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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III. BARTOLOMMEO EUSTACHIO.

1520–1574.

THREE names stand pre-eminent in the history of anatomy as the restorers and reformers of that science, viz: Vesalius of Brussels, Eustachius of Rome, and Fallopius of Modena. These old masters were contemporaries, all were famous in their day, and each enriched this science by important discoveries. Before their labors began, anatomy had been so imperfectly studied that it was scarcely worthy of being called a science, and hence this trio should be regarded as its real founders. Bartholomew Eustachius was born at San-Severino, in the March of Ancona, near Salerno in Italy. The precise date of his birth is not known, it is probable that it was about the year 1520. Very little is known regarding his life, except that

he studied anatomy at Rome, where he must have pursued this subject with the ardor of an enthusiast and certainly with eminent success, for he informs us, in the introduction of one of his works, (*Opusc. Anatom.*) that in 1562 he was professor of medicine in the Collegio della Sapienza, at Rome. Notwithstanding that he held this high position and that he was patronized by two Cardinals, Borromeo and Rovero, and that he was widely celebrated for his extensive acquirements in anatomy, yet he failed to obtain pecuniary success, of which he complains in the introduction above alluded to, and died as he had lived, in poverty, at Rome, in the year 1574.

It was, doubtless, the grand object of his ambition, probably in emulation of what Vesalius had so recently done, to furnish the world with a still more complete and magnificent work on the structure and functions of the human organism than had ever been seen before. To this end he had more carefully dissected the bodies of men and animals, the latter to elucidate the former, and his labors were crowned with greater success, and by more important discoveries than those of any other anatomist either in ancient or modern times. The better to illustrate his treatise, he had about forty beautiful folio plates engraved on copper, being the first of the kind ever made for this purpose, as all previous anatomical figures had been more or less rudely cut in wood. If we may judge by the minuteness and accuracy of these famous plates, and by the careful detail of his anatomical descriptions contained in the minor works which he published, we can comprehend the force of Lauth's remark, (in his *History of Anatomical Discovery*) that, if Eustachius had been able to publish, both text and plates of his great work, anatomy would have attained the perfection of the eighteenth century, two hundred years earlier, It is to be lamented, as it must have been by this

poor student of nature, that his poverty prevented the publication of his valuable treatise, after the bestowal of so much painstaken labor upon its preparation, and so much of his scanty earnings in the production of his marvellous plates, yet such was the will of the Gods. Unfortunately the entire text of the work is totally lost. The plates were lost to the world for a hundred and fifty years! They were commenced as early as 1552, but were not entirely completed at the time of Eustachius' death. It is possible that they were stowed away in the papal library, for we are told that when the plates were found they were presented by Pope Clement XI to Lancisi, his physician, who published them in 1714. It is also stated that Pinus, a friend of Eustachius, preserved them during his lifetime, and that he transmitted them to the family of Rubens.

Space will not admit of any special description of these plates, but to furnish an idea of their comprehensiveness, to those who are not familar with them, seven entire plates of many figures, are devoted to the kidneys alone, and twice this number to the muscles of the human body. One of his most important works was " On the Controversies of Anatomists," which was announced by him as ready for the press, but was never published, passed into oblivion and is now not extant. It is possible that some of these works may yet come to light. Louis Frank, in a notice of Flajanus (*Annali universali di med.*, Milan, Juin, 1823) says, that among the Mss. stored away in the library of this physician they have found one by Eustachius, remaining unpublished, having for its title *De Instrumentis et Officiis Medici.* This Ms. was then in the hands of one of the sons of Flajanus, a surgeon, by whom it was expected that it would be published. I am not aware that it has yet been done.

Fortunately his *Opuscula Anatomica*, being a collection of small but valuable treaties containing an account of many

of his original researches and discoveries, was published at Venice, in quarto, 1563.

It is generally conceded that he discovered the aural tube which bears his name. Eloy says, all the glory of this discovery belongs to Eustachius; others assert that he merely gave a more accurate description of it than any previous writer had done; that it was already known to Vesalius, and even anciently to Alcmœon, a disciple of Pythagoras, who was aware of the passage that led from the ear to the throat, inasmuch as Aristotle quotes him as saying, that goats breathed through their ears. So also with the stapes—Eustachius is among the claimants for its discovery. This is disputed by Fallopius, who affirms that he wrote concerning it to Cananus, Columbus, and Madius, but that not one of them knew of its existence. (Portal, *Hist. de l'Anat.*, v. i, p. 576.) Columbus and Ingrassias each contended for this honor, the latter declaring that he exhibited it to his pupils in Naples in 1546. Eustachius was the first who described the tensor tympani, as well as the stapedius muscle; he also gave a superficial description of the cochlea. He also discovered the supra-renal capsules, and the thoracic duct, of which he gave an accurate description of that of a horse, saying that it resembles a white vein, and opens with a semi-circular orifice into the internal jugular vein. He discovered the valve at the orifice of the coronary vein of the heart. He was the pioneer in the exact methods of investigation of the development and evolution of the teeth, having observed the rudiments or germs of both the temporary and permanent sets in the fœtal skull. He was equally minute in his researches in renal anatomy. He was the first to study these organs by comparison of numerous examples from different subjects, and also with those of the lower animals. He devoted a special work to this subject, *De renibus*, etc.,

in which he gives the first figures of the tubuli uriniferi, careful delineations of the mammillary eminences, and many other interesting things relating to the structure of the kidneys.

While Vesalius had corrected many of the anatomical errors of Galen, Eustachius performed the more difficult task of correcting numerous errors into which his distinguished contemporary had fallen. Thus by their united labors the science of anatomy made rapid strides toward perfection.

The following is the most complete list of the printed editions of his works that I have been able to compile:

De renibus libellus. 4° Venice, 1563, and in *Opuscula*, 1564. *De dentibus libellus.* 4° Venice, 1564. *Opuscula anatomica.* 4° Venice, 1564, 1574; with annotations by Pinus. 4° Venice, 1653; 8° Leyden, 1707; 8° Delft, (edition of 1574) 1736. *Erotiani, græci scriptoris, vetustissimi, vocum, quæ apud Hippocratem sunt collectio, cum annotationibus. Eustachii Libellus de multitudine.* 4° Venice, 1566; 8° Leyden, 1746, 1765; 8° Strasbourg. 1783. *Tabulæ anatomicæ Cl. viri Bartholomæi Eustachii, quas è tenebris tandem vindicatis, et Sanct. Dom. Clementis XI, Pont. Max. Munificentiâ dono acceptas, Præfatione Notisque illustravit Jo. Maria Lancisius Intimus Cubicularius, et Archiater Pontificis.* fol. Roma, 1714, 1728, 1740, 1783; Geneva, fol. 1717; published in Manget's *Theatrum anatomicum*, Cologne, fol. 1717, (thought to be more beautiful than the original edition); Amsterdam, fol. 1722; Leyden, fol. 1744, 1762. A commentary on these plates by Alex. Monro, was published at Edinburgh, 8° 1740; a Dutch commentary by Brown, Amsterdam, 1798, and one in German, by Kraus, in the same city, as recently as 1800.