Michael Servetus - Discoverer of Pulmonary Circulation and a Heretic

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Michael Servetus or Miguel Serveto (1509 or 1511-1553) was a theologian, physician and Renaissance humanist. He was born in Villanueva in Argon, Spain. A prodigy and a polymath, he was versed in many sciences: mathematics, astronomy, meteorology, geography, human anatomy and pharmacology as well as jurisprudence, translation, poetry and scholarly study of bible in its original languages. He was the first European physician to describe pulmonary circulation. He participated in Protestant Reformation and later developed a nontrinitarian Christology.

Servetus spent his whole life struggling against dogmatism and intolerance that permeated Renaissance world. His attack on orthodoxy was so broad and blatant that he became heretic of the worst sort and was condemned by Catholics and Protestants alike. Finally at the instigation of Protestant reformer John Calvin (1509-1564), he was arrested in Geneva and burned at stake. Almost all the newly printed copies of his books were added to the fire.

Servetus left native Spain becoming a wondering scholar. He published his first major treatise “on the errors of trinity” (1531). Fearing arrest he went underground, and established a new identity as “Michael Villanovanus”. Under this name he edited a classic of a great antiquity by the Alexandrian astronomer-geographer Ptolemy’s “Geographia”.

He returned to the University of Paris to study medicine in 1536 and supported himself by lecturing on mathematics, geography and astronomy. In Paris, his teachers included Sylvius and Andermach, who hailed him with Andrea Vesalius as his most able assistant in dissections. There he stepped over the line that Christian doctrine had drawn between acceptable areas of astrology, and forbidden zone of judicial astrology (left for God-essentially fortune telling). He was threatened with excommunication. As a result of the risk and difficulties of studying medicine in Paris, Servetus left for Montpellier to finish his medical studies and obtained his MD there in 1539. After his studies in Medicine, Servetus started medical practice. He became personal physician to Archbishop of Vienna and physician to Governor of Dauphine.
Servetus published yet another religious work Christianismi Restituto (Restoration of Christianity) in 1553. According to him to understand the relationship between God and humanity, and to know the Holy Spirit, one must understand the spirit within the human body. In the passage, Servetus recounts his discovery, that the blood of the pulmonary circulation flows from heart to lungs (rather than air in the lungs flowing in the left ventricle as per Galen’s concept). His discovery was based on the bright red color of blood returning to left ventricle, location, and size of different ventricles, and the fact that pulmonary artery was extremely large indicating that more blood was sent to the lungs than was necessary for their own nourishment. The bright red blood had been charged with the vital spirit formed by the mixing of air and blood in the lungs. This also suggested that passage of blood through pores in the septum was not the major part by which blood entered the left side of heart. He did not go to consider systemic circulation, apparently satisfied that he correlated physiology with his theological conviction. It is clear that his motive was primarily religious and not medical or scientific.

Servetus’s description and account of lesser circulation was buried somewhere in 700 pages Restitutitio-a theological treatise which was not a book on medicine. Thus his achievement was not widely recognized at the time. Moreover most copies of the book were burned shortly after its publication. Only three copies survived but they remained hidden for decades.

Ibn al-Nafis (1210-1288), the Egyptian physician had described pulmonary circulation in the thirteenth Century (*JAPI March-14 issue). It is apparent that Servetus and others were unaware of this as no translation was available. It seems unlikely that Servetus influenced anatomists any more than Ibn-al-Nafis.

Servetus also contributed enormously to medicine with other published works such as Complete Explanation of Syrups and his study on syphilis in his Apology against Leonard Fuchs, among others. His career remains a fascinating revelation of the dark underside of Renaissance and religious intolerance.