HISTORICAL AND BIBLIOGRAPHICAL NOTES.

A SERIES OF SKETCHES OF THE LIVES, TIMES AND WORKS OF THE OLD MASTERS OF ANATOMY AND SURGERY.

By GEORGE JACKSON FISHER, M. D.

XIV.—HEROPHILUS AND ERASISTRATUS.

THE MEDICAL SCHOOL OF ALEXANDRIA.

B. C. 320—250.

HE city of Alexandria, the new capital of Egypt, the new centre of learning and of future scientific investigation, the new rival of Athens and Pergamos, had already, in the third century antecedent to the Christian era, reached a degree of magnificent development, not merely in its immense population of a quarter of a million of Egyptians, Greeks, and Jews; not merely in its vast commercial and mercantile interests, nor in the grandeur of its public edifices—the Temples of Pan, and Neptune—the Soma, or Mausoleum of the Greek kings—the Emporium, or Exchange—the Serapium, or Temple of Serapis; and the

splendid Museum, also known as the College of Philosophy —but in the loftier aim of a great centre of learning, a focus of intellectual illumination. Here were concentrated the great thinkers and workers of that brilliant age. The most famous living philosophers and renowned men of erudition known to the world were induced hither by every encouragement and liberal patronage. Here also was being accumulated all the literary treasures that zealous effort and lavish expenditure could possibly procure.

Soter, who was the brother of Alexander the Great, and the first of the Ptolemies, or Greek kings of Egypt, was a man of learning and of a most enlightened understanding and cultivated taste. He was the author of a history of Alexandria and a biography of its distinguished founder. Ptolemy Philadelphus, the son and successor of Soter, was a man of the same stamp, and inspired with the same zeal and enthusiasm to increase the glory of this grand city and the renown of the Alexandrian school.

It was under the direction of these celebrated rulers that the vast bibliographic treasures of the world were collected together in two royal libraries. It should be borne in mind that in that day books were scarce, very expensive, and difficult to obtain. They were preserved in families with religious care, a single volume or roll being regarded as the most precious heritage of a family. But for this care all the sacred and profane classics of antiquity would have perished many centuries ago.

It is said that one of the Ptolemies gave the Athenians no less than fifteen talents (more than fifteen thousand dollars), along with a beautifully executed transcript of the works of Æschylus, Euripides, and Sophocles, in exchange for the originals, which he retained for his own library. Thus it appears that no care, effort or expense was spared in the formation of these royal libraries, and such was the success

of the enterprise under this munificent patronage that the Alexandrian libraries came in time to possess the enormous number of seven hundred thousand rolls or volumes. Writers differ as to the comparative size or contents of the ancient rolls or books with our modern average volumes. Some say that six hundred thousand Alexandrian rolls represented about two hundred thousand of ours; others, one hundred and twenty, and still others, only ninety thousand volumes. In either case, this famous library must have been immense.

The entire Alexandrian library was not massed at a single centre. The Bruchion collection was either near, or in the great structure used for the School of Philosophy—the Museum—and contained four hundred thousand rolls, which was the full extent of its capacity, and hence a second or supplementary, or, as it was called, the daughter library, was formed, and found lodgment in the Temple of Serapis, which stood quite remote from the Museum and near the centre of the city. The number of rolls in the Serapium was three hundred thousand. It was this great library that was accidentally destroyed when Julius Cæsar set fire to his own fleet in the harbor of Alexandria, the flames extending to the Museum, which stood in the immediate vicinity of the docks. The Museum, however, was soon after rebuilt by Cleopatra, the beautiful queen, who, with all her frailties and crimes, possessed an ardent zeal in the promotion of literature and the sciences. She made every effort to repair this grievous loss, and succeeded in inducing her admirer, Mark Antony, to present and transport to Alexandria the magnificent library of Pergamus, the hitherto boasted rival treasure of that city. This enormous acquisition was deposited with the rolls already in the Serapium, and Alexandria again prided herself in the possession of the largest library in the whole world. Before ending this rather lengthy account of these ancient libraries, I will briefly refer to the strong rival-

ry which existed between the bibliophiles of Alexandria and Pergamus. The library of the latter city could boast of but two hundred thousand volumes, and yet its increase was looked upon by Ptolemy Soter with so much jealousy that he forbade the exportation of papyrus from Egypt, whereby he hoped to prevent his Syrian rival from making paper to be used in copying manuscripts. This mean policy, however, resulted in the invention of parchment, or, as it was called, the paper of Pergamus, which subsequently quite displaced the bark of the papyrus, and served the after ages until modern paper was invented. To this day our vellum-bound antiquarian books are referred to, in European catalogues, as being bound in Perg.—a contraction of Pergamus—thus affording an interesting association with ancient times.

Let us now return to the Museum, or School of Philosophy, as it was in the palmy days of the first Ptolemies. Here we find the great masters and scholars dwelling together in social and friendly intercourse, fed and salaried at the public cost, almost a part of the royal family. Free from the common cares of the world, they devoted themselves to the study and development of every department of learning. Methinks I see the royal patron sitting in the midst of the philosophers, physicians and metaphysicans—Euclid, Aristophanes and Cronus; Theocritus, Hegesias and Timosthenes; as well as the three great members of the medical faculty, Cleombrotus, of Cos; Herophilus and Erasistratus. What a company of immortals! Their works and memories are fresh and radiant to-day, and will continue to shed lustre far into the remote ages of the future. "Thus the torch of civilization, which had anciently shone upon the banks of the Nile with a mysterious and isolated light, returned, after being increased and vivified at the free fires of the genius of Greece, to shed an éclat more resplendent than ever on its early cradle; and thus the city of the Ptol-

emies became not only the *entrepôt* of Greek and Roman commerce, but also a scientific focus, whose light was shed for ten centuries upon the antique universe." (*Renouard's Hist. of Med., Am. Ed.*, p. 169.)

None of the sciences received more encouragement than that of medicine. Hither students flocked from every region. For centuries the medical school of Alexandria was renowned among the nations for its superior advantages. So late as the middle of the second century after Christ, Galen wrote that the reputation of any physician was established when it was known that he had studied the healing art in that city; and even to have resided there for a short time, to have attended what might be called a post-graduate course of lectures at this Græco-Egyptian Medical Institute, gave an éclat to the physician of that day, far exceeding that which the American student now obtains by a tour of the medical schools of Europe.

While the collection of rare plants and animals which were brought to the national Museum from every known region of the earth, regardless of cost or care, gave a great impulse to the study of natural history as well as to materia medica, it was doubtless the liberal and extraordinary opportunity which this city alone afforded of dissecting the human body which made it attractive to home and foreign students of medicine. The study of practical human anatomy must have greatly improved physiological knowledge as well as given an impetus and precision to the advancement of surgical science and art.

The relaxation of the popular prejudice in allowing the examination of the bodies of the dead, and the authorization accorded by the royal founders of that school for the dissection of human corpses, were the events that secured the success and renown of the Alexandrian, completely eclipsed the ancient schools of Cnidos, Cos and Pergamus; imparted

glory to the epoch, and laid subsequent ages under a lasting debt of gratitude.

Among the founders of the medical school of Alexandria the most distinguished personages were Herophilus and Erasistratus. They cultivated anatomy, physiology, medicine and surgery with ardor and success. It is a matter profoundly to be lamented that the written results of their labors have passed into oblivion with the exception of a few scattering fragments, which have been preserved in the works of Galen, Aretæus, Cœlius Aurelianus, Celsus, Dioscorides, Pliny, and some others.

Before giving particular sketches of these two anatomists, I will mention a few facts to show what was previously known concerning the structure of the human body. The first systematic dissections seem to have been made by the Pythagorean philosopher Alcmæon, who flourished in the sixth century before Christ. It is, however, uncertain whether he merely dissected the brute animals or ever ventured to use his scalpel on the human cadaver. We have reason to believe that the Eustachian tube was first observed by him, for Aristotle says that Alcmæon was wrong in affirming that goats breathe through their ears, a fact which the latter had observed to be possible. The cochlea of the ear, and the amnios of the fœtus, owe their names to Empedocles of Agrigentum, who probably first described them in the fifth century B. C. The true nerves were probably first distinguished from the tendons by Aristotle, who also recognized the brain of man to be larger than that of any other animal. Aristotle was the most celebrated zoötomist of antiquity, and well deserves to be called the father of comparative anatomy. He restricted the term *aorta* to the great trunk of the arterial system. The modern term *rectum* is the literal translation of his description of the straight progress of the bowel to the anus. He gave the name *diaphragm* to the

abdomino-thoracic septum. Praxagoras, the tutor of Herophilus, is said to have been the earliest author who pointed out a distinction between arteries and veins. Owing to the confusion in the use of terms, it is difficult to understand the precise amount of anatomical knowledge which the ancients possessed previously to the advent of the two celebrities who are the subjects of this sketch. It must be admitted that the anatomy and physiology of that remote age was not only crude and erroneous, but fanciful and imaginary.

Herophilus appears to have been born at Chalcedon, in Bithynia, in Asia Minor; the year of his birth as well as that of his death is not now known, but we know that he lived in the time of Ptolemy Soter, B. C. 323–283. He was one of the pupils of Praxagoras, of Cos, who was the last of the family of the Asclepiadæ. He settled in Alexandria, where he acquired a famous reputation, and was one of the first founders of the medical school of that city, which, as above stated, became the most celebrated then in existence, and it continued to sustain this preëminence for a period of over five hundred years. He appears to have devoted himself chiefly to the pursuit of practical anatomy, not merely to the dissection of the lower animals, but quite extensively to that of the human body, as we are expressly informed by Galen. Great difference of opinion exists as to the probable truthfulness of the statement of Celsus, that both Herophilus and Erasistratus not only dissected human cadavers, but also the bodies of living men. Celsus records this as a fact, and without the least suspicion as to its truth. Tertullian, a native of Carthage, and one of the most learned fathers of the early Christian Church, who flourished about five hundred years after Herophilus, must have fallen into an error when he stated that Herophilus had vivisected hundreds of human beings, and he must also have had but little confidence even in post-mortem examinations. His

exact words are: "Herophilus, that physician, or rather butcher, who dissected six hundred men, in order to find out nature; who hated man, in order to learn the structure of his frame; could not, by these means, come to a more perfect knowledge of his internal structure, since death produces a great change in all the parts, so as to render their appearance after death different from what it was before; especially, since they did not die a natural death, but expired amidst all the agonies to which the curiosity of the anatomist was pleased to subject them." It ought to be borne in mind that human vivisection would not be nearly so revolting to the feelings of men over two thousand years ago, when the lives of criminals and prisoners of war were so little prized, as it would be in modern times.

The following is the exact account of human vivisection given by Celsus in the preface of Lib. I., as translated by Alex. Lee (Celsus, De Medicina, 8°, London, 1831, vol. I, pp. 8–9):

"The plan adopted by Herophilus and Erasistratus was much approved of, who obtained by royal edict criminals out of prison for dissection, alive, and contemplated, even while they breathed, those parts which nature had before concealed, with their relative position, colour, figure, magnitude, arrangement, hardness, softness, smoothness, and connection; also the processes and recesses of each, whether any one part is inserted into another, or whether it receives part of another into itself. For when there happens to be some internal pain, he cannot know what suffers, if he be ignorant of the situation of each viscus and intestine; nor can the part which is diseased be cured by him who is ignorant of what part it is; and should the viscera of any person be laid open by a wound, he who is ignorant of the colour of each healthy structure, cannot know what is sound, what is morbid; therefore, can render no assistance in the disease: and

they maintain that external remedies are more properly applied, when the situation, structure, and magnitude, of the interior parts are ascertained; and the same argument is applicable in all those cases already mentioned. Neither should it be deemed so cruel, as many exclaim, to search for remedies for an innocent people of succeeding ages, at the expense of only a few capital culprits."

Thus it is seen that Celsus speaks approvingly of this most atrocious practice.

Herophilus was an original investigator. His researches and discoveries were chiefly anatomical, his writings on this subject must have been far more accurate and comprehensive than any which had preceded them. Many of the technical terms of this science which are in use at the present time were first employed by him. The *duodenum* derives its name from him, signifying the length of twelve fingers in breadth. To the pulmonary artery he gave the name of the *arterial vein*, on account of its arterial structure and venous function. He was the first to describe the sinus which still bears his name, the *torcular Herophili*. He also applied the name *calamus scriptorius* to the angular indentation in the posterior part of the medulla oblongata, which forms the floor of the fourth ventricle, on account of the resemblance, not to the Roman *stilus*, but to the reed used sometimes by the ancients as a pen for writing, of which the best sorts came from Egypt and Cnidos.

[To be Concluded.]

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B. C. 320—250.

REMARKABLE acquaintance with the anatomy of the nervous system was displayed by Herophilus. He seems to have been the first to recognize the distinction between the nerves of sensation and those of motion, and yet his ideas were so crude that he included a third or spurious kind of nerves which served to connect the bones, and for the attachment of muscles, etc.; structures which are now described as ligaments, tendons, and fasciæ. He traced the nerves of sensation to the brain, and the motor nerves to the spinal cord. He distinguished the cerebrum from the cerebellum, and described the thin membrane which covers the brain and lines the ventricles, and named it the *choroid*.

He believed the brain to be the seat of sensation and the centre of the nervous system. He located the residence of the soul in its ventricles—an idea which was quite recently maintained, but modified by the German physiologist Sömmering (1796). Herophilus carefully dissected and described the tunics of the eye, and was the first to designate two of them by special names, the *tunica arachnoides*, and the *tunica retina*. It is said that he is the first surgeon who operated for cataract, which he did by extracting the crystalline lens. He observed the difference in the thickness of the venous and arterial coats, and said that the latter were six times as thick as the former. He also observed the varied force, tenuity and quickness of the pulse, and taught that there was an inherent rhythm in its movements, not unlike that of music, and that this varied in the different periods of life. He did not believe that the pulsating force resided in the arteries, but that it was derived from the heart. He attributed paralysis to a cessation of the vital force, and believed that sudden death often resulted from paralysis of the heart. This remarkable idea of Herophilus is preserved in Cœlius Aurelianus (Chron. lib. ii., c. i.). He observed the lacteals and noted the difference between those vessels which terminated in the mesenteric glands and the veins which passed to the liver. He, however, did not comprehend their character and function.

Herophilus is to be regarded as the inventor, or father of pathological anatomy, having been the first person that thought of opening the bodies of men after death in order to discover the character and course of the diseases which had caused their dissolution. Galen esteemed his authority so highly that he considered his knowledge of anatomy as absolutely perfect. And even a few centuries ago Gabriel Fallopius, in his admiration of him, calls him the evangelist of anatomists, and says that he would almost as

soon think of contradicting the Gospel as the authority of Herophilus. He was the first who wrote commentaries on the aphorisms of Hippocrates, and it is interesting to know that his manuscript still exists, and that it is preserved in the Ambrosian library in Milan.

I should have mentioned that he wrote a treatise on obstetrics, which, like his other works, has not survived the ravages of time. He studied the female organs of generation, and noticed the different appearances presented by the os uteri in its natural state, at the time of menstruation, and during pregnancy.

He was a heroic therapeutist. He administered large doses of medicine, used drastic purgatives, and resorted to compound medicines in complex disorders. It was largely due to his example and influence that the system of polypharmacy, so characteristic of ancient times, and which culminated in the celebrated Mithradatium, and the Theriaca Andromachi, each of which contained more than three score of simples, had its origin. So great was the fame of this Ptolemaic physician that his followers constituted a sect, which existed for a long period, its disciples being designated as Herophilites.

Erasistratus, the contemporary of Herophilus, and his associate, in founding the splendid medical school of Alexandria, was one of the most celebrated physicians and anatomists of antiquity. It is said by Suidas that he was born at Julis (the modern Zea), in the island of Ceos; by Stephanus Byzantius, at Cos; by Galen, at Chios; and by the Emperor Julian, at Samos. Almost equal confusion exists as to his parentage. Pliny says he was the grandson of Aristotle by his daughter Pythias, while Suidas affirms that he was the son of Cretoxena, the sister of the physician Medius.

He was the pupil of Chrysippus of Cnidos, Metrodorus,

and apparently of Theophrastus. He lived for some time in Syria, and was one of the court physicians of the king Seleucus Nicator, for it was while acting in this capacity that the oft repeated story of his tact and skill in the cure of Antiochus, the king's eldest son, is related of him. Since but few facts concerning his personal history are known, and as the good old story is one relating to our own profession, which may have been forgotten by some of my classical friends, and possibly unknown to other courteous and gentle readers of my sketches, I beg the privilege of repeating it here.

Antiochus fell violently in love with the young and beautiful wife whom his father had married in his old age, but did not disclose his passion, and chose rather to pine away in silence. Stratonice was the daughter of Demetrius Potiorcetes, and she had already born Seleucus one child. The other court physicians were quite unable to discover the cause and nature of Antiochus' disease, and Erasistratus himself was at a loss at first, till, finding nothing amiss about his body, he began to suspect, from his downcast look, the pallor of his face, the feebleness of his voice, and the emotionless tears which he shed, that it must be his mind which was diseased, and that he might perhaps be in love. This conjecture was confirmed when he observed his skin to be hotter, the color to be heightened, and his pulse quickened, whenever Stratonice came near him, while none of these symptoms occurred on any other occasion; and accordingly he told Seleucus that his son's disease was incurable, for that he was in love, and that it was impossible that his passion could be gratified. The king wondered what the difficulty could be, and asked who the lady was. "My wife," replied Erasistratus; upon which Seleucus began to persuade him to give her up to his son. The physician asked him if he would do so himself if it were *his*

wife that the prince was in love with. The king protested that he would most gladly; upon which Erasistratus told him that it was indeed his own wife who had inspired his love, and that he chose rather to die than to disclose his secret. Seleucus was as good as his word, and not only gave up Stratonice, but also resigned to his son several provinces of his empire in upper Asia.[1] For this valuable service, Pliny informs us, Erasistratus received one hundred talents, which is equal to more than one hundred and twenty thousand dollars of our currency. This story has been told with more or less variations by several ancient authors. Many painters and engravers have exercised their art in illustrating this fine old story.

Some time after this event, and when he was quite advanced in years, Erasistratus betook himself to the city of Alexandria, the better to gratify his taste for anatomical pursuits, to which he devoted his time and energies almost to the entire abandonment of the practice of medicine. These researches were richly rewarded by many important discoveries. The same fate, however, which befel the writings of Herophilus was no less disastrous to those of Erasistratus. Oblivion has so far concealed them that only fragments which are scattered through the works of other ancient authors have survived, and they furnish us with scanty material wherewith we can form but an imperfect idea of the extent to which he carried his investigations, or how fully he may have recorded the same. We can form some opinion of the extent and importance of his writings, however, from the titles of his works, which, with some interesting extracts found in Galen and Cœlius Aurelianus, have been preserved from complete destruction. We find that he wrote treatises on anatomy, wounds, causes and

[1] Smith's *Dictionary of Greek and Roman Biography and Mythology*, v. ii., p. 43.

treatment of disease, on fevers, on hygiene, and on medicines and poisons.

He appears to have left this famous city some time previous to his death, which is supposed to have occurred after he had attained a good old age, as Eusebius informs us that he was yet living in the year B. C. 258, which was about forty years after the marriage of Antiochus and Stratonice. It appears that he died in Asia Minor, as Suidas mentions that he was buried on Mount Mycale, opposite Samos, in Ionia, whence arose the surname of Samian which several authors have assigned him. He had numerous pupils and followers, and a medical school, or sect, bore his name for several centuries after his death. Among the celebrated Erasistratians were Artemidorus, Chrysippus, Heraclides, Ptolemaeus, and Xenophon of Cos.

He enjoyed the inestimable advantage of dissecting the human cadaver, and it is said of him, as well as of Herophilus, that he made human vivisections. He bestowed special attention upon the brain and nervous system. He distinguished the nerves into those of sensation, and those of motion. The former he at first believed to be hollow, and to spring from the membranes of the brain, while the latter he believed to arise from the substance of the brain and cerebellum. A more minute examination convinced him that both proceeded from the great nervous centers, and not from their membranes. The following is his own account of his observations on the brain and nervous system. It is extremely interesting to read his own words, which have been preserved for us through so many long centuries of time.

"We examined what the nature of the human brain was; and we found it divided into two parts, as it is in all other animals. Each had a ventricle or cavity of a longitudinal form. These ventricles had a communication with each

other, and terminated in a common opening, according to the contiguity of their parts, reaching afterwards to the cerebellum, where there was also a small cavity; but each part was separated from the other, and shut up in its proper membranes; and the cerebellum in particular was wrapped up by itself, as well as the brain, which, by its various windings and turnings, resembled the intestinum jejunum. The cerebellum was in like manner folded and twisted different ways, so that it was easy to know, by seeing it, that, as in the legs of swift-running animals, as the deer, the hare, and some others, we observe the tendons and muscles well calculated for that purpose; so in man, who has a larger share of understanding than other animals, this great variety and multiplicity of foldings in the brain was undoubtedly designed for some particular end. Besides, we observed all the apophyses, or productions of the nerves which came from the brain; so that, to state all at once, the brain is visibly the principle of everything that passes in the body; for the sense of smelling proceeds from the nostrils being pierced, in order to have communication with the nerves: the sense of hearing is also produced by the like communication of the nerves with the ears: the tongue and the eyes receive also the productions of the nerves of the brain."

He appears to have also studied the heart and vessels with much care. He pointed out the valves at the termination of the vena cava, and, according to Galen, believed their function to be the prevention of the blood, which had once reached the heart, from returning into the veins. By some authors it is supposed that he had almost discovered the circulation of the blood. He maintained that both the arteries and veins arise from the heart, though he believed the veins only are blood vessels, and that the arteries are empty of blood in health and filled with air, pneuma, or vital spirit, and that the pulsations of the arteries were due to the movements of the pneuma. The hypothesis that the arteries are air vessels, and not blood tubes, was entertained as far back as the time of Aristotle, and continued to exist until the time of Galen, who first proved by direct

experiment that the arteries are always filled with blood, as are also the veins. The ancients could not comprehend why there should be two distinct sets of vessels for the conveyance of the same fluid. Erasistratus maintained that the air passed into the left ventricle, or, as he called it, the pneumatic ventricle of the heart, where it became changed by the principle of life from common air to spiritual air, and that from thence this vital spirit was distributed to every portion of the body by means of the arteries. His belief in the doctrine of the absence of blood from the arteries has been adduced as a certain proof that he could never have performed dissections of the bodies of living men, or even of live animals. When only the veins carried blood, and the arteries were filled with vital spirits, then perfect health was maintained; but the entrance of blood into the arteries, which he admitted to sometimes occur, was abnormal, and the source of disease—fevers, when it entered some noble part or into a great artery; and inflammations, when it found its way into the less noble parts or in the extremity of the arteries. The sole purpose of breathing was to fill the arteries with air, the air distended the arteries and made them beat, thus the air caused the pulse. He rarely resorted to venesection, so popular in that day, as he feared that bloodletting would increase the tendency of the blood to pass from the veins into the arteries; he substituted the use of ligatures around the limbs for this operation. His treatment was characterized by mildness, being almost diametrically the opposite of that followed by Herophilus. He was opposed to the use of purgatives, and used, instead, mild enemata in small quantities, rather than the copious and irritating clysters then in vogue. He advised abstinence, diet, regimen, bathing, friction, and exercise, used the simplest of vegetable medicines, and reprobated in unmeasured terms the empiricism and polypharmacy of that

period. In place of the complicated formulæ of this era, he used barley-water, oil, and cuppings. He was well aware of the fact that the same agents produce diverse effects on different persons; in fact, he had a wholesome idea of the uncertainty of medicine, and hence followed a conservative course.

Among his anatomical observations one of the most interesting was the discovery of the lacteals, which he described more minutely than Herophilus had done, who also saw them. He saw the vessels of the mesentery were occasionally, but not always, filled with milk, or a white fluid resembling it. It is said that he found these white vessels both in man and in the brutes.

If, in his medical practice, he exhibited a degree of timidity, he certainly showed sufficient boldness and decision in surgery. In schirrhosities and tumors of the liver he did not hesitate to make a free opening to the part and apply remedies directly to this organ, and did the same in cases of splenic disease. He regarded both the liver and spleen as unimportant parts in the animal organism. He objected to the extraction of teeth when much force was required, and wholly disapproved of tapping in dropsy. In cases of retention of urine he made use of a catheter, in form like the Roman letter S, of which he was himself the inventor, and which long bore his name. I believe the first reference we have in ancient literature to the catheter is in connection with Erasistratus, and that he is considered its first inventor. Erasistratus did not regard the pulse to be of as much importance as Herophilus maintained. He was the first who had a correct idea of the use of the trachea; and disproved the error which had so long been a question in dispute among the ancients, and which was believed in by Plato, concerning the passage of fluids, taken into the mouth, entering the trachea and thence into the lungs. He

settled the matter conclusively that its function is solely that of an air tube, and that the lungs are pneumatic organs. He is the originator of the name *trachea*, which has continued in use to the present time, and will probably never be superseded by any other term.

Imperfect and fragmentary as are our sources of information concerning the two subjects of the present sketch, nevertheless they are sufficient to enable us to obtain an important insight into the state of anatomical and physiological knowledge existing among the ancients twenty-two centuries ago. We also learn somewhat of their pathological and therapeutical notions, as well as of their surgical ideas, instruments, and operations. Thus we have been enabled to see that enlightened and original ideas concerning the structure and functions of the human body in health, and many practical methods of treating the diseases and injuries to which it is liable, were known to the physicians and surgeons of the Alexandrian School of Medicine three centuries prior to the birth of Christ.

The materials for this sketch were obtained from the following: *Thompson;* Art 'Anatomy,' *Encyclop. Britt.*, ninth ed. *Marx; De Herophili Celeberrimi Medici Vita, etc.*, Gott., 1840, 4°, review of, in *Brit. and For. Med. Rev.*, v. XV., 1843, pp. 106–114. Articles "*Herophilus*" and "*Erasistratus*," in *Smith's Dict. of Greek and Roman Biog. and Mythol.*, Lond., 1873, and in *Anthon's Classical Dict.*, N. Y., 1865. *Portal; Hist. de l'anat. et de la chir.*, Paris, 1770. *Jourdan; Dict. des sciences med.: Biographie medicale*, Paris, 1821. *Moir; Outlines of the Ancient Hist. of Med.*, Ed. and Lond., 1831. *Dunglison; Hist. of Med.*, Phila., 1872. *Hamilton; Hist. of Med., Surg. and Anat.*, Lond., 1831. *Renouard; Hist. of Med.*, Cincinnati, 1856. *Watson; The Med. Profes. in Ancient Times*, N. Y., 1856. (See also *Haller; Biblioth. Anat.* and *Biblioth. Medic. Pract. Sprengel; Hist. de la Med.*).