Historical and Bibliographical Notes.

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

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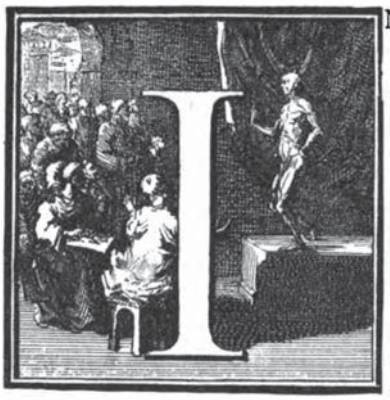
IX.—HIERONYMUS FABRICIUS AB ACQUA-PENDENTE.

1537—1619.



IN the little town of Acqua-pendente, anciently called Aucula, or Aqua Taurinæ, twelve miles from Orvieto. in central Italy, in the year 1537 Geronimo Fabrizio was born of poor but respectable parents. In after years the name of his native town was appended to his Latinized name, and henceforth used to distinguish the great Italian anatomist and surgeon from the celebrated German surgeon—Fabricius Hildanus—who was born at Hilden, near Cologne, in 1560, and died in 1637.

Jerome was a boy of great promise and eager for an education. He was accordingly sent to Padua, where he distinguished himself by his proficiency in the acquisition of

the Greek and Latin languages as well as in the study of philosophy. Having completed the university course, he at once, by natural selection, engaged in the study of the medical sciences under the immediate mastership of that most illustrious professor—Gabriel Fallopius—the great luminary of that brilliant scientific era. Jerome graduated with honor, having exhibited extraordinary ability at his examination for the degree. Under such a master, he, of course, took to anatomy and surgery as naturally as a duckling takes to the water, and he soon swam and dove into the depths of these sciences with the same facility and grace that the aquatic bird does in its favorite element. For a number of years he was the demonstrator of anatomy in the University of Padua, under his great master, during which time he gave such evidence of skill and aptitude to teach, that it was manifest that he would one day become the successor of Fallopius, and add splendor to the already glorious medical school of Padua. And thus it came to pass. When Fabricius reached the age of five and twenty years Fallopius died (1562), and his favorite pupil was at once elected by the Senate of Venice his successor in the chair of anatomy, to which was subsequently added that of surgery. He filled the double professorship with increasing reputation and renown for almost half a century (1562–1609).

Fabricius possessed every requisite to insure and maintain success; he was kind and generous, learned and eloquent, sound in judgment and skillful in practice, earnest and animated by a glowing enthusiasm. His fame extended over the continent of Europe, from every portion of which students flocked into Padua to listen to his prelections and witness his demonstrations. He was not, however, without some of the little indiscretions incident to most men. On one occasion, it is said, while engaged in explaining to

his class the mechanism and mode of action of the vocal apparatus, he, unfortunately, ridiculed the peculiar pronunciation of the Germans, which so offended them, that all the students of that nationality deserted the college in one day.

The Republic of Venice recognized the talents and importance of Fabricius. The Senate built him a new, very spacious, and magnificent anatomical amphitheatre, and had his name inscribed on the front of it. It also decreed him an annual stipend of one thousand crowns, and created him a Knight of St. Mark. In addition to all this the Senate voted him a massive golden chain as a badge of its respect, and when infirmity and old age came upon him, and rendered him incapable of continuing his labors, his salary was paid him, ungrudgingly, to the day of his death, and after this sad event occurred (May 21, 1619), it honored his name and memory by a noble statue.

Far grander and more enduring is the monument which Fabricius erected for himself by his genius and researches. His two greatest honors are the discovery of the valves in the whole system of veins, and the having been the preceptor of the immortal Harvey, to whom he furnished the key wherewith he unlocked the mysteries of the circulation of the blood.

The celebrity of the medical department of the University of Padua lay nearest to the heart of Fabricius, and to its promotion he devoted his greatest energies. Fame and not gain was his aim. Aside from his salary he was utterly indifferent to pecuniary gain. He refused fees for his services as physician and surgeon, and placed in a cabinet, set apart for the purpose, such presents as his generous and grateful patients insisted on his taking; over this cabinet was inscribed this sentiment—*Lucri neglecti lucrum.*

Anatomy, physiology, and surgery were all enriched by his researches. His works were quite numerous, as will be seen by the appended bibliography. They comprise not less than sixteen treatises. His *Opera omnia anatomica et physiologica* is a grand folio of nearly five hundred pages, illustrated by hundreds of figures, engraved on sixty-one full page plates. Thirty-three are devoted to his treatise on the formation of the fœtus, human and comparative; many are used to exhibit the valves in the veins. They are all exquisitely beautiful, marvelously accurate, and strikingly graphic. He was an ardent investigator of living phenomena: not content with the dissection of dead structure, he desired to understand the vital functions, with a view to which he made numerous vivisections. It is indeed fortunate for science that the world was not then pestered with the morbid sentimentality it now encounters in some of our large cities and small Berghs; had it been so, the circulation of the blood would still have remained a mystery. His study of the formation of the chick *in ovo* is a model of patient and well-directed research. The essay on the language of brutes is not only curious, but worthy the attention of physiologists of the present time. He also studied the comparative anatomy of the cæcal appendix; demonstrated the muscular coat of the bladder; the structure of the œsophagus, stomach, and bowels, as well as many delicate points relative to the anatomy of the eye, the ear, and the larynx.

Fabricius has been styled the father of modern surgery. He certainly made many improvements in both the science and the art. His works in surgery have been so highly esteemed, and so eagerly demanded, that no less than eighteen editions of them have been published in various languages and in different countries. They are illustrated with many plates of ingenious instruments and complex

apparatus, which will vie with the Sayerized engines of this mechanical era in surgery. Space will not admit of any further notice of this great master's work. I must confine the remainder of my remarks to the history of the discovery of the valves in the veins.

That Fabricius discovered in 1574 the valves in the entire system of veins of the body is most true, yet it is not true that he was the first and only anatomist that ever observed a valve in a vein and recorded the fact in an anatomical treatise. Marx refers their discovery, but on insufficient grounds, back to the time of Erasistratus. (*Diatribe anatomico-physiologicum de structura atque vita venarum*, 8vo, Carls., 1819, p. 6.) Nor is it evident that Dionysius, Alberti, or Theodorus, to whom Haller refers, ever saw the venous valves. To Charles Étienne or Carolus Stephanus, belongs the honor of having first observed them, which he did in the hepatic vein, and called them *apophyses membranarum*, saying they are to prevent the regurgitation of the blood, in which function he compared them to the valves of the heart. I have examined this reference in my esteemed copy of his rare work (*De dissectione partium corporis humani*, etc., folio, Paris, 1545, pp. 182, 183), which confirms me in the opinion of Cruveilhier that Stephanus of Paris was the first to make the discovery, and, I will add, the first to comprehend their function as true valves, viz.: to prevent regurgitation of blood. In 1551 Amatus Lusitanus published a letter from Cannanus, in which it is stated that in 1547 he discovered the valves in the vena azygos. In 1563 Eustachius published an account of the valves of the coronary veins. Piccolhominus published his work on anatomy (*Anatomicæ prælectiones*, etc., folio, Rome, 1586), which contained a very lucid account of the valves of the veins, seventeen years previous to the publication by Fabricius of his monograph on the venous valves (*De venarum ostiolis*, fol.,

Padua, 1603). The former, therefore, antedated the latter by a long period in publication, notwithstanding it was, even then, twelve years subsequent to the alleged discovery of Fabricius.

Harvey gives the entire credit to his old master in the following words. "The celebrated Hieronymus Fabricius of Acquapendente, a most skillful anatomist, and venerable old man, or, as the learned Riolan will have it, Jacobus Sylvius, first gave representations of the valves in the veins." (*The Works of Harvey, Syd. Soc.*, c. xiii, p. 62.)

It is quite certain that Sylvius saw the valves in question, and called them *epiphyses venarum.* It has been suggested, however, that he may have heard of them from Cannanus, who demonstrated them to Lusitanus in 1547; the work of Sylvius was not published until 1555. Meryon (*Hist. of Med.*, p. 289) sums up the case thus: "Now as Étienne saw only the valves of the vena azygos and hepatic vein, Cannanus and Amatus those of the vena azygos, and, perhaps, also those of the renal and iliac veins, whilst Sylvius described those in the veins of the extremities and neck, we may charitably conclude that all were engaged in their own independent investigations, and that all may participate in the merit of the general discovery. But when it becomes a question of absolute priority, it certainly does appear that the honor should be conceded to Étienne."

Fabricius himself lays claim to the discovery of the valves and called them *ostiola.* "Who, indeed," he goes on to say, "would have thought of finding membranes and ostiola within the cavities of the veins of all places else, when their office of carrying blood to the several parts of the body is taken into account? The ostiola nevertheless were necessary, and we may therefore safely say that they were contrived by the Almighty Maker of all things, to prevent over-distention of the veins. * * What first astonishes,"

says he, "is that these valves have so long escaped anatomists, ancient as well as modern, and so entirely escaped them that no mention was made of them, no one had seen them, until the year 1574, when I observed them for the first time with great joy (*summâ cum lætitiâ*)."

The valves in the veins are the anatomical proof of the circular motion of the blood, yet, stranger than all else to us at this time is the fact that Fabricius failed to see it, being blinded by the old theories of the flux and reflux of the blood.

The following is a complete list of his works, and of the several editions.

Pentateuchus chirurgicus, Francfort 1592, 8°; 1604, 8°. *De visione, voce et auditu*, Venice 1600, fol.; Padua 1603, fol.; Francfort 1605, fol.; 1614, fol. *De formato fœtu*, Padua 1600, fol.; 1603, fol.; Venice 1620, fol. *Tractatus de oculo, visus organo*, Padua 1601, fol.; Francfort 1605, fol.; 1613, fol. *De venarum ostiolis liber*, Padua 1603, 1605, 1625, fol. *De brutorum loquela*, Padua 1603, fol. *De locatione et ejus instrumentis*, Padua 1603, 4°; Venice 1603, 4°. *De musculi artificio et ossium articulationibus*, Venice 1614, 4°. *De respiratione et ejus instrumentis libri duo*, Padua 1615, 4°. *Opera chirurgica in duas partes divisa*, etc., Padua 1617, 1647, 1666, fol.; 1671, 1684, 1711 (in Italian); Venice 1619, fol.; Francfort 1620, fol.; Leyden 1722, fol.; Lyons 1628, 4°; (in Dutch) 1647, 1666, fol.; (in French) 1649, 1670, 1729, 8°; Rouen 1658, 8°; (in German) Nuremberg 1672, 4°; 1716, fol. *De motu locali animalium secundum totum*, Padua 1618, 4°. *De gulâ, ventriculo, intestinis, tractatus*, Padua 1618, 4°. *De totius animalis integumentis opusculum*, Padua 1618, 4°; Milan 1672, 4°. *De gressu*, Padua 1618, 4°. *De formatione ovi et pulli*, Padua 1621, fol. *Opera anatomica*, Padua 1625, fol.; Francfort 1623, fol. *Medicina practica*, Paris 1634, 4°. *Opera omnia anatomica et physiologica*, Leipsic, 1687, fol.; Leyden 1723, 1737, fol.