is the Greek and Latin text of Kühn, consisting of this long range of twenty octavo volumes, with 1,000 pages or thereby in each, published in Leipzig, 1821-1833. There are really twenty-two volumes, two being double; the first volume is largely taken up with a life of Galen and a bibliography in great detail; and the last volume is occupied by an index. It is to this edition that references are here given.

Another edition by Renatus Charterius in thirteen folio volumes, Paris, 1679, was much referred to before Kühn's appeared. It contains the works of both Hippocrates and Galen, and has a Latin translation as well as the Greek text.

A French translation by Daremberg, in two volumes, entitled "*Œuvres Anatomiques, Physiologiques et Médicales de Galien*," Paris, 1854-56, is of very special value, so far as it extends. Its title page bears that it is preceded by an introduction containing a bibliographical, literary, and scientific study by the editor; in the preface this study is announced as about to follow (constituting a third volume); but it never appeared, and it is to be feared the MS. is lost. (Laboulbène: *Gazette des Hôpitaux*, 1882, p. 1187.)

Of English translations, there are none except those by Gale: "Certaine Workes of Galens called Methodus Me-

<sup>7</sup> Daremberg "*Essai sur Galien considéré comme philosophe*," Paris, 1847 (?); (Extrait de la *Gazette Médicale de Paris*). "Grâce à la découverte de M. Mynas signalée plus haut, nous savons maintenant que Galien mentionne véritablement cette quatrième espèce de syllogisme dans l'Introduction Dialectique." A footnote refers to *Introductio Logica*: "Ouvrage récemment découvert au Mont Athos et publié par M. Mynas, Paris, 1844."



dendi," beginning with "The Third Booke of Galen, called in Greeke *θεραπευτικόν*; in Latine, Methodus Medendi," and going on to the "sixt;" also "Claudus Galeni de Tumoribus preter naturam;" and "An Epitome upon Galens three bookes of naturall Faculties." This edition of Galen, which I show, was published in London in 1586; the bulk of the volume consists of a translation from Vigo.

J. R. Coxe: "The writings of Hippocrates and Galen epitomised from the original Latin translations," Philadelphia, 1846, may also be mentioned, but I have not seen this work.

Dr. Broadbent has translated into English, in his little book on "The Pulse," London, 1890, part of Galen's "Libellus de Pulsibus ad Tirones."<sup>8</sup>

#### SECTS IN GALEN'S TIME.

It is scarcely within the scope of this demonstration to enter into a discussion of the sects existing in Galen's time, or even of Galen's doctrines; these require quiet study by yourselves. But I will read the following short extracts, which may put these matters before you sufficiently for our present purpose. Dr. Adams says (*Paulus Aegineta*, vol. i, p. 12, London, 1844:—

[Various Sects.] "The empirics held that observation, experiment, and the application of known remedies in one case to others presumed to be of a similar nature constitute the whole art of cultivating medicine. Though their views were narrow and their information scanty when compared with some of the chiefs of the other sects, and although they rejected as useless and unattainable all knowledge of the causes and recondite nature of diseases, it is undeniable that, besides personal experience, they freely availed themselves of historical detail and of a strict analogy founded upon observation and the resemblance of phenomena. To this class we may refer Scribonius Largus, Marcellus, Plinius Valerianus, and a few others. The sect called the Rational, Logical, or Dogmatical, holding that there is a certain alliance and connection among all the useful and ornamental arts, maintained that it is the duty of the physician not to neglect any collateral science or subject. They therefore inquired sedulously into the remote and proximate causes of disease, and into the effects of airs, waters, places, pursuits, food, diet, and seasons in altering the state of the human body, and in rendering it more or less susceptible of morbid changes. Looking upon general rules as not being of universal application, they held that the treatment ought to be modified according to the many incidental circumstances under which the patient might be placed. They freely and fully availed themselves of whatever aid they could derive from experience, analogy, and reasoning. Hippocrates, Galen, Aëtius, Oribasius, Paulus Aegineta, Actuarius, and all the Arabian authorities may be looked upon as belonging to this sect. The Pneumatic sect, to which Aretæus probably belonged, was nearly allied to the Dogmatical. The sect of the Methodists, rejecting altogether the consideration

<sup>8</sup> Lists of the various treatises and editions may be found in the first volume of Kühn's edition; likewise in the articles on Galen in the *Dictionnaire des Sciences Médicales, Biographie Médicale*, Paris, 1821; and in *Dezeimeris: Dictionnaire historique de la Médecine ancienne et moderne*, tome ii, Partie 1, p. 450, Paris, 1834; also in *Fabricius: Bibliotheca Græca*, Liber IV, cap. 17 (*Eulogium Galeni chronologicum, Auctore Philippo Labbeo*), Hamburgi, 1708.



of remote causes, which they held to be of no importance to the cure, and giving themselves up to too bold classification of diseases, according to certain hypothetical states of the body in which they were supposed to originate, fettered themselves too much with a few general rules, which they held to be so universally applicable that they would scarcely allow of their being modified by incidental circumstances in any possible contingency. The only perfect model of ancient Methodism that has come down to us is Cælius Aurelianus. Moschion and Theodore Priscian belonged to this sect; Alexander of Tralles also had a considerable leaning to its principles, and some would even refer the illustrious Celsus to this class, but probably without good reason, for he would rather seem to have imbibed the genuine spirit of Eclecticism, and, like his distinguished correspondent Horace, to have been "Nullius addictus jurare in verba magistri."

*Galen's Doctrines.*—The essential distinctions of Galen's doctrines are thus briefly summarised and given by Pettigrew (*Biographical Memoirs of the Most Celebrated Physicians and Surgeons, etc.*, vol. ii, London, 1840:—

He holds the end and object of medical science to be to preserve the parts of which the body is composed in a natural state, and to endeavour to establish their functions when disordered. Hence he deduces the necessity of a knowledge of anatomy. The parts of the body he considers as simple or compound, similar or organic; having for their elements fire, water, air, and earth, of which the qualities are heat, cold, moisture, and dryness. According to the predominance of any one of these qualities over the other is determined the condition of the body: while they are balanced health is maintained, when they are disturbed disease results. Health, therefore, consists in the just proportion of the four elements. When he comes, however, to explain the origin of sickness, as produced by any defect of the elements or improper mixture of them, he is under the necessity of calculating the varieties of temperament as dependent upon qualities and combinations. Hence he is led to exercise his imagination; to depart from nature, and indulge in sophistical conjecture. His remedies are directed by the same consideration. When a part naturally hot becomes cold means must be taken to restore that which is lost, and *vice versa*. He admits, with Hippocrates, four humours—blood, phlegm, yellow, and black bile—these correspond to the four temperaments. By the aid of the four humours and the four elementary faculties, he attempts to explain the nature and origin of all diseases, and also the qualities of all substances employed as medicines.

In trying to give some idea of Galen's works we have to consider him as (1) a philosopher and critic; (2) a Hippocratic scholar and commentator; (3) an anatomist; (4) an experimental physiologist; (5) a physician versed in diagnosis and practice; (6) a surgeon.

The first need not detain us, as I have already spoken of him in connection with logic, and the further discussion of such subjects does not fall to me. The last, again, may also be dismissed shortly, as Galen's reputation as a surgeon has never been great; his practice in this direction having apparently been small. The following is an extract from Gale's translation of the 6th Book of the *Therapeuticon*, where, speaking of wounds of the head, Galen says:—

I had also gone about to trie the like waie of curing, if I had continually remained in Asia, but seeing I have bidde at Rome, I doe followe the manner of the Citie, committing the greatest part of such works to those whom they call chirurgions (*Gale's Translation*, London, 1586, p. 124).

#### GALEN AS A HIPPOCRATIC CRITIC.

As a Hippocratic scholar, critic, and commentator, Galen had enormous advantages. Thoroughly acquainted with the various idioms of Greek, and saturated with the knowledge and traditions of the medical profession, he had likewise a great admiration of the author, and at the same time much practical experience to guide him in his study of the works.



Some idea of the extent of Galen's commentaries may be gathered at a glance when I show you these five volumes of Kühn's edition—about one-fourth of the whole—as comprising the commentaries on the Hippocratic writings. I likewise show to you in vol. 19 a vocabulary he compiled for the Hippocratic treatises, and this, along with a similar lexicon by Erotian and Herodotus, was shown to you—in a volume edited by Franzius, Leipzig, 1780—when I gave you a demonstration of the Hippocratic writings.

Galen discusses the genuine or spurious character of the various Hippocratic treatises; he expounds the meaning of the text; he criticises the statements, and he goes into long and elaborate commentaries based on his own ideas and experience. His criticism is of paramount importance; but, from his somewhat egotistical character, he has been accused of being too "Galenical," and not sufficiently Hippocratic.

#### GALEN AS AN ANATOMIST AND PHYSIOLOGIST.

As an anatomist Galen takes high rank. Two anatomical treatises exist: one *De Anatomicis Administrationibus*, in nine books; and the other *De Usu Partium*, in seventeen books. This last is translated in full by Daremberg. Both of these works testify to the minuteness of his anatomical studies. It is in the latter work that the so-called "Hymn" to the Creator occurs (Lib. III, cap. X). The following is the translation as it occurs in Pettigrew's *Biographical Memoirs*, under Galen:

[Galen's Hymn to the Creator.] In my opinion, true religion consists not so much in costly sacrifices and fragrant perfumes offered upon his altars, as in a thorough conviction impressed upon our own minds and an endeavour to produce a similar impression upon the minds of others, of his unerring wisdom, his resistless power and his all-diffusive goodness. For, his having arranged everything in that order and disposition which are best calculated to distribute his favours to all his works, is a manifest proof of his goodness, which calls loudly for our hymns and praises. His having found the means necessary for the establishment and preservation of this beautiful order and disposition, is as incontestable a proof of his wisdom, as his having done whatever he pleased is of his omnipotence. (See also Daremberg's Translation, tome 1, p. 261; and Kühn, vol. 3, p. 237.)

Of Galen's work as an anatomist and physiologist we can gather a good idea from Dr. Kidd's paper already referred to in the first footnote. Much discussion has taken place as to whether Galen practised human dissections or limited himself entirely to the lower animals. It is quite certain that he dissected animals, and a representation of this process is given on the title page of the Latin edition already mentioned (Basle, 1562). It is clear from his writings that Galen dissected apes, preferring them on account of their resemblance to the human subject, and he mentions specially that those physicians who had the opportunity of examining the bodies of their enemies slain in the German war, waged by Marcus Aurelius, could make out little more than the position of the viscera unless they had been previously versed in the dissection of animals, and especially of the ape.<sup>8</sup> In the same passage he refers to stray chances of examining the bodies of young children who had been exposed, of robbers who had been slain, or of those condemned to be exposed to

<sup>8</sup> At qui in aliis animantibus et potissimum in simia prius se exercuerit promptissime singulas quæ inciduntur partes detegit (Kühn, vol. 2, p. 385). And again: Quemadmodum nec medici bello Germanico barbarorum corporum insectionis potestatem habentes amplius quippiam didicerunt iis quæ coqui intelligunt (Kühn, vol. 13, p. 604).



wild beasts. But whilst it seems plain from such remarks that human dissections were rare, although not unknown, it is equally clear, from the following extract, that Galen had the benefit of the study of human osteology in Alexandria, and he advises his pupils to go there for this purpose.

[Study of Osteology.]—This indeed will be absolutely necessary for you, that you make yourself thoroughly acquainted with the subject, not only from a book, but with your eyes as a diligent observer of human bones; this is more easily done in Alexandria, because the physicians of that place in expounding to their pupils the science of the bones exhibit them for their inspection. I am, therefore, of opinion that you should endeavour to make a stay at Alexandria, if for no other reason than this alone. If you cannot manage to do this, you can examine human bones in the way I adopt, for I have often studied them in certain burying places or in ruinous tombs. Sometimes, also, a river having overflowed, a few months previously, some ill-built burying place, has washed out its contents, and has conveyed a whole body even the length of a stadium, carrying it along by the impetus of its own motion, the flesh being in a state of putrefaction, but the bones still cohering, until it has been caught in the nooks of some elevated piece of ground and landed there. When such an occurrence has happened, a medical man should carefully prepare it [*i.e.*, the cadaver] for the teaching of his pupils. Sometimes, also, we see the skeleton of a robber lying on a hill-side, a little way off the road, who, when making an attack, has been killed by some traveller in self-defence. No inhabitant of the district would order the body to be buried, but would rather, pursuing it with hate, take a pleasure in leaving it to be devoured by birds; and these having, for a couple of days, been removing the flesh, have left a dried skeleton, as it were, to anyone willing to examine it for instruction. But if no opportunity of this kind turn up, you can still avail yourself of the individual bones of dissected monkeys, having first removed the muscles; for which purpose you will select those monkeys which most closely resemble the human figure (Kühn, vol. 2, p. 220).

One of the most important points demonstrated by Galen was the presence of blood, as distinguished from air or vital spirits, in the arteries and aorta. This he contended for by experiment and by argument. The following graphic and very accurate account is quoted from Dr. Kidd's paper.

[Blood in Aorta.]—There are some teachers, Galen says, who are in the habit of advancing opinions which they are not prepared, and, therefore, not inclined, to put to the test. Such was the case with a certain teacher of anatomy, who, having declared that the aorta contains no blood, and having been earnestly desired by several ardent pupils of Galen to exhibit the requisite demonstration, they themselves offering animals for the experiment, declined, after various subterfuges, to satisfy them without a suitable remuneration, on which the pupils immediately raised a subscription among themselves for the purpose, to the amount of a thousand *drachmæ* (equivalent probably to about twenty-five or thirty pounds of our money). The professor being thus compelled to commence the experiment, totally failed in his attempt to cut down upon the aorta, to the no small amusement of the pupils, who thereupon taking up the experiment themselves, made an opening in the thorax in the way in which they had been instructed by Galen: passed one ligature round the aorta at the part where it attaches itself to the spine, and another at its origin; and then by opening the intervening portion of the artery, showed that blood was contained in it. (See also Kühn, vol. 2, p. 642).

But Galen as a philosopher and logician could contend by argument on such subjects as well as by experiment. In those old times medical questions were discussed by means of all sorts of arguments and reasonings, often of the most



dubious character. In dealing with such arguments Galen is highly sarcastic.

[Syllogisms as to blood-vessels.]—But if the controversy were to go on what could they answer (were they only willing to be consistent), but that there exists no art of deduction, and that from given hypotheses anything can be inferred without distinction? Or, that the art indeed exists, but is not needed in clinching demonstrations? But both positions are utterly absurd. For if they were to take up the former position (as a certain fellow of shameless front once had the hardihood to do), they might then hear from us, in turn, such arguments as he heard. "The arteries have two coats, blood is tawny, *therefore* the arteries contain not only air but blood as well." On their laughing, I immediately added this other syllogism, "crows are black, swans are white, *therefore*, not air alone is contained by the arteries." When they laughed afresh at this, I subjoined a third reasoning, "Fire is hot, snow is cold, thou art stupid, *therefore* not air only is contained in the arteries." For if *anything* can be inferred from given premises, and there exists no art of drawing a conclusion, what is to prevent me from arguing in this way with you? But if there be a certain art and well-considered science which teach us to discriminate in individual cases, and what can be inferred from certain premises, which man appears to you, O disciples of Erasistratus! to have more sense, whether he who knows no art, or knowing does not use it? or he who both knows and uses it?" (Kühn, vol. 4, p. 727).

Further points of interest may be gathered from the following quotations from Dr. Kidd's paper:

[Relation of Heart and Arteries.]—In giving an account of an experiment intended to prove that the arteries contain blood, he says, that after having made a ligature on the femoral artery, you will observe the pulsation *between* the ligature and the heart, but not between the ligature and the extremities. (Kühn, vol. 2, pp. 646-9). In another part of his works he makes the general observation that the heart is evidently the source of pulsation, since, if a ligature be made in any artery, pulsation continues in that part of the artery which is intermediate to the ligature and the heart, but ceases in that part of the artery which is intermediate to the ligature and the extremities. (Kühn, vol. 4, p. 683). But how unprepared he was for the discovery of the true circulation of the blood is evident, from his confession that he is totally unable to explain why Nature, which does nothing uselessly or without design, should have made *different* vessels—namely, arteries and veins—to contain the same fluid. (Kühn, vol. 4, p. 722).

[Physics of Sucking from the Breast.]—It appears that Galen, although ignorant of the doctrine of atmospheric pressure, was acquainted with some of its practical effects. Thus, he says, if you put one end of an open tube under water and suck out the air with the other end, you will draw up the water into your mouth, and it is thus that infants extract milk from the mother's breast. (Kühn, vol. 5, p. 708.)

[Experiments on Ureters.]—If, he says, you open the abdomen of a living animal, and make a ligature on the ureters, you will find that no urine passes into the bladder; but after having loosened these ligatures, you will observe the bladder become gradually distended with urine (Kühn, vol. 2, p. 36); and if, when the bladder has been distended with urine, you fix a sufficiently tight ligature on the penis, and compress the bladder even with considerable force, you will find that no urine repasses into the ureters, and for this he accounts by the oblique entrance of the ureters into the bladder, the obliquity of the entrance forming a natural valve, the action of which valve, he adds, is so perfect as to prevent the regurgitation not only of liquids, but even of air, as is proved in the common inflation of the bladder of any animal. (Kühn, vol. 3, p. 390.)

#### GALEN AS AN EXPERT IN DIAGNOSIS.

Galen's strongest point in diagnosis turned on his discrimination of the different kinds of pulse. On account of his wonderful skill in this way, it was said that "Apollo pro-



phesied by the mouth of Galen."<sup>9</sup> Full justice is done to him by M. Ozanam and by Dr. Broadbent, in their treatises on the pulse. The latter has furnished a translation of a large part of the *Libellus de Pulsibus ad Tirones*.<sup>10</sup> The following short extract, selected from his translation, may suffice to show the style of the author:

[Pulse.]—Chapter II. The artery will seem to the touch to be distended in every dimension. There are three dimensions in every body—length, depth, and breadth.

In an animal in a normal state of health you will find the artery quite moderately distended; but in normal conditions sometimes the tension is too low, sometimes too great in every dimension. Now you must remember what a normal pulse is like, and if you find an abnormal pulse of excessive breadth, you should term it "broad"; if of excessive length, "long"; and if of excessive depth, "deep"; and in like manner the opposite of these "narrow," "short," and "shallow." And a pulse that is in all these dimensions abnormally diminished is termed "small," and one that is abnormally augmented "large." Such, then, are the varieties of pulse, as far as dimension goes.

Chapter III. As regards special characteristics, there is swiftness and slowness. In the former case the movement is free and unrestrained, in the latter case enfeebled. These conditions you must judge by comparison with the normal.

The strength of the pulse, or the reverse, is determined by the force with which it repels the touch; if it repels violently it is strong, if weakly the reverse.

And there are variations in the softness or hardness of the arterial coat; it is soft when the artery appears, so to speak, flesh-like to the touch; hard when it seems dry and hard, like leather.

So then you notice differences in pulses such as this at once, as you observe the movement of the artery, though they are not, however, specially characteristic of it, as were the three before mentioned.

His writings on the pulse are very extensive, and a large part of both Vols. viii and ix, in Kühn's edition, is taken up with the different treatises on this subject. At pp. 505 and 532 of Vol. viii, and at p. 438 of Vol. ix, I show you his elaborate tabulation of different kinds of pulse—twenty-seven varieties, each of these divisible into three varieties, or eighty-one in all.

The following illustration of Galen's diagnostic skill in pulses shows likewise his pertinacity, and his acuteness in other things as well as sphygmology!

[Diagnosis of Love by the Pulse.]—Some medical sophists, ignorant of the way in which Erasistratus discovered the love of a young man for his father's maid, in asserting that he had discovered it from feeling love pulses in the young man, allege, indeed, nothing more than anyone might say, namely, that it was found out from the pulse. I am certainly not able to say in what way Erasistratus may have made the discovery, but I will disclose in what way I did so. I was called to visit a woman [the wife of Justus] who was troubled with insomnia, and was tossing about from one position to another on a couch. On ascertaining that she was free from fever, I made some inquiries in regard to the particulars of the onset of the condition, from which I might form a notion of how the insomnia was caused. But the woman herself, if she made any response at all, made it to little purpose, showing that it was vain to question her further; at last, with averted looks, she covered herself up entirely with the bedclothes, and lay with her head turned away on a small pillow, after the manner of a person in need of sleep. Therefore I left, and from these things concluded that she was suffering from one of two

<sup>9</sup> Ozanam, *La Circulation et le Pouls*; Paris, 1886, p. 21.

<sup>10</sup> Broadbent, *The Pulse*; London, 1890, pp. 6-11.



things—either that she was the victim of melancholia, or that she was affected by some grief which she was unwilling to avow. Therefore I delayed till next day to examine her with greater care; and on my arrival, the first thing I heard, from a maid standing by, was that I could not see her. On my next visit I was told the same thing. I returned a third time, and the servant told me, in order that I might go away, that the woman did not wish to be disturbed. When I ascertained that on my departure she had made her toilet and resumed her accustomed ways, I went to see her next day, and in a general gossip with the maidservant I ascertained that she was clearly troubled by some distress, the nature of which I found out by accident, in the same way as I think Erasistratus also made his discovery, accidentally; for when I had made sure that she suffered from no bodily affliction, it happened that, at the same time as I was visiting her, this was confirmed by some one coming from the theatre and mentioning that he had seen Pylades dancing. Her look and colour underwent a change; the brachial pulse, which I was holding, became irregular and suddenly agitated in several ways, the sure index of mental emotion; the same thing happens in those who are contending about something. On the next day, I directed one of those who followed me, that when I went in on my visit to the woman, he was to come in shortly after, and mention that Morpheus was dancing to-day. This was done, but I found no disturbance in the pulse. In a similar way, on the following day, I had taken care that the name of a third dancer should be mentioned, but there was no alteration of the pulse. On the fourth evening, I made a careful experiment. With the pulse in my hand, it was again mentioned that Pylades was the dancer; again there was the same agitation, and I concluded that the woman was in love with Pylades, a diagnosis confirmed by the repetition of the experiment on subsequent days (Kühn, vol. xiv, p. 630; compare also vol. xviii B, p. 40).

On the title page of the Latin edition published in Basle in 1562, this story is depicted—"Amantis Dignotio"—the woman in bed, the husband, Justus, standing by, Galen feeling the pulse, and a "Nuntius" intimating the name of the dancers.

Galen's diagnosis of the illness of a Sicilian physician was supposed by the patient and his friends to be based on the pulse; but, as will be gathered from the amusing narrative, this part, although important, was trivial as compared with the acuteness of observation which utilised every trifling circumstance which could be laid hold of. The following is rendered into English from Daremberg's French translation (tome ii, p. 657).

[Wonderful Diagnosis of the Case of a Sicilian Physician by Galen.]—When I came to Rome for the first time I was greatly admired by the philosopher Glaucón on account of a similar diagnosis. Finding me on the road, he said to me that I had arrived opportunely; then taking my hand, he said: "We are quite near an invalid whom I have seen just now, and I wish you would come to visit him with me. He is a Sicilian physician whom you have seen a few days ago walking with me." "What is the cause of his illness?" I said. Placing himself at my side, he said very frankly and plainly—for he was not one to cheat or play tricks—"Gorgias and Apelas informed me yesterday that you have made diagnoses and prognoses which approach to divination rather than to the art of medicine. I desire, then, to have a proof, not of your knowledge, but of the power of the art of medicine, and to ascertain if it can furnish such an astonishing diagnosis and prognosis." During this conversation we had arrived at the door of the patient, so that I had not been able to reply to his request, nor to tell him, what you know I often repeat, that sometimes there are, fortunately for us, indubitable signs, but that sometimes everything is doubtful, and that consequently we have to await the results of a second or a third examination. At the outer gate we met a



domestic who was carrying from the sick room to the dunghill a vessel containing excrements resembling the washings of flesh—that is to say, thin and bloody fluid, a constant sign of an affection of the liver. Without appearing to have noticed anything, I went with Glaucôn to the physician, and I was putting my hand to his arm, wishing to know if there was inflammation of the organ or simply atony. The patient, who was himself a physician, as I have mentioned, said that he had just returned to bed after having been at stool. “Consider, therefore,” he added, “that the frequency of the pulse is increased by the effort I have made in rising.” Thus he spoke, and as for me, I ascertained in the pulse the sign of inflammation. Then, seeing placed at the window a pot containing hyssop prepared with honey-coloured water, I bethought me that the physician believed himself affected with a pleurisy, on account of feeling at the false ribs the pain which sometimes also appears there in inflammation of the liver. I thought that, as he experienced this pain, his respiration was frequent and small, and that he was tormented with short paroxysms of cough; in a word, he believed himself affected with pleurisy, and so had made a preparation of hyssop and honey water. Recognising, then, that good fortune had given me the means of raising myself in the estimation of Glaucôn, I placed my hand on the false ribs on the right side of the patient, and indicating the place, I said that he suffered in this region. The patient confessed it, and Glaucôn, believing that the pulse alone had sufficed for this diagnosis of the affected place, showed visible signs of admiration. To astonish him further, I added, “If you have admitted that you suffer there, acknowledge also that you experience the necessity of coughing, and that at pretty long intervals you are seized with a short, dry cough, without expectoration.” As I said these words he coughed, by chance, exactly in the way I had indicated. Then Glaucôn, astonished, and being unable to contain himself, heaped on me well-earned praise, with a loud voice. “Do not suppose,” said I, “that these are the only things which Art can divine regarding patients; there are others which I will mention. The patient himself will be my witness.” Then addressing him: “When you breathe more deeply, you feel a sharper pain at the place which I have marked; you experience also weight in the right hypochonder.” At these words the patient could not restrain himself; full of admiration he joined his exclamations to those of Glaucôn. Recognising the success which I had obtained on this occasion, I wished to risk a word about the twinges at the clavicle; but although knowing well that this accompanies grave inflammation of the liver, as scirrhus, I did not dare to advance this, fearing to compromise the praises which they had lavished on me. I had the idea of sliding in this remark, with precaution, and turning to the patient I said: “Shortly, you will experience twinges at the clavicle, if you have not already felt them.” He confessed this to be the fact; and I said, looking at the patient, who was struck with astonishment, “I will not add further to my indications than this divination; I will announce the opinion which the patient himself has formed of the disease with which he has been affected.” Glaucôn said that he did not any longer despair of this divination; and the patient, stupified by this singular promise, gave me a piercing glance, and close attention to my words. When I had told him that he believed himself affected with a pleurisy, he acknowledged the fact, testifying his admiration; and not he only but also the servant who came to make the affusions of oil as if he had a pleurisy. Glaucôn since this time conceived a high opinion of me and of the medical art, which he had esteemed but slightly before, never having found himself associated with remarkable men who were consummate masters of the art. (Kühn, vol. viii, p. 363).

This story is also depicted in the title page of the Latin edition, Basle, 1562, “*Hepatici Cognitio*.” We see the patient in bed; “Glaucôn” standing by; Galen applying his hand to the region of the liver; and a servant is seen, through an open door, emptying a vessel into the dunghill.



A better insight into Galen's really scientific methods of diagnosis may be gained from his treatise *De Locis Affectis*; indeed, in several passages, one might almost think he was reading a modern treatise on medical diagnosis. I have selected the following extract from this treatise as to the diagnosis of urinary disorders. It is rendered from Daremberg's French translation (tome ii, p. 471).

[Differential Diagnosis in Urinary Disorders.]—Another kind of diagnostic is drawn from certain signs which manifest themselves when something abnormal is enclosed in a region with which it has no natural relation—for example, a stone in the kidneys or bladder, or pus in the thorax. To this variety may be referred a clot of blood, whatever may be the place where it is enclosed, or any peccant humour engendered in the body of the animal, or introduced from without. This fact has raised among many modern physicians a question, useless indeed for practical purposes in medicine, but giving rise to speculative views. They have asked themselves if such abnormal things, engendered in us, come under the category of "affected places;" or if, no place being affected, the animal suffers solely from the presence of this unnatural cause. That such a problem is useless, as I have said, is easily recognised in considering how much diagnosis contributes to practice. Thus, suppose there is a person who has for three days passed absolutely no urine, would we not immediately inquire in which part of the body the cause of mischief is? Is it in the kidneys, in the ureters, in the bladder, or in the urethra? Certainly we would not search in the liver, the lung, the spleen, the stomach, the heart, nor in any other part, because not one of these is a urinary organ; but if we did not know that the secretion of urine takes place first of all in the kidneys, then that the urine passes through the ureters to the bladder, and that it is evacuated from it in the manner that we have indicated in the discussions. *On the Natural Faculties* (1, viii), we could not discover anything from this. It is not even enough to go this length, for it is preferable to search, among the causes announced, for what may be the cause of the retention of urine.

Here is the method to follow in this inquiry: to inquire into all the symptoms present and past, examining for one's self the symptoms actually present, and ascertaining the past symptoms, not merely from the patient but also from the attendants (see Hippocrates, *Aphor.*, 1, i). Is there, for example, a tumour in the region called *pubic*—a tumour indicating clearly that the bladder is full to a certain extent, and that the discharge of urine is completely suppressed; is it not evident either that the force which presses the urine out is abolished, or that the passage of the urine is obstructed? But one will examine next if this force can be abolished, recollecting how the evacuation of urine is effected in healthy persons, who possess voluntary control, the muscle which surrounds the neck of the bladder ceasing to act, while the bladder itself acts. The action of the muscle depends on our will, that of the bladder is involuntary and physical. In fact we have shown in our commentaries *On the Natural Faculties*, that in almost all parts of the body there exists a faculty for separating superfluities, a faculty which all animals constantly possess, and of which they make use when hampered by these superfluities. When then this faculty has been injured, there results sometimes the affection named *ischuria*. But if you placed the patient in such a position that the neck of the bladder inclines downwards, pressing with your hands on the abnormal tumour, the urine will be expelled. If this attempt leads to no result, the idea of paralysis must be abandoned, and we must suppose that the urethra is obstructed. In fact, the paralysis of the muscle which surrounds the urethra produces not ischuria but involuntary discharge of urine. [Kühn, vol. viii, p. 7.]

[Galen then goes on to describe, in similar detail, what kinds of obstruction in the urethra might cause retention of urine. He supposes the case of a child who had symptoms of stone previously; such a case is to be further explored by a catheter,



pushing away the stone from the neck of the bladder, and so giving passage to the urine; and so on with other causes of obstruction, by clots, etc.]

Galen's recognition of jaundice as caused by snake bites is interesting as a clinical description. The following is rendered from Daremberg's French translation (tome ii, p. 654).

[Jaundice from Snake Bites.]—One of the slaves of the Emperor [Marcus Aurelius] whose duty it was to drive away snakes, having been bitten, took for some time draughts of ordinary medicines, but as his skin changed so as to assume the colour of a leek, he came to me and narrated his accident; after having drunk *theriaca* he recovered quickly his natural colour. Physicians seek to find out if there are signs peculiar to poisoning, because they often see, without the administration of any deadly poison, that the body presents a corruption of the humours similar to that which is produced by poisons; it is not at all surprising, therefore, that there sometimes supervenes a change in the humours, so that the whole body is affected with jaundice. [Kühn, vol. viii, p. 355].

A picturesque synonym for diabetes, from the diagnostic point of view, occurs in Galen—*ὀδρεος ἐν ἀμύδα* in Greek (Kühn, vol. viii, p. 394); or, as rendered by Daremberg (tome ii, p. 675), *hydropisie dans le pot de chambre*. His definition of inflammation, as given in Gale's translation, p. 126, comes very near the words which have become stereotyped in medicine.

[Inflammation.] The Grecians use to call that an inflammation, which cometh with great tumor or swelling in the fleshie parte, strained and stretched forth, resisting with pulsation and dolour, hot and red. (Kühn, vol. vii, p. 707.)

The following short note about aneurysm may also be quoted here from Gale's Translation, p. 131:

[Aneurysm.] When there is an orifice made in the arterie, that affect is called Aneurisma, and it chaunceth when the arterie being wounded, the skin which is above commeth to a ciccatrise, but the separation which is in the arterie remaineth, being neither conglutinated, nor brought to a ciccatrise, neither yet stopped with flesh. These affects are chiefelie known by the pulse and beating which the arteries doe make. And also all the tumour vanisheth awaie when the arterie is pressed downe, the substance which made the tumour, runneth backe againe into the arterie, when it is so compressed downe. (Kühn, vol. vii, p. 725.)

#### GALEN AS A PRACTITIONER.—BLOODLETTING.

The theoretical principles underlying Galen's practice have been already alluded to, but it may interest some to hear that as far back as Galen we have a clear enunciation of the principles of cure *per similia* as well as *per contraria*; many of the public foolishly think that the former principle was originated last century, although long before universally recognised.

[*Per similia et per contraria*.] "Ac si præter naturam sit quod indicet, contrarium id semper indicare: sin secundum naturam se habeat non contrarium sed simile." (Kühn, vol. x, p. 775.)

On the great question of blood letting, the following short extract given by Dr. T. K. Chambers in his racy paper, mentioned in the first footnote, may suffice at present.

[Blood letting.] Next there was a fourth patient, a woman, who was ill at the same time that the catamenia were suddenly stopped, whom these enemies to bleeding<sup>11</sup> brought to death's door. They kept her for three days absolutely without food because she had a continued fever; on the fourth day they gave her the smallest possible quantity of slops; on the fifth they ordered fasting again, and then she got

<sup>11</sup> Elsewhere called *αιμόφοβοι* (Kühn, vol. x, p. 627), or "blood funkens," as rendered by Dr. Chambers!



violently delirious, jumped up, and ran screaming about out-of-doors, and the attendants had great difficulty in restraining her violence. She, however, was saved by Nature, through a copious effusion of blood from the nostrils. This was a circumstance which should excite our admiration, and at the same time teach us what a powerful influence blood-letting has in such affections, for immediately after the hæmorrhage from the nostrils the woman was freed from all her symptoms. Now, previously to this I had shunned having any communication with the medical men, guessing what they would say against the use of venesection. But since it was so very clear to all that the woman's life was saved by the evacuation of blood, I recalled to their memory the fatal cases [already narrated in the passage] expressing an opinion that perhaps those, too, would have been saved if they had been bled, and I gave sundry reasons for it. But these gentlemen involved the matter in a maze of words, twisting the argument round and round and up and down, came to no conclusion. However, they at last ended by taking refuge in Erasistratus, stating that it was "shown by him in his First Book on Loss of Blood, that it was better to apply ligatures to the limbs than to bleed" (Kühn, vol. ii, p. 190).

#### GALEN'S USE OF MEDICINES.—THERIACA.

Regarding the use of special medicines by Galen I must refer to Dr. Gasquet's article, indicated in the first footnote, where many interesting details and references on this subject may be found; but I cannot pass over the great remedy called "Theriaca." For compounding this Galen had a great reputation. This word *theriaca* (from which our word treacle comes, from a superficial resemblance between them) is derived from the Greek *θηριακα φάρμακα*, antidotes against the bites of wild beasts—from *θηρίον* and *θήρ*, a wild beast. Originally devised as an antidote to such bites, it came to be used, in certain of its forms, as an antidote to other poisonings,<sup>12</sup> to which important people were specially liable; and from this the term came to be applied to remedies regarded as antidotal to disease (compare the passage already quoted on jaundice from snake bites). Opium was probably the most important ingredient in many, if not all, the forms of *theriaca*, and powdered snakes may be regarded as the most striking, from the point of view of curing *per similia*! The number of ingredients varied, but was always enormous; even in this modern French Codex (1866), which I show you here, the ingredients of "*thériaque*" number 57, including, strange as it may seem, not only "*opium de Smyrne*," but also "*vipères sèches*"! Galen informs us that not a few, and among them the Emperor Marcus Aurelius himself, took a daily dose of *theriaca* as a precaution or antidote.<sup>13</sup>

#### GALEN AS A TEACHER.—PROFESSION IN ROME.

Galen was distinguished as a teacher as well as a practitioner; indeed then, as now, reputation as a teacher assisted in gaining practice, perhaps even more so at that time, as the lectures and the displays of surgical operation seem to have been of a more public nature. Puschmann says of Galen:

"In order to become known there [in Rome] he gave public lectures on the structure and functions of the human body. The interest of the subject, and the practical knowledge of the lecturer, soon attracted a numerous audience composed of representatives of the most distinguished circles of the capital. Amongst his hearers were men in influential positions, such as the philosophers Eudemus and Alexander of Damascus, the prefect Sergius, the consuls Boëthus and Severus, who afterwards mounted the throne, and Barbarus the Uncle of the Emperor

<sup>12</sup> *Omnino a lethalibus et deleteriis appellatis medicamentis erit securus et immunis*" (Kühn, vol. xiv, p. 3).

<sup>13</sup> *Ad Pisonem de Theriaca*, Kühn, vol. xiv, p. 216; see also vol. xiv, p. 3.



Lucius.<sup>14</sup> In this way Galen succeeded, within a short time, in obtaining a profitable medical practice." (*History of Medical Education*, London, 1891, p. 95.)

In the quotations already given about tying the aorta, we have a glimpse of his influence on his pupils in their ardour in trying to convict of incompetence a rival teacher who had different views from their master. We likewise get an indication of his clinical teaching in connection with the case of "Amantis Dignotio," for he there makes use as a messenger of one of his pupils, apparently—"ex iis qui sequebantur me"—showing that they visited patients with him at their own homes, and received in this way their clinical instruction.<sup>15</sup> Of the state of the profession in Rome Galen draws a dreadful picture; but as he himself poses as the victim of the envy and persecution of the physicians there, it is perhaps fair to discount somewhat his retaliation on them in this abusive description. One can easily gather, even from the quotations I have given, that Galen had, as a French biographer phrases it, "un amour-propre excessif"; and his acrid disputes, with syllogisms embellished by such phrases as "tu stupidus es," might naturally set the profession there against him; indeed, his position in Rome was probably only rendered safe by the influence of Marcus Aurelius and other potentates. Galen says of physicians in Rome:

[Medical Profession in Rome.]—They will say or do anything to curry favour with the multitude; they will also flatter and favour; in the towns they will daily salute wealthy and influential persons, walk alongside of them, take them to their houses, give banquets, and behave themselves like buffoons. Others, not only in this manner, but also by the gaudiness of their clothing and their rings, by the splendour of their silver vases and by the troops of followers accompanying them, endeavour to dazzle fools and show that they are persons of tremendous importance and men to be imitated. (Kühn, vol. xiv, p. 600.)

In another passage he draws a comparison between the members of the medical profession and robbers, the sole difference being, he says, that the former perpetrate their crimes in the towns and the latter in the mountains.<sup>16</sup>

Notwithstanding the hard lines which had, according to himself, fallen to his lot through the hatred and envy of the profession in Rome, Galen seems to have had at least one good fee, received from the Consul Boëthus for attendance on his wife; he sent him 400 "aurei," equivalent, we may say, to 400 English guineas. Indeed, so far as the value of that coin can be estimated, the "balance of exchange" seems to have been in favour of Galen, for it is quoted in the *Dictionary* as £1 1s. 1½d.; but these "aurei" evidently acquired a very special additional value in Galen's eyes, as the rumour of them increased the envy of his fellow-practitioners and added to his praise!<sup>17</sup>

<sup>14</sup> Some of these are figured and named, as viewing Galen's dissection of an animal, on the title page of the Latin edition, Basle, 1562.

<sup>15</sup> Clinical instruction seems also to have been given in *Tabernæ Medicæ* or *Iatreia*, the construction of which was arranged to secure good light and ventilation. (See Puschmann: *History of Medical Education*, London, 1891, p. 111; also Galen: Kühn, vol. xviii B, p. 678, 674, etc.)

<sup>16</sup> "Sola hac re a latronibus differunt, quod in urbe, non in montibus facinora sua perpetrent." (Kühn, vol. xiv, p. 622.)

<sup>17</sup> "[Boëthi uxorem uteri profluvio laborantem praeter spem aliorum sanat].....quadrigentos aureos ad me misit, auxitque generosorum horum medicorum invidiam, inde quod me laudibus extolleret." (Kühn, vol. xiv, p. 647.)