SOME PIONEER MEDICAL BOOKS.

Abstract of an Address delivered at the Pupils' Physical Society, Guy's Hospital.

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WHEN your President honoured me with an invitation to deliver the opening address for this session I found some difficulty in making choice of a subject upon which to speak. A Society like yours—of venerable antiquity, yet, from its very nature, instinct with a youthful, vigorous life—touches, on the one side, the history of the past, and reaches forth, on the other, to the achievements of the future. I hesitated, therefore, uncertain whether to choose some topic connected with the early history of medicine, or to essay a scientific forecast as to the future of some branch of our professional study. I have been led to select the former horn of the dilemma, as circumstances have caused me within the last few months to occupy myself with the history of the medical curriculum, which is the story of an evolution, the result of growth regulated and directed by environing conditions. As the consequence of that growth repeated divisions have taken place in the subject-matter of the course, so that what was originally a formless mass of doctrine, comprehended under the vague term "medicine," has become split up into a series of linked, though discrete, sciences. In reviewing the progress of these divisions it is worthy of note that the occurrence of each segmentation has been generally accompanied by the appearance of a new book dealing with the special subject which is budding off from the parent stem, and it seemed to me that an interesting hour might be spent in recalling some particulars concerning these pioneer works on medicine.

Few books are of so little market value as old editions of medical textbooks. They may be picked up off the barrows of the street vendor for fewer pence than they originally cost shillings, and, in general, they are not worth buying even at that small outlay. But there is a certain stage of antiquity at which a book begins to acquire a new value in accordance with the old rhyme:

Keep a thing for seventy years and it a price will bring;
Keep it seven times seventy years, it is a precious thing;
But keep it seven times that again, and give it to the King.

It is mainly of books whose value is thus enhanced by age, as well as by circumstance, that I desire to speak this evening.

"Of the making many books there is no end." Even if we confine ourselves to the subject of pioneer books as defined just now, our catalogue will prove to be too long. We shall therefore require to limit our selected series, and I propose to take these in three groups: First, the most ancient series; secondly, an intermediate group, being those named as the subjects of instruction in the oldest statutes of the University of Cambridge, A.D. 1396; and, thirdly, a few of the more recent pioneer treatises which may be regarded as the precursors of our present-day textbooks.

At the head of the first class stands one which, according to the adage just quoted, has earned sufficient value to be a worthy Royal gift. Its age is a little over the seven times seven times seventy years, as it was written in the days of Amenhetp III, about B.C. 1500. There are about a score of Egyptian medical papyri known, but this is much the largest, consisting of 107 pages, and it is also the oldest medical work extant. It was found in a tomb at El Assassif in ancient Thebes, and was purchased by the late Professor Ebers, for the Leipzig Museum. We turn to it with expectancy to ascertain what was the wisdom of the Egyptians in the art of medicine, but I fear we shall turn away from it with a sense of disappointment. It begins with a high-sounding preface, which, leaving out some repetitions, runs somewhat thus:

Beginning of the book of preparing remedies for all parts of the body. I come from Anu, with the priests of Hetut, of the Lord of healing, the King of eternity and protector. I come from Sais with the Mother Goddess who guards me. There is given from the Lord of All, the word to remove all deadly disease of all sorts. There are sections for the head, neck, arms, flesh, limbs, to remove the hurt done by the Ruler of those who have brought diseases on my flesh. . . . It is his guide Tehuti, who gave me this word. Whom the God loves he makes to live. I am one whom the God loves. He makes me live.

Then follows a magical spell to be repeated when the remedies are being prepared. The main bulk of the treatise consists of prescriptions; 811 in number, for diseases of the different parts. Interspersed are short diagnostic aphorisms,

about 62 in number, mostly about abdominal diseases and swellings, and there are over a score of magical spells. As a sample of the prescriptions we take one purgative, consisting of equal parts of *uam* seeds, *aneb* herb, *keseb't* fruit, honey, and *s'neft*. We have no means of knowing what these ingredients are, and cannot consequently ascertain their value. Where we can identify them they do not seem very active; thus, in the prescription on page 66, which professes to be the oldest—made by King Teta as a hair-oil for his mother Ses, about 1500 years B.C.—the ingredients are dogs' claws, an ass's hoof, and dates, all boiled and rubbed up together in oil. For blindness, take two pigs' eyes and the fluid belonging to them, eye powder, vermilion and honey equal parts, rub together, and put into the patient's ear, repeating this formula twice: "I have brought this thing and put it in its place; the crocodile is weak and powerless."

One sample of the aphorisms will suffice (page 25): "If ye see one with a swelling feeling like dough, his body is hard under it; he is sick in his *ro-ab*. It is a swelling of his body that finds no way out and there is no passage for it out; it is corruption in his body. Nothing comes out. It is the *hesep't* worm. If it be not the worm it feels like a ball. If it empties he gets well; purge him, and immediately he will get well." Now, *ro* means "mouth" and *ab* "heart," so *ro-ab* is the mouth of the heart; but the descriptions fit most closely with something abdominal, probably intestinal. Ebers guessed that it might be the cardiac orifice of the stomach, but that is purely hypothetical. The prescriptions profess to come from many quarters. One was composed by the Goddess Tefnut, for Ra, and consists of *amāa* flour, *s'neft* fruit, and goose grease pounded together six times, and useful for all wounds and sickness. Another was invented by Seb, and a third by Isis.

On pp. 99 and 100 there is a treatise on blood vessels, the book of the secrets of the heart; these vessels are to be traced by the finger from the heart. At one time I thought it might be possible to recognize some real anatomical knowledge in this section, but, on careful revision, the whole is so fanciful that no reconstruction of the author's vascular system can come any way near to reality. Four vessels go from the heart to the nose, of which two carry slime; four divide at the back of the neck to nourish the hair; four go to the two ears, the breath of life goes to the right ear, the breath of death to the left; six vessels go to the two arms, six to the legs, two go to both testes, four to the liver, bringing moisture and vapour; four go to the intestine, two to the bladder, and four to the anus. A later recension of the anatomy is given on p. 103, which only gives two vessels each to the arm, to the leg, to the occiput, to the eyebrow, to the forehead, and to the nose.

The last section on p. 103 claims to have been in existence in the days of Hesepti, who lived about B.C. 4000; similar claims to antiquity are found in the medical papyri of London and Berlin, which, though smaller, have a general resemblance to this. This short sketch will suffice to show that the Egyptian medicine at the beginning of the new empire was little else than folk-lore, empiricism, priestly tradition, and magic, with no underlying knowledge of the structure of the body and no unifying theory of disease, except the elementary notion of malign influences.

In later times the Greeks learned Egyptian empiricism and engrafted it on a basis of philosophy. The other later Egyptian papyri down to the Greek period show no advance on the knowledge represented by the Papyrus Ebers.

We pass over a thousand years and from Egypt to Greece, and we take as our representative work of Greek medical literature the writings ascribed to Hippocrates. My copy is the Aldine, the first printed edition produced at Venice in 1525. The Father of Medicine, born at Cos, lived most of his active life at Larissa, in Thessaly, and died there about B.C. 390. Of the fifty-six works here ascribed to him, only seven are certainly genuine—the book on air, water, and soil, two of the three books on epidemics, the prognostics, the prorrhethics, or predictions, the aphorisms and the diet of acute diseases; possibly the "wounds of the head" may be genuine. Six others were almost certainly written by Polybus (his disciple); two probably by Thessalus (his son), and the others by later writers of the Dogmatic School which he founded. The seventh genuine work is the oath which he exacted of his disciples, which is one of the most significant evidences showing what manner of man he was. It runs somewhat thus:

I swear by Apollo the Physician, by Asklepios, by his daughters Hygieia, and Panacea; and by all the Gods and Goddesses, that to the best of my ability and judgement I will faithfully keep this oath and obligation. The master that has instructed me I will esteem as my parents, and

shall supply as occasion may require with the comforts and necessities of life. His children I will regard as my own brothers, and, if they desire to learn, I will instruct them in the same art without any reward. The precepts, the explanations, and whatsoever else belongs to the art I will communicate to my own children and to such other pupils as have subscribed to this oath, and to no others. My patients shall be treated by me to the best of my power and judgement in the best manner without injury or violence. Neither will I be prevailed upon by another to administer pernicious physic, nor will I be the author of such advice myself. I shall never recommend means to produce abortion, but will live and practise chastely and religiously. I will not meddle with lithotomy, leaving that to operators of that art. Whatever house I am called to attend I will aim at making the patient's good my chief aim, avoiding all injury, corruption, and unchastity, and whatever I hear in the course of practice relating to the affairs of life that ought to remain secret nobody shall ever know from me. May I be prosperous, and honoured and esteemed by all men as I observe this solemn oath, and may the reverse be my lot if I violate it and forswear myself.

The works of Hippocrates would easily supply material for the whole time at our disposal, but they are accessible to you at any library in many editions in Greek, Latin, or English, and you will find them well worthy of perusal.

Along with Hippocrates as a pioneer we may bracket Theophrastus of Eresium, the first writer on materia medica. He was born about the date of Hippocrates's death, and became an active medical and philosophical teacher. He collected all the herbal lore of the day, and wrote this book on the history of plants, in which he described about 500 species, giving the medical properties of each. There is much of interest in it even yet, and it remained a classic authority on the subject down to the seventeenth century. His teleology and his reverence for the Great First Cause made his writings popular as long as education was controlled by the Church. My translation is the first Latin edition, printed and published at the famous press of Cratander of Basel, 1534. The translator, Theodore Gaza, was one of the most remarkable of the band of scholars who, after the dark ages, brought back the philosophy and culture of Greece to Europe in the early fifteenth century.

From Greece to Rome is a natural transition at the beginning of the Christian era. In the Golden Age of Latin literature medical writings are conspicuous by their absence. Gato and Pliny inveigh against those Greeks who practised the art in Rome, and reproached them for their evil practices. Among the earliest authors just at the beginning of the Silver Age, however, Cornelius Celsus takes a conspicuous position. His eight books *de re medica*, written probably in the time of Tiberius, in the first century A.D., constitute a part of the classics of the science, and have always been popular for their pure, elegant, and luminous style. They are worthy to be read to-day, not only on this account but also because they fill up the historic gap between the Greek dogmatists and Galen. They give us a record of the growth of opinion in the Alexandrian school, and the rise and progress of the medical sects of Empirics and Methodists. The first printed edition was that issued at Basel in 1528. This small duodecimo edition was printed by Tornæsius at Lyons in 1549, and is a beautiful example of italic typography. To the anatomist Celsus is especially interesting, as he gathers up some of the current descriptions of parts from sources which have disappeared. Critics are divided on the question whether he was a practising physician or not, and there is much evidence, both internal and external, in support of the view that his interest in medicine was chiefly, if not entirely, literary and philosophical. Pliny mentions him as a general writer, but ignores him as a medical author, and although his surgical descriptions are graphic they might easily be those of an onlooker not of a practitioner, and he never refers to any case which had been treated by himself. He wrote on rhetoric and other subjects, but these works are not extant. We, however, know so little of him personally that the question must remain an open one. He has often been confounded with his later namesake, the Epicurean Celsus of the time of Hadrian, whose attack on Christianity under the name "The true word" was so completely answered by Origen.

A century after Celsus another literary work appeared, this time in verse—the *De Medicina Præcepta Saluberrima* of Serenus Samonicus, who was put to death in the reign of Caracalla, circa 206 B.C. This writer, in more or less elegant hexameters, gives us the treatment of diseases as then practised. Whether he was a practitioner or no we have not much evidence. Spartianus mentions the manner of his death, and from another source we learn that he was the tutor of Gordianus. The chief interest of this work is that it was the precursor of a series of metric medical

books. One well-known production of this description is extant, bearing the name of a little-known poet of the Golden Age—Aemilius Macer, a contemporary of Virgil; but it bears the marks of a much later authorship. It is called *De Virtutibus Herbarum*, and gives the medical properties of about eighty plants. The style is crude and the dogmata are essentially Galenical. It is in barbarous Leonine verse, and is probably a ninth-century production, by some attributed to a Frankish physician, Odobonus by name. Several editions are extant, the first being dated 1477. It was twice translated into English, one version being by Linacre in 1522. I show you here. Tornæsius's edition of Serenus, 1549. A later edition, with a prodigiously bulky and dull commentary, was published by Humelberg in 1581.

I shall have occasion to refer to metric medical books later on, but may here note that such were not uncommon. The *Schola Salernitana* is the most famous of these, also in Leonine verse, written by John of Milan in 1099. Another and much later one, the *Sybilla Medica* of Carolus Sponius of Lyons, is a metric rendering of Hippocrates's *Aphorisms* and *Prognostics* in Latin verse, very eloquent and varying in metre, published in 1661. The same author reduced to verse a most prosaic subject, the origins and insertions of all the muscles of the body, under the title, *Musculorum Microcosmi origo et insertio*. He also varies the metre with the muscles in this book; thus he gives the sterno-mastoid in Sapphic stanzas with a versus Adonius every fourth line:

Mastoideus solet auspicari,
Munus e summi saliendo sterni
Limite et clavi media lacertus,
Pene bicorpor.
Inque processu incita mammiformi
Constituta ipsi fixit hæreat cui
Firmiter flexus capitis patrare
Quoslibet aptus.

Phineas Fletcher's *Purple Island* (1633) may, perhaps, be put in this category as a metric treatment of a physiological subject, but it was scarcely intended for the medical student.

The second group of pioneer works to which I shall now refer are those named on the Cambridge Statutes of 1396, as limiting the medical curriculum of the period. All medical education at that time, as for the ten preceding centuries, was strictly Galenical, so these are chiefly some selections from the works of that great reformer of medicine and a few commentaries on them. Of Galen I need only remind you that he came from Pergamon, and settled in Rome about A.D. 160, and that his voluminous and very dull commentaries on Hippocrates and other treatises became in the third century the standard works on medicine. The parts of his works named in the Cambridge syllabus are four: *Techne Iatrike*, called in the barbarous Latin of the period the *Liber Thegmi*. The edition of this that I show is that edited by Hieronymus de Salys of Faenza and Michael de Cappella, published at Venice in 1527. In this four separate Latin translations of the Greek text of Galen are printed side by side. [These are the ancient translations by Constantinus Africanus; a second made from the Arabic version of Galen by Halî'ibn Rodoam, an Egyptian, in the twelfth century; a third by Nicolas Leonicetus in the fifteenth century; and a fourth by the ill-fated Laurentius Laurentianus, who drowned himself in 1515 when in pecuniary difficulties.] In this text the commentary of Halî'ibn Rodoam, twice as long as the book itself, is included. This special commentary was not required, but the Cambridge course prescribes instead a brief introductory, the *Isagoge* of Johannicius, properly called Honein ibn Ishak, a Christian physician from Hira in Babylonia, who died in prison in A.D. 873. This author's work is here translated into Latin by Hieronymus. It takes up five and a-half pages, and is a most crabbed piece of contracted printing. The subjects dealt with in it are the elements, the humours of the body, the animal spirits, the colour of the hair—black from combustion, red from excessive blood, fair from absence of black bile, and grey from deficient natural heat. The eye is described as having seven coats, *rhetina*, *secundina*, *scirros*, *tela aranee*, *uvea*, *cornea*, and *conjunctiva*. The second Galenical book is the commentary on Hippocrates's *Aphorisms*, of which in this volume three translations are printed in parallel columns. The third and fourth are the *Prognostics* and the *De regimine acutorum*, which are given in this volume in Constantinus's translations. The translator was a remarkable man, a native of Carthage, who, after a life of many vicissitudes, became a Benedictine monk at Monte Cassino, and died in the convent of St. Agatha at Averso. Besides these, there are three small textbooks prescribed, not unlike our modern "cribs." Two of these were written by

Theophilus, who was a protospatharius, or colonel of the guards, as well as chief physician, at the Court of the Byzantine Emperor Heraclius in the seventh century. The first he wrote, under the pseudonym Philaretus, on the subject of the pulse. Arteries are here described as receptacles for air, natural spirits, and a little blood. They begin at the heart by a tube called by one translator *odorti*, by another *adhorta*. The method of feeling the pulse is carefully described, and its variations due to age, sex, season of the year, and locality are given. Ten pairs of varieties of pulse are mentioned—great and little, quick and gentle, vehement and languid, hard and soft, quick and slow, equal and unequal, regular and irregular, full and empty, deficient and intermitting, hot and cold. The other textbook is a longer work on the urine, published under his own name, Theophilus. According to him the urine is formed in the vena portae and brought to the kidneys by the vena cava; its colour, consistence, and sediments are described at length. I here show two versions of these, one by Hieronymus, in 1527; the other, in which urine is called *lotium*, by Albanus Torinius, Professor of Medicine at Basel, written at the beginning of the sixteenth century and printed at Basel by Petrus in 1533.

These works were intended to be learned by heart, but their very condensed form was found to be a difficulty by some. An English Benedictine monk in the twelfth century, John Giles by name, better known by his Latin title, Joannes Aegidius, rendered both these works into Latin heroic verse. This was first printed by Wolfius of Basel, with a long commentary by Gentilis, of Foligno, in 1529, and is praised by its editor, Venantius Mutius of Camerino, as better than that of Philaretus, which in avoiding the Charybdis of confusion flies into the Scylla of brevity. As a specimen we may take the first few lines of the *De Urinis*, amusing for their notions of etymology:

Dictur Urina, quam fit in renibus una,
Aut ab Urith Greco, quod demonstratio fertur,
Aut quia quod tangit mordet desiccatur et urit.

The last canto contains an attack on the school of Montpellier, the rival of the Salernitan to which Aegidius belonged, and especially on one Petrus Musandinus, whom he accuses of copying him. He also commemorates two authors on urine whose books are not extant, Urso and Maurus. This Giles is not to be confounded with the Portuguese Dominican of the same name. Some authors erroneously describe him as an Athenian.

Three other treatises are included in the Cambridge list. Two of these were written by Isaac Israelita Beimiram, a tenth-century physician. The larger one is on urine, and resembles that of Theophilus. In the edition which I show it is translated from an Arabic original, and is the subject of a long commentary by Petrus Hispanus. The smaller is a compendium of practice of medicine, which Constantinus, its translator, calls the *Viatricum*. Isaac was the adopted son of a certain Arabian King Solomon, and died A.D. 940. This edition of Isaac's works was edited by Andreas Turinus of Piscia, and printed at Lyons in 1515 at the famous press of Joannes de Platea. The *Viatricum* was translated from the Syriac and contains some good advice; for example, under the head, "De Ebrietate," he says: "Oportet vinum bibentes quantitatem vel qualitatem cavere que eos valeat inebriare." Of hair he says that it is produced by the vapour of hot humours, and when these vapours increase the hair grows, when they cease the hair falls out. As its translator says, it contains milk for sucklings, harder things for those with canine teeth.

The last work of the Cambridge list is on pharmacy, the *Antidotarium* of Nicolaus, Praepositus of Salernum written in the early part of the twelfth century. It was first printed by Jensen in 1471, but this edition is exceedingly rare; the copy I show is bound up with the works of the Arabian author Mesuë, and printed at Venice by Juntas, in 1549. It is a remarkable illustration of the polypharmacy of the Galenic School, and contains 140 formulae, one of which was said to have been composed by Ezra, when returning from the Babylonish captivity. While on this book I may mention that the *Antidotarium* continued in use until 1540, when it was replaced by the first European pharmacopoeia, that of Valerius Cordus of Nuremberg, which in this country gave way in 1618 to the first London *Pharmacopoeia*. Looking over this book one feels how thankful the present-day student should be for his deliverance from such a textbook. It contains 1,300 drugs, among which are puppies, earthworms, hedgehog, green frogs,

sharks, moles, vipers, foxes, which must be killed by hunting and opened immediately. Human skull mummy powder, human fat, faeces, urine, sweat, and saliva, are all official, as also the dung of the dog, wolf, mouse, goat, and horse, pearls, amber, calcedony, lapis lazuli, and other precious stones. In one plaster live frogs are an ingredient. In the antidote of *Mathiolus* 142 ingredients are contained in varying quantities, and one singular compound is called the electuary of warm gems. This consists among other ingredients of red rose petals, lavender, lign. aloes, liquorice, spodium, crocus, and mastich, white pearls, zedoary root, doricum, lemon-peel, mace, bergamot, ambergris, red coral, amber, ebony shavings, sapphire, hyacinth stone, lard, garnet, emerald, cinnamon, zurembet, lichen root, cloves, ginger, long pepper, two forms of spica cardami, gold leaf, silver leaf, and musk, all to be powdered and mixed, and kept closely excluded from the air.

The humanist revival of the fourteenth and fifteenth centuries revolutionized the study of medicine. No longer trammelled by servility to Galen, researches were instituted in all branches of knowledge. The line between theory and practice becomes sharply defined in the textbooks, and the former, under the term *Institutiones Medicinae*, becomes the subject of numerous treatises: the latter, under the title "*Consilia Medica: aut Consultationes*," also develops a literature of its own. (The examples of these shown were Heurnius's *Institutiones Medicinae*, 1611, and his *Praxis Medicinae*, 1590.) Then anatomy became developed as an independent subject, and separated from the institutes with treatises of its own. (The books shown were Vesalius, 1543; Remmelinus, 1619, and the first edition of Halle, and an early edition of Vicary as the pioneer English works.) At first anatomy included physiology, but afterwards, when the discovery by Harvey of the circulation (1619-1628) had stirred up special and experimental interest in functions, this branch likewise became isolated, Haller's *Primae Lineae Physiologiae*, published at Göttingen in 1747, being the pioneer students' manual. Pathology, at first part of the institutes, became the subject of special treatment in the seventeenth century, the first English book under this title being Charleton's *Exercitationes Pathologicae*, but the most important of the earlier treatises was Morgagni's great folio, *de sedibus et causis morborum*. The microscope was used first in human anatomy by Malpighi, of whose work describing blood corpuscles, Malpighian tufts, and the Malpighian bodies in the spleen. The edition shown was published in London in 1669. Hooke's *Micrographia* soon followed, the parent of our handbooks on histology. Thus by the middle of the eighteenth century the student had to hand books on anatomy, physiology, materia medica (not yet chemistry and physics), pathology, systematic therapeutics, nosology, and clinical medicine. (As a specimen of the first English treatise on midwifery Raynold's *Woman's Booke* was shown.) The literature of surgery, at first in classic times inseparable from medicine, appears in the mediaeval times independent. Salicet, Lanfranc, but especially Guy de Chauliac, who wrote in 1363 in the days of Clement VI, were its principal authors. (The exceedingly rare Venice edition, 1490, edited by Thura de Castello, was shown.) His seven sections are on anatomy, on tumours, on wounds, on the algebra and extension and restoration of fractures and dislocations, on surgical sicknesses such as gutta and skin diseases, baldness, ophthalmia, and affections of the nose and mouth, and on antidotes. If his book may be taken as parent of the treatises on the theory of surgery, that of Scultetus deserves to be reckoned as parent of the work on practical surgery. His gruesome pictures have seldom been equalled and never surpassed. Scultetus published his book about 1640. The edition I show is the Dutch edition, with additions of 1693.

The sixteenth to the eighteenth centuries were marvellously prolific in medical books. There were no journals to be safety-valves for the professional *cacoëthes scribendi*, so every man who thought he had a message for his time produced a book. Most, of course, are worthless, the same statements dished up again and again, but grains of wheat can be gleaned here and there in the mountains of chaff; out of these were evolved the textbooks you have now in use, and the development from the eighteenth to the twentieth century is marvellous. They are not yet perfect. When our knowledge is such that from a complete series of general laws, founded on a solid basis of induction, all details can be directly deduced, then will come the millennium of medical literature, but that is a long way off yet.