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# The Historical Collection of Medical Classics in the Library of the Surgeon-General's Office

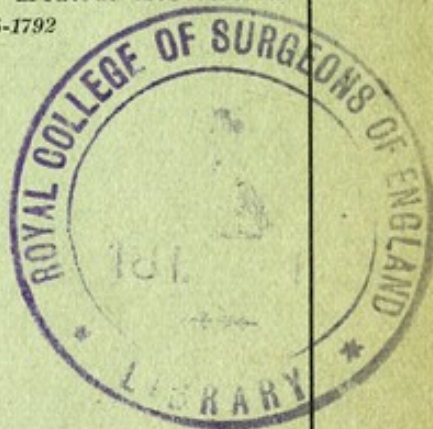
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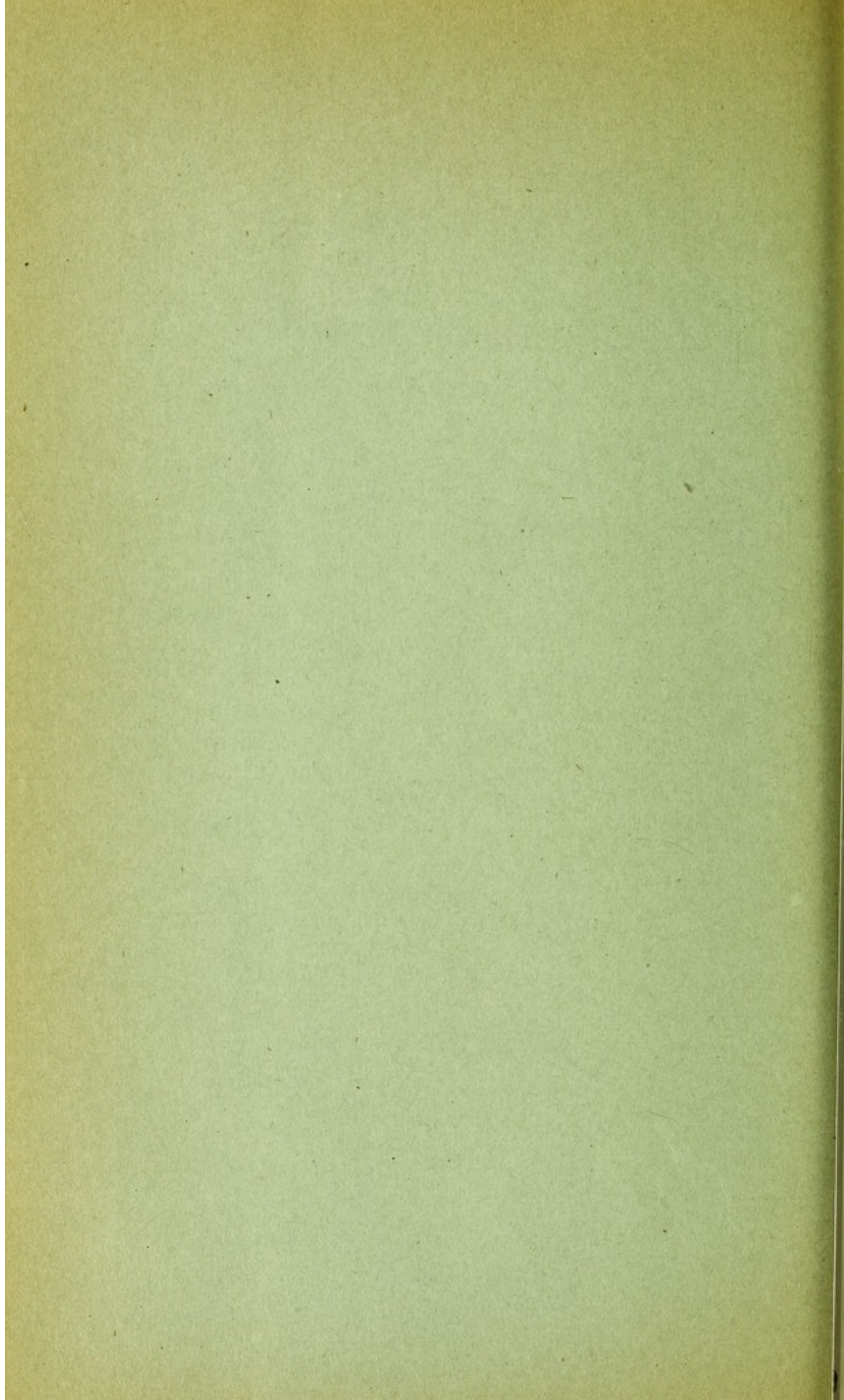
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The Historical Collection of Medical  
Classics in the Library of the  
Surgeon-General's Office



FIELDING H. GARRISON, M.D.  
WASHINGTON, D. C.

The Historical Collection of Medical  
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THE HISTORICAL COLLECTION OF MEDICAL  
CLASSICS IN THE LIBRARY OF THE  
SURGEON-GENERAL'S OFFICE \*

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In any library of size the problem of what to do with its rarer and costlier books is usually solved by stowing them either in or out of sight, in show-cases, drawers, cupboards and coffer, and in the Surgeon-General's Library at Washington this policy has been in force for some years so far as its incunabula, elephantines, erotica and curiosa are concerned.

The recent plan of the librarian, Col. Walter D. McCaw, to put the more important medical classics under glass, for purposes of safe keeping, has resulted in a collection of unique interest and value, for the nation's medical library is singularly rich in these literary treasures, the accumulation of which is mainly due to the untiring zeal and vigilance of Dr. Billings and Dr. Fletcher in the past. The fact that nearly every volume in this exhibit is a first edition should interest the medical bibliophile, and at the same time an arrangement of the classics in strictly chronological order affords a bird's eye view of the textual history of medicine to the student and casual visitor, while giving the specialist chapter and verse, as it were, by enabling him to put his finger on the particular *locus classicus* in each case. Then, many of these old medical classics are fine specimens of typography in themselves, bearing on title-page or colophon the stately names of the great printers of the past.

In preparing this chronological exhibit, which will, when completed, be provided with a suitable *catalogue raisonné*, it was thought best that the historical collection proper should begin with Greek medicine, for the reason that, apart from the works of the Jewish and Arabian

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physicians in the Middle Ages, Oriental medicine has mainly an anthropologic or esoteric interest. The leading monuments of pre-Hippocratic medicine, including the Ebers Papyrus, the Code Hamurabi, the Charaka Samhita and the Suruta, are, of course, on exhibition in the library hall, and no one will challenge the importance of these documents. From the hieratic writings of the papyri we get a clear idea of the priest-like dignity of the ancient physician's calling, the various diseases and the extensive materia medica known to the ancient Egyptians. From the Code Hamurabi we sense the importance attached to physicians' fees even 2,200 years before Christ. From the Suruta, the great storehouse of Aryan surgery, we learn that to their lofty Brahminical code of ethics the ancient Hindu physicians united a highly specialized knowledge of operative procedure and of surgical instrumentation that was not improved on by the Greeks and Romans who came after them. Aryan skill in surgery has been an unbroken tradition, even through the Dark Ages, when surgery was most under a ban. But with this single exception and in the face of the researches of savants like Ebers, Joachim, von Oefele, Jolly, Preuss and Bartels, it is doubtful whether the records of Egyptian, Indian, Chinese, Mesopotamian and Babylonian medicine can be ranked with the classic texts. Cuneiform, hieroglyphic, runic and palm-leaf inscriptions all point to one fact, that ancient medicine and the medicine of primitive peoples, whether Accadian or Scandinavian, Slavic or Celtic, Roman or Polynesian, has been the same throughout space and time—in each case an affair of charms and spells, plant lore and psychotherapy, to stave off the effect of supernatural agencies. It may interest us vastly to know that the *ascariasis* disease of the Egyptian papyri was identical with hookworm infection; that the Chinese had a pulse-lore and practiced acupuncture; that Finsen's red-light treatment of small-pox was known to ancient Japanese physicians as it was to John of Gaddesden; that an early Persian manuscript pictures a permanent gastric fistula like Alexis St. Martin's; that Machaon and Podalirius were the first naval surgeons, and so forth. Yet these are after all only waifs and estrays of information, and as information is not knowledge, so disconnected facts do not make a scientific record. Such a record implies not only the isolation and collation of facts, but their interpreta-



tion and the induction of the general laws behind them, and, in this sense, pre-Hippocratic medicine has not the slightest claim to be called scientific. Few will dissent, therefore, from the wise (if somewhat Olympian) view of Goethe that Eastern antiquities have only a casual interest: "Chinesische, indische, ägyptische Alterthümer sind immer nur Curiositäten."

#### I. THE GREEK AND GRÆCO-ROMAN PERIOD (460 B. C.-476 A. D.)

European medicine began in the age of Pericles and its scientific advancement centers in the figure of Hippocrates (460 to 370 B. C.), who crystallized the loose knowledge of the Coan and Cnidian schools into systematic science, dissociated medicine from theurgy and philosophy, and developed the art of grouping and coordinating symptoms so that the clinical picture of a disease began to emerge of itself as a definite entity.

The Surgeon-General's Library possesses an unusually rich collection of some 900 volumes relating to the Hippocratic Canon, including fifty-two different editions of the *Opera Omnia*, 441 separate treatises, and 408 commentaries and critical compendiums. Of these, the following are on exhibition:

1. The folio Latin text of the *Opera Omnia*, translated and edited by Fabius Calvus, the friend and patron of Raphael, and published at Rome under the auspices of Pope Clement VII in 1525. This was the first complete edition of Hippocrates to be printed.
2. The folio *editio princeps* of the Greek text, published the following year (1526) by Aldus at Venice.
3. The Basel *Opera Omnia* edited by Janus Cornarius and printed by Froben (1538), highly prized on account of its textual and critical accuracy.
4. The Greek text and Latin translation of Hieronymus Mercurialis, printed by the house of Giunta at Venice in 1588.
5. The Frankfort edition of 1595, containing the valuable translation and commentary of Anutius Foesius, the most learned, industrious and able of the Hippocratic commentators before the time of Littré.
6. The first Latin text of the aphorisms, edited by François Rabelais (Lyons, 1532).
7. The tiny Leyden editions of the aphorisms (1607 and 1628), the first a Plantin imprint, the second a vest-pocket Elzevir.

The greatest scientific name after Hippocrates is that of "the master of those who know," the Asclepiad



Aristotle (384 to 322 B. C.), who gave to medicine the beginnings of zoölogy, comparative anatomy and embryology and the use of formal logic as an instrument of precision. A worthy successor of the Stagirite was his friend and pupil Theophrastus of Eresos (370 to 286 B. C.), also a physician and called the "protobotanist," because he did for the vegetable kingdom what Hippocrates had previously done for surgery and clinical medicine, by collating the loose plant-lore of the woodmen and "rhizotomi" into a systematic treatise. The "*De Historia Plantarum*" of Theophrastus, the foundation-stone of European botany, is represented by the Aldine Greek text of 1497 and the Greek and Latin text of Stapel (Amsterdam, 1644).

The colonization of Greek medicine in Egypt led to brilliant developments in anatomy and surgery, but our knowledge of the two great Alexandrian anatomists, Herophilus and Erasistratus, the originators of dissecting, is not based on any textual record of their writings, but was pieced together by the scholarship of Marx and Hieronymus. The principal relics of the empirical poison-lore of the second century B. C. are the two hexameter poems of Nikander on poisonous animals ("*Theriacae*") and plants ("*Alexipharmaca*") which have been preserved in the two Aldines of 1499 and 1523, and the French versification of these poems by Jacques Grevin (Plantin imprint, Antwerp, 1568).

After the destruction of Corinth (146 B. C.), Greek medicine may be said to have migrated to Rome. Before the Greek invasion, the Romans, as the younger Pliny tells us, "got on for 600 years without doctors," relying mainly on medicinal herbs and domestic simples, superstitious rites and religious observances. The proud Roman citizen, who had a household god for nearly every physiologic function, looked askance on the itinerant Greek physician, despising him as a mercenary for accepting compensation for his services and otherwise distrusting him as a possible poisoner or assassin. Apart from the writings of a private litterateur like Celsus, the principal Roman contribution to medicine was the splendid sanitary engineering of the architect Vitruvius. Greek medicine was finally established on a respectable footing in Rome through the personality, tact and superior ability of Asclepiades of Bithyna (124 B. C.) whose fragments are presented in Gumpert's Greek text (Weimar, 1794).



Although Roman medicine was almost entirely in Greek hands, the best account of it that we have was the work of Aurelius Cornelius Celsus, a private gentleman who lived during the reign of Augustus Cæsar, and wrote encyclopedic treatises on medicine and other subjects for the benefit of the Admirable Crichtons of his day. To moderns, Celsus is the leading authority on Græco-Roman medicine and Alexandrian surgery. Under the Romans military and gladiatorial surgery attained a degree of perfection which the general art was not to reach again before the time of Ambroise Paré. Celsus is also the standard authority for the weights and measures used by the Romans, and the *Proæmium* of his "De Re Medica" contains the first history of medicine. Of the 105 different editions of Celsus, the Surgeon-General's Library possesses sixty-five. The show-case exhibit includes the Florentine *editio princeps* of 1478, the Milan imprint of 1481, the rare Giunta of 1524, the Aldine of 1525 and the handsome Elzevir of 1657.

Pedacius Dioscorides, a Cicilian Greek, was an army surgeon during the reign of Nero (*circa* 64 A.D.) and utilized his opportunities of travel in the study of plants. His work is the authoritative source on the *materia medica* of antiquity, of which he describes about 600 plants and plant-principles, over a hundred more than Theophrastus. Up to the beginning of the seventeenth century, the best books on medical botany were still simply commentaries on the treatise of Dioscorides, which is preserved as the Aldine of 1499 (Greek text), the Stephanus of 1516 (Latin text), the rare bilingual text of Cologne, 1529, and the Italian commentary of Mattioli (Venice, 1544), also excessively rare.

Aretæus the Cappadocian, who also lived in the reign of Nero, comes nearer than any other Greek to the spirit and method of Hippocrates and is on this account more readily appreciated by modern men. As a clinician, he ranks next to the Father of Medicine for the graphic accuracy and fidelity of his pictures of disease, of which he has given the classical, first-hand accounts of pneumonia, asthma, diabetes, leprosy, diphtheria (*ulcera Syriaca*) and the first clear differentiation between cerebral and spinal paralysis. His work is preserved in the faulty Greek text of 1554 and in Wigan's valued Clarendon Press edition (Oxford, 1723).

Another great eclectic was Rufus of Ephesus, who lived in the reign of Trajan (98 to 117 A. D.), and



whose literary remains and fragments have been preserved in the Paris text of 1554.

Soranus of Ephesus, a methodist of the second century, A. D., is our leading authority on the gynecology, obstetrics and pediatrics of antiquity. His treatise on midwifery and diseases of women, represented by Dietz's Greek text (Königsberg, 1838), was the original of such famous books as Röslin's "Rosegarten" (1513) and Raynalde's "Byrthe of Mankynde" (1545), and most of the supposed innovations in these books, such as the obstetric chair or podalic version, have been traced back to Soranus. After Soranus, there were no real additions to obstetrics before the time of Paré, some 1,500 years later.

The ancient period closes with the name of the greatest Greek physician after Hippocrates—Galen (131 to 201), the founder of experimental medicine. Galen's youth and old age were those of a peripatetic. His life was one long *Wanderjahr*. This roving disposition undoubtedly did much to develop that cocksure attitude of mind which made his writings the fountain-head of ready-made theory, or what the Germans call "polypragmatism." He had an answer ready for every problem, a reason to assign for every phenomenon. How the followers of Galen imposed his authority on European medicine for ages is one of the commonplaces of medical history. Up to the time of Vesalius, European medicine was one vast *argumentum ad hominem* in which everything relating to disease and its treatment was referred back to Galen as a final authority, from whom there could be no appeal. After his death European medicine remained at a dead level for nearly fourteen centuries. Galen's true greatness lies in the simple fact that he gave to medicine that method of putting questions to Nature and arranging matters so that Nature may answer them which we call experiment. His experiments on the physiology of the nervous and respiratory systems are truly classical and the only thing of the kind before Harvey. Of Galen's *Opera Omnia*, the Surgeon-General's Library possesses the ten different Giunta editions, selected volumes of which are on exhibition, together with the Aldine of 1526, Linacre's translations of the "De Sanitate Tuenda" (Paris, 1517), and "De Temperamentis" (1527); and the Simon Colinaeus imprint of the "De Usu Partium" (Paris, 1528), the prototype of all subsequent "Bridgewater treatises."



## II. THE BYZANTINE PERIOD (476 TO 732 A. D.)

The solitary thing the Eastern Empire did for European medicine was to preserve something of the language, culture and literary texts of Greece. Although the Byzantine power lasted over a thousand years (395 to 1453 A. D.), medical history is concerned only with the names of four remarkable men who were prominent physicians in the first three centuries of its existence. Of these the courtier Oribasius (326 to 403 A. D.), a friend and physician-in-ordinary to Julian the Apostate and sometime quæstor of Constantinople, is chiefly remarkable as a torch-bearer of knowledge rather than as an original writer, but his compilations are highly valued by scholars in that he always gives his authorities and, so far as is known, quotes them exactly. Medicine is indebted to him for a remarkable anthology of the works of his predecessors, many of whom (the great surgeon Antyllus, for instance) might otherwise have been lost to posterity. A representative work of Oribasius is the epitome of medicine which he made for the use of his son ("Synopsis ad Eustasium Filium"), of which a rare large paper Aldine (Venice, 1554) is exhibited; but the student of medical history will read Oribasius to best advantage in Daremberg's splendid six-volume edition, with the French translation (Paris, 1851-1876).

Aetius of Amida, who lived in the sixth century A. D., was also a royal physician and *comes obsequii* at the court of Byzantium. His work, represented in the Aldine of 1534, is principally remarkable for the introduction of such far-Eastern drugs as cloves and camphor into the pharmacopeia.

Alexander of Tralles (525-605), who is regarded by many historians as the most remarkable of the Byzantine compilers on account of the originality of his therapeutic procedure, is represented by the Lyons *editio princeps* of his "Practica" (1504).

Paul of Ægina (625-690), the last of the Greek eclectics and compilers, is represented by the Aldine Greek text of 1528. We may judge how low medicine had sunk at this time by his apologetic statements in regard to any lack of originality on his part. He frankly admits that the ancients have said all that could be said about medicine and that he is only a humble scribe. Paul was, however, a very capable surgeon and the seventh book of his "Epitome" was the standard work on the subject up to the time of Albucasis.



### III. THE MOHAMMEDAN AND JEWISH PERIODS (732-1096 A. D.)

By the swords of Mohammed and his emirs the wild outlaw clans of the Asian and African deserts were converted into nations capable of acting as military and social units, but it was not until long after his death when the mighty empire which he founded was subdivided into caliphates, that the sciences and arts were permitted to develop. We call the medical authors of the Mohammedan period "Arabic" on account of the language in which they wrote, but in reality most of them were Persian- or Spanish-born, and many of them were Jewish. The leading physicians of the Eastern (or Bagdad) Caliphate were the three Persians, Rhazes, Haly Abbas and Avicenna.

Rhazes (860-932), a great clinician, ranks with Hippocrates, Aretæus and Sydenham as one of the original portrayers of disease. His descriptions of small-pox and measles is the first authentic account in literature, a classic text. It is preserved in the original Arabic, with parallel Latin translation, in Channing's edition (London, 1766). Rhazes' great encyclopedia, the "El Hawi" or "Continens," which Haller preferred to any other Arabic treatise, is shown in the Latin translation of Feragius (Brescia, 1486).

Haly ben Abbas, a Persian mage, who died in 994, was the author of the "Almaleki" or "Liber Regius," a text-book which was the canonical treatise on medicine for a hundred years, when it was superseded by the "Canon" of Avicenna. It has never been printed in the original Arabic, but is preserved in the Latin translations of 1492 and 1523.

Avicenna (980-1036), called "the Prince of Physicians," a convivial Omarian spirit, eminently successful in practice as court physician and vizier to different caliphs, was one who trod the primrose path at ease and died in the prime of life from the effect of its pleasures. The "Canon" of Avicenna, a huge, unwieldy storehouse of knowledge, which Haller styled a *methodica inanitas*, but which was none the less a great medical text in its day, is preserved in the original Arabic text (Rome, 1593) and in the Latin texts of 1479, 1483 and 1486. The Giunta edition of 1608 contains some striking plates which show that Avicenna knew and practiced the method of treating spinal deformities by forcible reduction which was reintroduced by Calot in



1896. The collection of pharmacologic treatises by the eponymous or pseudonymous Mesue junior is of interest as one of the earliest known incunabula (Venice, 1471).

The leading medical authors of the Western or Cordovan Caliphate were the surgeon Albucasis and the Jewish physicians Avenzoar and Moses Maimonides. Albucasis, a native of Cordova, who died there in 1106, was the author of a great medico-chirurgical treatise called the "Altasrif" (or "Collection"), of which the surgical part is exhibited in Channing's Arabic text (Oxford, Clarendon Press, 1778). It is remarkable as containing the first pictorial representations of surgical instruments and was the leading text-book on surgery in the Middle Ages up to the time of Saliceto. The greatest of the Jewish physicians during the Arabic period was the Cordovan Avenzoar, who died in 1161. He was one of the few men of his time who had courage enough to tilt against Galenism and by his description of the itch-mite (*Acarus scabiae*) he may be accounted the first parasitologist. His "Teisir," or "Rectification of Health" is preserved in the Latin translation of 1490. The Rabbi Moses ben Maimon, called Moses Maimonides (1139-1208), was court-physician to Saladin, and his "Tractatus de Regimine Sanitatis" was written for that Sultan's personal use. The copy on exhibition, the Florentine imprint of 1478, is one of the rarest of books.

#### IV. THE MEDIEVAL PERIOD (1096-1438)

Medieval medicine began in the School of Salerno, which was founded by the Benedictine Monks in the ninth century, and survives in its principal document, the "Regimen Sanitatis," written in hexameter verse (1840), and in the "Antidotarium" of Nicolaus Praepositus, the first formulary and one of the first medical books to be printed (Venice, 1741). The principal outcome of the School of Salerno was the work of two surgeons, Roger and Roland of Parma, who, as Allbutt says, "stand like twin brethren in the dawn of modern medicine, bearing the very names of romance." Roger's "Practica," written in 1180 and reedited by Roland, is preserved in the library collection as a rare and interesting manuscript of the fourteenth century, together with Daremberg's classical edition of the "Glossulae Quatri Magistrorum," vilely printed, "on gray paper with blunt type" (Naples, 1854). Roger, Roland and the Four Masters were suc-



ceeded by Hugh of Lucca, who left no record of his work behind him, and his disciple Teodorico Borgognini (1205-96), whose treatise is preserved in the surgical anthology of Articella (*editio princeps*, Venice, 1490). Hugh and Theodoric contradicted the pseudo-Galenist dogma of "coction" or "laudable pus" and stand out in their day as pioneers of a rational asepsis. The ablest Italian surgeon of the thirteenth century was Guglielmo Salicetti, called Saliceto, a man well educated in hospital and on the battlefield, as well as in respect of university training. His "Cirurgia," exhibited in the *editio princeps* of 1476, stands out as a great landmark or sea-mark in the history of the craft, to be followed by the "Chirurgia magna" of his pupil Lanfranchi of Milan (*editio princeps*, Venice, 1490). Lanfranc, also a university man, was driven by banishment to Paris, where he became the founder of French surgery and made a resolute and valiant stand against the medieval schism between surgery and medicine. The effect of the work of these great surgeons, coincident with the development of the medieval universities—Bologna (1110), Montpellier (1137), Paris (1176), Oxford (1200), Padua (1222)—and the brilliant false dawn of culture and liberalism in the thirteenth century, did much to further the growth of surgical talent in France, England and Flanders. The "Cirurgia" of Pietro Argelata (Venice, 1480), the reproductions of the text of Henri de Mondeville by Pagel (Berlin, 1892) and Nicaise (Paris, 1893), the "Cirurgia" of Guy de Chauliac, written in the *lingua franca* (Venice, 1480), a rare and curiously illustrated fourteenth century manuscript of John of Arderne, and the facsimile of the "Chirurgie" of Jean Yperman (1295-1351) by Carolus (Ghent, 1854), are the principal landmarks of the period.

Hand in hand with the medieval development of surgery, there necessarily went some effort to improve the status of human anatomy. Dissecting, at first rigorously proscribed by law and sentiment, became more and more a matter of course, following the decree of Emperor Frederick II in 1240. Payne had divided medieval anatomic teaching into three periods: First, the Salernitan (from the ninth to the twelfth century), in which instruction was based on the dissection of animals as set forth in the "Anatomia Porci" of Copho, one of the Jewish instructors at Salerno. Second, the Arabist



period (thirteenth century), in which such dissections were superseded by books and lectures: The leading authorities of this time were Richard, canon of Wendover, called Richardus Anglicus (1252), whose work is preserved in Töply's text (Vienna, 1902); and Henri de Mondeville, who, long before Ambroise Paré, prefixed an anatomic treatise to his surgery, and who improved on Wendover's teaching by the use of pictures, diagrams and a model of the skeleton. The interest of the third period centers in the revival of human dissecting by Mondino de' Luzzi, called Mundinus (1250-1325), whose "Anathomia" is exhibited in the Leipsic edition of Dr. Melerstat (1493). This little horn-book of Mundinus, although full of Galenical errors in regard to the structure of the human frame, was yet the sole text-book on anatomy for over a hundred years.

Internal medicine during the Middle Ages was essentially scholastic and monastic; that is, its votaries were either monks or schoolmen of the type of the great intellectual leaders of the thirteenth century—Roger Bacon, Thomas Aquinas, Duns Scotus and Albertus Magnus. The medieval logicians did good service in sharpening men's minds and teaching them how to use dialectics as an instrument or weapon, but science itself could not advance so long as the pitfalls of syllogism were preferred to inductive demonstration of fact. The medieval writers on practice of medicine are commonly described as Arabists on account of their unswerving fidelity to Galenical dogma as transmuted through Mohammedan sources. Characteristic Arabist texts are the "Liber Aggregationis" of Jacopo de Dondis (1298-1358), the earliest known of medical incunabula, printed at Strasburg, *circa* 1470 by Adolf Rusch (the "R" printer); the "Conciliator Differentiarum" (Venice, 1476) of the heretic Peter of Abano (1250-1315), the "Breviary of Practice" (Pavia, 1488) of Arnold of Villanova (1235-1312), and the "Lilium Medicinæ" of Bernard de Gordon (Venice, 1496), also exhibited in a rare manuscript of 1349. Nowise classical, these works are typical of the Middle Ages in scholastic subtlety and rigid adherence to dogma. Two books of this group are of special interest to English-speaking people—the "Compendium Medicinæ" (London, 1510) of Gilbertus Anglicus, the leading spirit of Anglo-Norman medicine, and the "Rosa Anglica" (Pavia, 1492) of John of Gaddesden, a prebendary of St. Paul's, whom some think the original of



Chaucer's Doctor of Physic. The former is remarkable for its account of leprosy and as containing the first reference to the contagiousness of small-pox. The latter has a remarkable reference to the red-light or Finsen treatment of the same disease, but is otherwise a farrago of Arabist quackeries and countryside superstitions.

V. THE PERIOD OF THE RENAISSANCE, THE REVIVAL OF LEARNING AND THE REFORMATION (1438-1600)

In the transition of civilized mankind from medieval to modern conditions many forces were operative, but undoubtedly the most potent were the invention of gunpowder, which gave the *coup de grâce* to feudalism, and the discovery of printing, the greatest agent in uplifting mankind by self-education. The effect of the revival of Greek culture by the Byzantine scholars who poured into the Italian peninsula after the fall of Constantinople (1453) was to substitute the spontaneous receptive attitude of Plato and Hippocrates for the dialectics and logic-chopping of Aristotle and the Galenists. Prime movers in this change for medicine were the great printers of the Renaissance and the so-called medical humanists. The printing houses of the Aldi and Giunti in Venice, Stephanus and Colinæus in Paris, Herbst (Oporinus) and Froben in Basle, Wynkyn de Worde and Wyer in London, Plantin at Antwerp, Elzevir in Leyden, vied with each other in the issue of stately folios and beautiful texts, while such editors and translators as Niccolo Leonicensio at Ferrara; Rabelais at Meudon, Gunther of Andernach at Strasburg, Hagenbut (Cornarus) at Marburg, and Anutius Foesius at Metz did for Hippocrates what Linacre and Caius in England did for Galen. Linacre's translations of Galen in particular made it clear to physicians of the day that for centuries the profession had relied on garbled and second-hand versions of their favorite author.

Some time after the invention of printing, Germany entered the field of medicine with a remarkable array of semi-popular treatises, most of them written, contrary to custom, in the vernacular, the language of the people. The earliest of the German incunabula on exhibition is the "Regiment der jungen Kinder" of Bartholomæus Metlinger<sup>1</sup> (Augsburg, 1473), a little book on infant

1. An earlier German incunabulum is the Hohenburg "Regimen Sanitatis," printed at Augsburg in 1472. (See Sudhoff's "Deutsche Medizinische Inkunabeln," Leipzig, 1908, p. 8.)



hygiene which would be the first Renaissance contribution to pediatrics were it not preceded by Paolo Bagellardo's "De Ægreditudinibus Infantum" (Padua, 1472). The "Artzneibuch" of Ortolf of Bavaria (Nuremburg, 1477) was an important German text of popular medicine in its day, and followed, about 1500, by Ortolf's quaint little "Frauenbuchlein," or popular hand-book for lying-in women. A few years later (in 1513), there appeared at Worms the "Rosegarten" of Eucharius Röslin, a work which bears the same relation to Renaissance obstetrics that the "Anathomia" of Mundinus did to medieval anatomy. Although mainly a compilation from Soranus of Ephesus as filtered through the manuscript codices of Moschion, it was still the only text-book in the field after a lapse of fourteen centuries. Three first editions were issued simultaneously, all extremely interesting for their quaint cuts (already faintly outlined in the Moschion codices), for the *réchauffé* of podalic version as originally described by Soranus and for the fact that Röslin's text was miserably plagiarized by Walther Reiff<sup>2</sup> in 1545, and also translated and reissued by William Raynalde as "The Byrthe of Mankynde" (London 1545). The ordinance issued by the city of Ratisbon in 1555 for the direction of midwives ("Regensburger Hebammenbuch") has been proved by Mr. Felix Neumann<sup>3</sup> to be the earliest public document of this kind in the vernacular.

The foundations of medical jurisprudence were laid in its earliest European text, the "Caroline Criminal Constitutions" (*Peinliche Gerichtsordnung*) issued by Emperor Charles V in 1533 and exhibited in Schmid's Middle-High German text (1835). Interesting relics of the great medieval pandemics of syphilis and bubonic plague are preserved in the curious tracts of Widman (1497), Conrad Schelling (1502), Grünpeck (1503), Ulrich von Hütten (1514) and Schmaus (1518). Early German botany survives in the wood-engravings of the "Hortus Sanitatis" (1491) and the herb-books of Brunfels (1530) and Bock or "Tragus" (1539); early German surgery begins with Haeser's reproduction of the "Bündth-Ertzeney" (1460) of Heinrich von Pfolspeundt, which contains the first reference to gunshot-

2. The plagiarist Reiff should not be confused with the Swiss obstetrician Jacob Rueff (1500-58), author of the "Trostdüchle" (Zürich, 1554), a midwifery of sterling character.

3. Arch. f. Gesch. d. Med., Leipsic, 1911, v.



wounds as "powder-burns"; the "Buch der Chirurgia" of Hieronymus Brunschwig (Strasburg, 1497) and the Fieldbook of Military Surgery by Hans von Gersdorff (Strasburg, 1517), both containing some of the most instructive pictures of early surgical procedure in existence, the latter including unique plates of diseases like leprosy and St. Anthony's fire. The same thing is true of the *ὀφθαλμωδουλία, das ist, Augendienst* of the court oculist Georg Bartisch (Dresden, 1583), the striking illustrations of which give us a complete purview of Renaissance eye surgery. The earliest work in this field was the "De Oculis, Eorumque Egritudinibus et Curis" of Benvenuto Grassi (Ferrara, 1475), and in the vernacular group may be mentioned the little eye book of Walter Bailey (London, 1586) and the "Traité des Maladies de l'Œil" by Jacques Guillemeau (Paris, 1585).

The effect of these vernacular writings was to get men's minds away from scholasticism and turn them toward realities. This Renaissance tendency reached its highest development in the earliest of the medical leaders of the sixteenth century, Paracelsus, Vesalius and Paré—three strong men of aggressive temperament, who by shouldering past other men, literally "blazed the way," not only for the general advance of medicine, but for keen and liberal thinking in all its branches.

Aureolus Paracelsus (1493-1541), the founder of chemical pharmacology and therapeutics, was neither the refined, supersubtle mystic of Browning's poem, nor yet the roystering, lying, tippling blackguard and quack-salver of tradition. His influence was far-reaching and his real services were great. Far in advance of his time, he discarded Galenism and taught men to accept chemistry as a science; he attacked witchcraft and the strolling mountebanks who butchered the body in lieu of surgical procedure, and he did away with the silly uromancy and uroscopy; almost the only asepist between Mondeville and Lister, he taught that Nature (the "natural balsam") and not officious meddling heals wounds; he introduced mineral baths and was the first to analyze them; he made mercury, opium, arsenic, antimony and lead a part of the pharmacopeia, and discovered zinc; his "doctrine of signatures" survives in the essence of homeopathy; and in comparing the action of the "arcana" or intrinsic principles of drugs to a spark he grasped the idea of catalytic action. As a theorist, he



believed in the descent of living organisms from the *Urschleim* or primordial ooze, and some credit him with anticipating Darwin in his observation that the strong war down and prey on the weak—a fact, unfortunately, within the range of any beggar or footman. But none of these things can outweigh the influence which Paracelsus exerted on his time through his personality. In an age when heresy often meant death, he wasted no time in breaking butterflies on wheels, but drove full tilt at many a superstition, risking his neck with the recklessness of a border reiver. The importance attached to his name may be gathered from the line in Shakespeare's comedy which brackets it with that of Galen<sup>4</sup>. Paracelsus was great in respect of his own time. He does not seem particularly great in relation to our time.

The works of Paracelsus on exhibition are his manual introducing the use of mercurials in syphilis (Frankfurt, 1553), the treatise "*De Gradibus*" (Basel, 1568), which contains most of his innovations in chemical therapeutics, and his monographs on miners' diseases ("*Von der Bergsucht*," Dillingen, 1567) and mineral baths (Basel, 1576), the former one of the few original contributions of his time to internal medicine. In this connection we should mention Baillou's account of whooping-cough (1578) and the original description of the syndrome "mountain sickness" by the Jesuit traveler Joseph d' Acosta (1590).<sup>5</sup>

After the time of Mundinus, there appeared a number of anatomic treatises containing the first rude attempts at pictorial representation of dissected parts. These are the so-called "graphic incunabula" of anatomy, of which appropriate woodcuts from Ketham (Venice, 1493), Peyligk (Leipsic, 1499), Hundt (Leipsic, 1501), Friesen (Strasburg, 1519), Berengario Carpi (Bologna, 1521, 1522), and Dryander (Marburg, 1537) are displayed. These tentative efforts at representation, rare and curious as they are, pale almost into obscurity beside the cartoons, *écorchés* and chalk drawings of the great artists of the period—Luca Signorelli and his pupil Michael Angelo, Raphael and Leonardo da Vinci. Of

4. In *All's Well that Ends Well*, Act II, Sc. 3, where Lafew refers to the king's case as incurable, "to be relinquished of the artists," and Parolles replies: "So, I say, both of Galen and Paracelsus"—meaning, of course, that neither the Galenical nor the alchemical school of physicians could help him in any way.

5. d'Acosta, Joseph: *Historia natural y moral de las Indias*, Sevilla, 1590.



chief interest are the reproductions of Leonardo's red-chalk drawings from the Ambrosian Library at Milan and the Royal Library at Windsor. Startlingly modern in their accuracy and display of physiologic knowledge, these impromptu sketches, made beside the dissected subject, reveal such acquaintance with muscular anatomy as was possible only to the Greek sculptors, and fully justify William Hunter's claim that their author was "the greatest anatomist of his epoch." The marginal notes, which Leonardo has recorded in mirror-writing lest others appropriate his ideas on the physiology of locomotion, reveal the cautious, secretive spirit of the time. The exhibit of pre-Vesalian anatomy includes, of course, the *editio princeps* of Albert Dürer's treatise on human symmetry (Nuremberg, 1532).

Thoroughly as the great artists of the Renaissance may have studied external anatomy, yet dissecting for teaching purposes was still hampered by the theologic idea of the sanctity of the human body as the image of Godhead and the anatomy of the schools was the anatomy of Galen. How far such teaching had progressed may be gathered from the quaint cut on the title-page of the *Melerstat Mundinus* (1493), in which the scholastic instructor in long robe and barretta, wand in hand, gravely expounds Galen by the book from his pulpit-chair, while below the long-haired barber-servant makes a desperate shift at demonstrating the viscera of the subject before him. The Faust who was to release the science from these trammels and revive the doctrine of the *visum et repertum* was Andreas Vesalius (1514-64), the most commanding figure in European medicine after Galen and before Harvey. There were plenty of dissectors and dissections before Vesalius, but he alone made anatomy what it is to-day—a living, working science. It was the effect of his strong and engaging personality that made dissecting not only viable but respectable. His career is one of the most romantic in the history of medicine. Flemish born, but of German extraction, a pupil of the ardent and bigoted Galenist, Jacobus Sylvius, Vesalius, in his graduating thesis, showed at first the conventional tendencies of the scholiast, but his mind was too active, his spirit too keen and independent, to feed long on the dust of ages, and he soon established a reputation for first-hand knowledge of the dissected human body, even teaching himself the difficult art, so essential to surgeon and gynecologist, of recognizing the



palpable structures by an educated sense of touch. Five years' experience as public prosector at Padua, where he made students dissect and inspect the parts *in situ*, culminated in the magnificent "De Fabrica Humani Corporis" (1543), a work which marks an epoch in breaking with the past and throwing overboard Galenical tradition. The effect of a publication so radical on a superstitious and forelock-pulling age was immediate and self-evident. Sylvius, his old teacher, turned against his brilliant pupil with acrimony and coarse abuse, while his own pupil Columbus, an intellectual upstart, sought to cast discredit and derision on him by sharp practice. Others were inclined to "damn with faint praise" or joined in a conspiracy of silence, and, as a last straw, he was subjected to subterranean persecution at the instance of authority. Those things were not without their effect on Vesalius. His portrait suggests a doughty, swarthy, shaggy, full-blooded nature, like some of Lucas Cranach's worthies—a man ready to give no odds and take none, so long as his opponents confronted him in the open; but nowise intended for the spiritual rôle of a martyr. In a fit of indignation he burned his manuscripts, left Padua and accepted the lucrative post of court physician to Emperor Charles V. He married, settled down, became a courtier, and gave up anatomy so completely that, during the long tedious years in Madrid, "he could not get hold of so much as a dried skull, let alone the chance of making a dissection." He paid the penalty of *il gran rifiuto*, when his favorite pupil, Gabriele Falloppio, came to the front as a worthy successor and rumor began to make it clear that he himself was fast becoming the shadow of a great name—

"Vesalius, who's Vesalius? This Fallopius  
It is who dragged the Galen-idol down."

On receiving the Fallopiian "Observationes Anatomicae" in 1561, all the aspirations of his youth revived, if we may trust his own burning, enthusiastic words, language which fully justifies the implications of Edith Wharton's poem:

"At least  
I repossess my past, am once again  
No courtier med'cining the whims of kings  
In muffled palace-chambers, but the free  
Friendless Vesalius, with his back against the wall,  
And all the world against him."



In the year 1563, Vesalius set out on a pilgrimage to Jerusalem, as a penance, some say, for an accidental human vivisection, more probably, others think, as a pretext for getting away from his tiresome surroundings. On his way back in 1564, he received word of an invitation to resume his old chair at Padua, just vacated by the death of Fallopius. But his highest wish, to "once more be able to study that true Bible, as we count it, of the human body and of the nature of man," was not to be realized. The sudden access of an obscure malady left Vesalius to die, solitary and unfriended, on the island of Zante.

The exhibit of Vesalius includes his graduating dissertation, the "Paraphrasis" (Basel, 1537); Sir William Sterling Maxwell's facsimile reprint of the "Tabulæ Anatomicae Sex" (Venice, 1538); the "Epitome" (Basel, 1542), an advance specimen abstract of the "Fabrica," remarkable for the plates representing two handsome specimens of the human race, usually ascribed to Titian; finally the "Fabrica" itself (1543), a superb example of the beautiful typography of his friend Oporinus at Basel, sumptuously illustrated by Titian's pupil, Johan von Calcar. While written in Latin, the "Fabrica" is truly vernacular in the sweeping scorn and violence of its language in dealing with Galenical or other superstitions. Although it completely disposes of Galen's osteology for all time, and indeed recreates the whole gross anatomy of the human body, it has never been translated.

The heretic Servetus (1509-53), whom Calvin caused to be burned at the stake for a mere juggling of verbiage, a theological quibble, was one of the great martyrs for "the crime of honest thought." The discoverer of the *vraie vérité* about the pulmonary circulation, he ranks with Ramon y Cajal as a leader of Spanish medicine. The discovery is recorded in his book "The Restitutio Christianismi" (1553), the foundation stone of Unitarianism, of the original of which only three copies are known to exist. The rare Nuremberg reprint of 1790 on exhibition is probably the only copy in the United States.

The exhibit of anatomic works contemporaneous with Vesalius includes the "Isagoge" (1555) of his teacher Sylvius, to whom the discovery of the Sylvian aqueduct and fissure have been wrongly ascribed, but who discovered the valves in the veins before Fabricius and did



good work in the obscure province of descriptive nomenclature; the treatises of Fallopius (1561), Varolius (1573), Vidius (1611), and Eustachius (1714), whose names have been eponymically preserved in the structures they discovered; the monographs "De Formato Fœtu" (1600) and "De Venarum Ostiolis" (1603) by Harvey's teacher, Fabricius ab Aquapendente; and the examples of French and Spanish anatomic illustration by Stephanus (1546) and Valverde (1556).

The effect of Vesalius on Renaissance surgery is seen in the life-work of Ambroise Paré (1510-90), who made the "Fabrica" popular and accessible to surgeons by writing an epitome of it in the vernacular. Paré's greatest contribution to surgery hinges on the baneful effect which the Hippocratic aphorism that "diseases not curable by iron are curable by fire" exerted on the treatment of gunshot wounds, the new feature of Renaissance surgery. Giovanni di Vigo, physician to Pope Julius II, had taught in his "Practica" (1514), that such wounds were poisoned burns and therefore should be treated with a first dressing of boiling oil. How Paré's supply of boiling oil gave out one night in camp and how he profited by the experience to the extent of letting well enough alone in future is well known. Had it not been for his "fat of puppy-dogs," a lard or salve, which, from some tenacity of superstition, he continued to apply, he would have been a true asepsist. As it is, his relation to the healing power of nature is summed up in the famous inscription on his statue "Je le pansay, Dieu le guarit." Paré invented many new surgical instruments, made amputation what it is to-day by reintroducing the ligature which had fallen into abeyance since the time of Celsus; was the first to popularize the use of the truss in hernia and described fracture of the neck of the femur. In obstetrics, it was his description and use of podalic version that made the procedure viable and practicable. In dentistry, he introduced reimplantation of the teeth, and his little treatise on medical jurisprudence (1575) was the first work of consequence on the subject prior to the "Methodus Testificandi" of Codronchi (1597).

Paré is represented by his essay on podalic version (1550), his treatise on gunshot wounds (1552), the first edition of his collective works (1575) and his discourse on the mummy and the unicorn (1582), which successfully disposed of an ancient therapeutic superstition.



In connection with Paré, let mention be made of the works of his predecessors, Marianus Sanctus Barolitanus, who gave the original account of the "Marian operation" or median lithotomy (1535); the Provençal surgeon Pierre Franco, who (1561) rehabilitated the operations for hernia, lateral lithotomy and cataract, which had previously been in the hands of strolling mountebanks or hereditary in certain families, like the Collots and Brancas; the "Practica" (Basel, 1563) of the Swiss surgeon Felix Würtz, a follower of Paracelsus in the simple treatment of wounds; Rousset's treatise on Cesarean section (1581) and Tagliacozzi's revival of rhinoplasty (1597). Wilhelm Fabry of Hilden (1560-1634), whose statue was unveiled last year in his native town, is usually regarded as the father of German surgery. He was a bold and resourceful operator and is fairly represented by his treatise on gangrene (Cologne, 1593), a condition for which he was the first to recommend amputation above the diseased part.

At a respectful distance from the great Renaissance pathbreakers may be grouped the works of a quartette of original thinkers—Benivieni (1502), Cornaro (1467-1566), Fracastoro (1484-1553) and Valerius Cordus (1515-54). The "De Abditis" of the distinguished Florentine Antonio Benivieni (Giunta edition, 1507), has been described by Malgaigne as "the only work on pathology which owes nothing to any one," and as far as mere priority goes its author may be regarded (Sir Clifford Allbutt thinks) as a founder of pathology before Morgagni. Luigi Cornaro's "Trattato della vita sobria" (first edition, Padua, 1558) is probably the best treatise on personal hygiene and the "simple life" in existence. Girolamo Fracastoro, the kindly Veronese, who practiced in the Lago di Gardo region, was at once a physician, poet, geologist, astronomer and pathologic theorist, and shares with Leonardo de Vinci the honor of being the first geologist to see fossil remains in the true light. He was also the first scientist to refer to the magnetic poles of the earth (1530). His medical fame rests on that most celebrated of medical poems, "Syphilis sive Morbus Gallicus" (Venice, 1530), which gave the disease its present name<sup>7</sup>, and his treatise "De Contagione"

7. Fracastorius takes the name from Syphilus, a shepherd in the poem, who was stricken with the disease for blaspheming Apollo (liber iii, 329-332):

"Syphilus ostendit turpes per corpus achores,  
Insomnes primus noctes convulsaque membra  
Sensit et a primo traxit cognomina morbus,  
Syphilidemque ab eo labem dixere coloni."



(1546), in which he states with wonderful clairvoyance, the modern theory of infection by microorganisms (*seminaria contagionum*).

Valerius Cordus, the gifted Prussian youth, whose early death robbed science of one of its most promising names, is known to medicine for his discovery of sulphuric ether (*oleum dulce vitrioli*) in 1540; but botanists revere him as the young Marcellus of their science. Greene styles him "the inventor of phytography" and points out that the field-work and taxonomy of a well-equipped modern botanist were actually done "almost four centuries ago by a German boy in his teens."<sup>8</sup> His posthumous commentary on Dioscorides, edited with pious hand by Conrad Gesner, not only describes some 500 new species of plants, the ardent search for which eventually cost him his life, but recreates the species listed by Dioscorides in terms of modern botany. The "Dispensatorium" of Cordus is of interest as the first real pharmacopeia to be published (Nuremberg, 1546).

A striking feature of Renaissance medicine was the publication of a large number of encyclopedic treatises by many authors, not unlike the "up-to-date" works written on the cooperative plan in our own time. Of these we may mention the Aldine "Medici Antiqui Omnes" (1547), the "Medicæ Artis Principes" of Stephanus (1567), the Venetian anthology on mineral waters ("De Balneis," 1553), the Gesner collection of surgical treatises (Zürich, 1555), the Basel encyclopedias of gynecology (1566, 1586) and the medical dictionary of Stephanus (1567).

No account of sixteenth-century medicine would be complete without a passing reference to "The Metamorphosis of Ajax" (1596) of Sir John Harington (1561-1612), the witty graceless godson of Queen Elizabeth, who was banished from her court for writing it. The work introduces an important and indispensable improvement in sanitary engineering, but our author's treatment of his theme is entirely in the manner of Aristophanes, Rabelais or the Zähdarm epitaph in "Sartor Resartus." Those who can read the garrulous whimsical old knight as they would the writers of Elizabethan comedy will smile over his facetious pages.

Army Medical Museum.

8. See the chapter on Valerius Cordus in "Landmarks of Botanical History" by Dr. Edward Lee Greene (Smithsonian Misc. Collect., v. 54, Washington, 1909, pp. 270-314). Charming in style and irreproachable in scholarship, this work is cordially recommended to physicians as the best history of early botany and materia medica that has yet appeared.



