THE OTHER HARVEY

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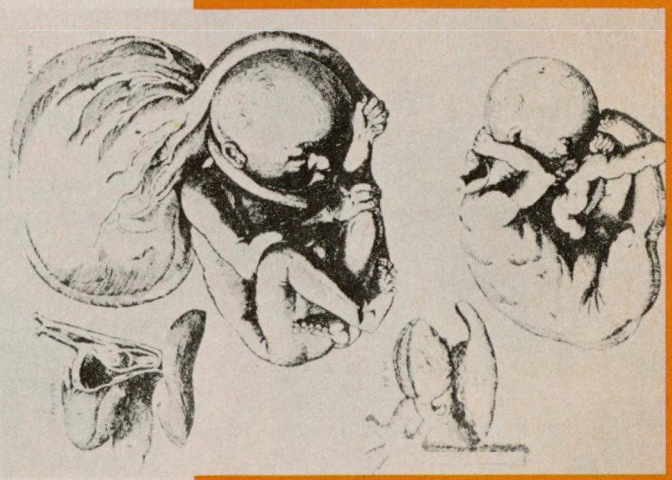
Before the 400th anniversary celebrations of William Harvey's birth are concluded, we should perhaps pause to remember that he was also the forerunner of much that is known today in human embryology and obstetrics, as well as a contributor to the field of psychosomatic medicine. But no matter what the subject, he was a great observer of both man and nature.

When Harvey set out from Cambridge for Padua in 1598, he little realized that he would fall under the spell of that great teacher, Fabricius of Aquapendente (1537-1619). It was from this surgeon-anatomist that Harvey was to learn that the valves in the veins implied "one-way traffic" in the vascular system. The youthful Harvey missed no opportunity to assist Fabricius with his experiments on fertile eggs of chickens. The latter's *De formatio fetu* was published in 1600, halfway through Harvey's studies at the great Paduan university. In fact, Fabricius was following in the footsteps of Aristotle as he described the formation of the chick in the egg. In turn, Harvey, "in the spring season by way of helping out Fabricius," came to grips with "a throbbing point of blood," which he described thus: "I have seen the first rudiments of the chick as a little cloud in the hen's egg about the fourth or fifth day of incubation, with the shell removed and the egg placed in clear warm water. In the center of the cloud there was a throbbing point of blood, so trifling that it disappeared on contraction and was lost to sight, while on relaxation it appeared again like a red pin-point. Throbbing between existence and non-existence, now visible, now invisible, it was the beginning of life."



Anatomical drawing from De formatio fetu *by Fabricius of Aquapendente. Harvey at Padua studied with Fabricius who, according to one biographer, had a profound influence on him because of his teaching, his ability to arouse constructive opposition, and the example of his wide range of scientific investigations.*

Nor was Harvey involved only in animal physiology. At one point he remarks of the botanical world: "From a small seed springs a mighty tree; from the minute gemmule or apex of the acorn, how wide does the gnarled oak at length extend his arms, how loftily does he lift his branches to the sky, how deeply do his roots strike down into the ground."

Although Harvey cogitated upon embryology for a full 50 years, he was reluctant to publish his observations. Perhaps he had in mind the clamor and vituperation that had attended his publication on the circulation of the blood in 1628. In any event, his friend Dr. George Ent, in 1649, persuaded him that he should permit the publication of his views on "animal Generation." Ent promised to see the manuscript through the press, and this must have been the deciding factor, for the aging Harvey, weary of many continental obscurantists, could hardly relish the task of dealing with printers and their misreading of his enigmatic writing.

Accordingly Harvey's quarto *Exercitationes de generatione animalium*

(Continued on page 21)

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was published in 1651 in London. The volume has been referred to by some scholars as the first book by an Englishman on the subject of obstetrics. Its significance has also been discussed by the distinguished embryologist Dr. Joseph Needham, now Master of Gonville and Caius College, Cambridge, where Harvey was once an undergraduate. Needham gives us a clear perspective in terms of the misinformation that Harvey had to clear away: "He denied the possibility of generation from excrement and from mud, saying that even vermiparous animals had eggs. . . . He handled the question of growth and differentiation better than any before, anticipating the ideas of the present century. . . . He set his predecessors right on a very large number of detailed points such as the structure of the placenta. . . . He made a great step forward in his theory of foetal respiration. . . . He affirmed that embryonic organs were active, and that the embryo did not depend on external aid for its principal physiological functions."

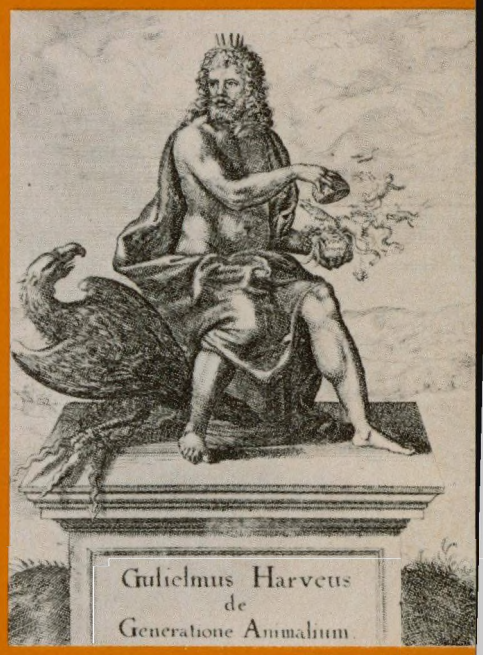
Harvey on psychosomatic medicine was most discerning. He wasted no flowery language in describing his patients. Thus he wrote: "Valetudinarians are affected and nice in their food and many of them are always complaining, like Lady Croft!" Also, Harvey did not forget the brain. Early in his Lumleian lectures at the Royal College of Physicians he spoke of "the divine banquet of the brain." Anticipating Sherrington, Harvey remarked: "Wherefore, since all animals have one most perfect part, man has his brain whereby he excels all other animals and by whose means he has dominion over them all."

As a clinical observer Harvey had few equals. We can only guess at what he would have given the world if his medical observations had not been destroyed when his lodgings in Whitehall were plundered by the Roundhead troops during the Civil War in 1642. Nonetheless we do have record of his typical descriptive style, concerning a "strong man who, having received an injury and affront from one more powerful than himself, and upon whom he could not have his revenge, was so overcome with hatred and spite and passion, which he yet communicated to no one, that at last he fell into a strange distemper, suffering from extreme oppression and pain of the heart and breast." He concluded that: "For every affection of mind which is attended with pain or pleasure, hope or fear is the cause of an agitation whose influence extends to the heart."

Eight years before his death in 1657 Harvey discussed "the signal influence of the affections of the mind. . . . What indeed is more serving of attention, than the fact that in almost every affection, appetite, hope, or fear, our body suffers, the countenance changes, and the blood appears to course hither and thither. In anger the eyes are fiery and the pupils contracted; in modesty the cheeks are suffused with blushes; in fear, and under a sense of infamy and of shame, the face is pale, but the ears burn as if for the evil they heard or were to hear."

Thus we see in William Harvey a pioneer in a third field, that of psychosomatic medicine. He was keen to reject the sophistry and speculation that "serve as a common subterfuge of ignorance." He saw "grief of mind" as a major cause of morbidity, not to say mortality.

We may lament the loss of Harvey's unpublished manuscripts, lost to rampaging mobs who destroyed so much, so senselessly, in his time; but centuries from now physicians will still be admiring Harvey's surviving writings on the heart and the brain and their complex interrelationships.



Frontispiece of the 1651 edition of Harvey's De generatione animalium *was etched by Richard Gaywood, a student of Harvey's old friend, the great engraver Wenceslaus Hollar. The opened egg held by Jove from which a variety of animals escape is engraved with the inscription* "Ex ovo omnia," *"Everything from an egg."*