Harvey, William - William Harvey (1578–1657) was both a physician and a remarkable natural historian. His great achievement was the demonstration of the circulation of the blood, a discovery which replaced centuries of theory and speculation with knowledge firmly based on accurate observation and experiment. His work was of vital importance in illustrating the sequence of hypothesis, experiment, and conclusion which has governed all medical discovery since his time. He was the founder of modern physiology.

Harvey was born in Folkestone in Kent on 1 April 1578, the son of a yeoman, James Harvey, and his wife Joane Halke. Aged ten, in the year of the Spanish Armada, he was sent to King's School, Canterbury, and from there to Cambridge University, being admitted to Gonville and Caius College on 31 May 1593. He graduated BA in 1597 and deciding to study medicine, travelled though France and Germany to Padua, where Galileo was then teaching. There is no evidence that Harvey ever met Galileo, nor of whether he believed in the heliocentric view of the universe. His own mentor was the great anatomist, Fabricius of Aquapendente, who maintained the traditions of Vesalius at Padua. Harvey graduated MD in Padua on 25 April 1602 and returned to London, taking his Cambridge MD in that same year. Two years later he married Elizabeth Browne, daughter of Dr Lancelot Browne, onetime physician to Queen Elizabeth. In 1607, he became a Fellow of the College of Physicians and in 1609 began his long association with St Bartholomew's Hospital, on appointment as assistant physician.

In 1615, Harvey was elected Lumleian Lecturer at the College of Physicians, and he delivered his first lectures in April 1616. The notes he used for these lectures not only illustrate his wide reading and knowledge of the classics, but also reveal some of the ideas that led him to the discovery of the circulation of the blood. For many years he gave the Lumleian lectures annually at the College.

His position as a physician was increasingly recognized in wider circles through these years. In 1618 he became physician to James I, initiating a link with the Royal family that persisted throughout his long life. In 1630, at the behest of King Charles I, he accompanied the Duke of Lennox on a European tour and two years later travelled with the King to Scotland. In the years before the Civil War he was in London, but he went to Oxford in attendance on the King in 1642. There, on 7 December, he was made MD of the University. He pursued his anatomical studies and dissections at Merton College. He was at the battle of Edgehill and is said to have had charge of the Prince of Wales and the Duke of York during the action. After the surrender of Oxford in 1646, he returned to London and there continued his scientific studies. He was active in the affairs of the College of Physicians, being elected President in 1654, an honour he declined because of his increasing years, being 76 years old. In that same year he donated his library to the College. He died on 3 June 1657 and was interred at Hempstead.

Harvey's monumental work De Motu Cordis was published in 1628. In his dedication to King Charles I, he likened the position of the monarch in his kingdom with that of the heart within the body. Until that time, medical opinion was governed by the views of the second century writer, Galen, whose works had gained a position among learned physicians that was almost akin to holy writ. The Galenical view was that the blood was formed in the liver from nutrients derived from the intestine. It
passed from there to the heart, where it was imbued with ‘vital spirits’, and then traversed the septum (which divides the right and left sides of the heart) through invisible ‘pores’. The different functions of the veins and arteries were unknown and the blood was considered to ebb and flow in the veins to reach the tissues of the body.

Harvey's observations clearly showed the Galenical view to be erroneous. Using experiments in animals such as the snake, he demonstrated that the blood passed from the veins to the right side of the heart (the right ventricle), that the supposed pores in the septum of the heart did not exist, and that the right ventricle propelled the blood into the lungs. It then returned to the left side of the heart. The left ventricle was thicker and more powerful than its counterpart on the right side, because it pumped blood not just through the lungs but throughout the entire body. Harvey clearly demonstrated that blood in the arteries was always carried away from the heart, and how the valves in the veins, originally described by his teacher, Fabricius, ensured that the venous blood always flowed towards the heart. He calculated how much blood might be propelled from the heart with each heart beat and showed there was no likelihood that the liver could synthesize sufficient blood to enter the heart as proposed by the Galenists. From ingenious but classically simple experiments and observations, Harvey concluded that the only explanation for the heart's action must be that a defined amount of blood constantly circulated throughout the body.

Harvey's discovery, comparable to the anatomical studies of Vesalius, was of great importance in destroying the influence of Galen, whose dogmatic assertions had by then become pernicious. It was perhaps natural that so novel and original a discovery would generate controversy. On the continent, Leyden was the first university to accept Harvey's conclusions; in many other schools, particularly in Paris, it was a further half century before Harvey's work was fully appreciated. So important was his work, however, that by the beginning of the eighteenth century the great Dutch teacher of medicine in Leyden, Hermann Boerhaave, stated that nothing that had been written before Harvey was any longer worthy of consideration.

Harvey was interested in many other aspects of comparative anatomy and physiology, for example the problem of reproduction, then poorly understood. But his discovery of the circulation of the blood remains his lasting memorial. His death in 1657 preceded by three years the foundation, by Charles II, of the Royal Society of London. It was, however, in large part due to the influence of William Harvey that the Society chose as its motto ‘Nullius in verba’

C. C. Booth

Bibliography


See also blood circulation.


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