Book Reviews

The Anatomical Lectures of William Harvey, Praelectiones Anatomie Universalis. De Musculis, edited, with an introduction, translation and notes by GWENETH WHITTERIDGE, Edinburgh and London, E. & S. Livingstone Ltd., 1964, pp. lxiv, 504, Frontis., 7 plates, £7 7*s*.

I have already and on not infrequent occasions disclosed my new opinion regarding the motion and use of the heart and the circuit of the blood in my lectures on Anatomy. Having now for nine years and more (*per novem et amplius annos*) confirmed it with the help of many ocular demonstrations in your presence . . . I have acceded to so many requests by all and entreaties by some and made it public.

IT is in these words of the Dedication of his great work of 1628 that Harvey calls upon the listeners to his Lectures on Anatomy to support his case as being borne out by what they have been shown in dissections and ocular demonstrations. For, Harvey continues, as his book goes so much against the traditionally ruling opinion, he would not have felt equal to a charge of presumption had he not repeatedly and for a considerable time proposed its subject to his auditors, answered their doubts and objections and achieved the assent of the President of the College of Physicians. These few sentences epitomize the outstanding value and significance to be expected from the notes jotted down in Harvey's own hand for his Lumleian *Lectures on the Whole of Anatomy* for 1616 and the following years, extant in a manuscript in the Sloane Collection in the British Museum (Sloane 230). To this should be added a second manuscript entitled *De Musculis* (Sloane 486) to make up all that is known of the anatomical writings of Harvey. The latter is here published for the first time in transcript and annotated translation, whereas the former—more important—work had been made accessible in facsimile and transcript on behalf of the Royal College of Physicians by E. Scott in 1886. However courageous, the attempt at providing a correct and readable transcript was defied in many places by Harvey's handwriting, the casual nature of the notes and their widely ramified background rooted in ancient Greek as well as sixteenth-century anatomical literature. Whilst the work of 1886 retains its value as facsimile text, the preparation of a proper transcript had to wait for the appearance of the truly magnificent work under notice. It becomes immediately evident that there could have been no transcript without a deep understanding of the subject-matter—the meaning intended by the writer as well as the vast number of references on which it is based. Nor could there have been anybody more suited for the gigantic task than the present editor, translator and annotator—the scholar and palaeographer best conversant with what appear to the uninitiated as tantalizing vagaries of the hand of a seventeenth-century *savant*, and prepared for the work through the exemplary first edition and annotated translation of Harvey's manuscript on *Local Movement in Animals* (Cambridge, 1959), the text following that *On Muscles* here published for the first time (see the review in this Journal, **7**, 1962, 89). The importance of the expert, painstaking and critical execution of the task cannot be exaggerated, for it is the *Praelectiones Anatomiae* which promise authoritative information as to the development of Harvey's ideas and knowledge of the motion of the heart and blood and indeed the gradual collection of the evidence preceding the final announcement of closed circulation in 1628. As is well known, the lecture notes themselves, dating from 1616, already contain a brief summary of the discovery—a

summary that is remarkable for its anticipation of Harvey's comparison of the heart to a pump ('. . . the blood is perpetually carried through the lungs into the aorta as by two clacks of a water bellows to rayse water. It is proved by means of a ligature that blood passes from the arteries into the veins. Hence the perpetual movement of the blood in a circle is achieved by the beat of the heart', fol. 80 verso). The comparison with the pump in this statement is all the more remarkable as no such comparison occurs in *De Motu* of 1628 (see Basalla, G., *Bull. Hist. Med.*, 1962, **36**, 467) and is only found in the *Second Letter to Riolan* (1649). Doubts have been expressed for a long time as to the contemporaneity of this announcement of the circular motion with the body of the lecture notes. It is written in a different *ductus*, standing by itself on the empty space of the back of a sheet, concluding the section on the heart, but out of context with what went before and with what comes afterwards. From further circumstantial evidence the editor of the work under notice definitively confirms that it is a later addition, though not as late as the *Second Letter to Riolan*, but dating from about 1627 to 1628. This is in keeping with the main contention of the outstanding introductory chapter on the state of Harvey's ideas on the circulation of the blood as expressed in the *Lectures on Anatomy*: the latter do anticipate much of Harvey's knowledge of the movement of the heart as later incorporated in the first seven chapters of *De Motu*, but 'from chapter 8 onwards he (sc. Harvey) lists the experimental proofs of the circulation of the blood throughout the whole body, and from chapter 8 onwards all parallels with the *Praelectiones* cease . . .' (p. xlv). What was anticipated in the lectures, however, is in the opinion of the editor nothing essentially new, and 'more or less in accordance with the findings of Galen and Columbus' (*ibidem*). Columbus is presented as 'leading the way' and it would seem that he already had arrived at the conclusion that what was commonly called diastole was in fact systole and vice versa (*De re Anatomica libri XV*, book XIV *de viva sectione*, in the fourth edition used by Harvey—Francof. 1593, p. 474. See *Praelectiones*, fol. 77 recto; the present edition, p. 265). Harvey is conceded the advantage of having based his conclusions on experiment as against the observations of Columbus. In the reviewer's submission it is at this point of particular importance to see matters in due proportion. The bulk of the *Lectures* is culled from other authorities among whom, as the present editor has convincingly shown, Bauhinus and his *Theatrum Anatomicum* of 1605 is the source most closely followed by Harvey. In other words the *Lectures* were not primarily meant to be an original work, but as notes jotted down to aid the memory for the exposition of the extant literature *viva voce*. Yet this was seen through the eyes of a critical and original observer who followed the right way through a tangle of contradictory and confusing theories. He achieved this through his own selective appraisal of the correct lore of Columbus. It is this part of the *Lectures* which was to form the substructure of his great work of 1628. Harvey's observations as communicated in the *Lectures* therefore assume high historical significance. For the work *De Motu* was not meant to deal only with Harvey's entirely new and original discovery of the—circular—motion of the blood, but also its essential cause—the motion of the heart. Hence the title: *De Motu Cordis et Sanguinis*. Moreover, even where Harvey may follow Columbus he is much clearer and more definite. A comparison of the statement of Columbus repeated in its entirety (though with slight verbal modification) in the *Lectures* (fol. 77 recto, p. 264 of the edition under notice) with Harvey's own statement following it seems to bear witness to this. The former is admirable in itself and there is no intention on the part of the reviewer to reduce it to a 'wisp of wool'—'neque hoc floccifacias' (in Columbus's own words). Yet Columbus somewhat loosely states: the heart is pulled upwards and appears to swell

when it is constricted. When it thrusts itself out (*exerit*), however, as if relaxed, it tends downwards and at that time the heart is said to be at rest: and that then is the systole(!) of the heart, because it assumes it more easily and with less effort, whilst when it transmits (sc. the blood) it requires more force. This is followed by the warning that the matter should not be underrated in importance, for you may find not a few who are convinced that the heart is dilated at that time when in reality it is constricted (all translations here are the reviewer's).

In the *Lectures* as well as in *De Motu* Harvey tells us how hard he found it to answer the question of what nature is systole and of what diastole. Yet already in the *Lectures* he arrives at a clear cut conclusion:

> Erection is the proper motion of the heart, for it is first strengthened and then relaxed and void of strength. Erection is systole: (1) it strikes the chest in the act of erection (2) from soft it becomes hard and can only be felt when erected . . . (3) the auricles are visibly contracted, become whiter and the blood is thrust forth . . . the pulse begins from the auricles and progresses towards the tip of the heart. . . .

Harvey thus introduces erection—a distinctly active movement (where Columbus had spoken of the heart as being pulled upwards)—and clearly identifies this as the proper movement of the heart and systole. These are obviously original observations and original interpretations. This even more applies to such observations as the spurting out of blood at the heart's erection and that this causes the pulse (fol. 77 verso, p. 267 of the present edition), to the implied assessment of the heart movement as muscular action (denied by Columbus) and above all to the rejection of Galen's 'pulse-making force' of the arteries in favour of his clear insight into the nature of the arterial pulse as a product of the thrusting forth of the blood by the heart (fol. 78 verso, p. 269 of the present edition). It would thus appear that the *Lectures* retain their value as a prime source for our knowledge of the development of Harvey's ideas: first in a positive sense; the ideas which concern the movement of the heart and form the substructure of *De Motu* are indeed essentially found in the *Lectures* and had therefore been conceived at an early time. Of the circular movement of the blood, however, we have no such evidence—on the contrary, from several passages it may look as if Harvey at the time of the earlier lectures was not aware of the centripetal direction of the venous blood. A suggestive case has been made out for this by the editor, although some of the evidence is circumstantial and not all passages adduced are clear and revealing—no wonder, in view of the long stretches of time covered by the various parts of the text. It is thus from the *Lectures* that the—negative—information is derived to the effect that

> some time between 1616 and 1619, if we are to take at its face value, as indeed we must, Harvey's own statement in *De motu cordis*, the essential step was taken which convinced Harvey of the passage of the blood from the arteries into the veins . . . *De motu cordis* must have been taking shape in Harvey's mind sometime during 1626 and 1627 at the latest (p. l).

The strictures imposed by the present editor are therefore indeed suggestive, applying as they do to optimistic expectations of a proof of the early conception and announcement of Harvey's discovery in the *Lectures*. In this respect we may learn more from the dissimilarity of the *Lectures* and *De Motu* than from the parallels between them (p. xlvi).

Here, then, we have a transcript of the Latin text, a translation and commentary which with its critical introductions and assessments would seem to reach the limit

of what scholarship at the highest level has been able to do for a text of first importance in the history of anatomy, physiology and indeed of scientific medicine as a whole.

At the same time the text is one of the most difficult documents which we have, and not a few passages still leave room for speculation as to reading and meaning. It is quite impossible to go into any detail within the scope of a book-notice—the reviewer already dealt with some such passages elsewhere ('An Harveyan Prelude to Harvey', *Hist. Sci.*, 1963, **2**, 114–25) and hopes to discuss them further at a later date and in a more comprehensive context. Here and there the reader will miss a reference (concerning an allusion made by Harvey) which can be found elsewhere, but such gaps are compensated for by the large number of references which can be found only in the present edition—an exemplar of scholarship, understanding and literary criticism answering a vital *desideratum* of some eighty years' standing.

WALTER PAGEL

Shakespeare's Son-in-Law: John Hall, Man and Physician, by HARRIET JOSEPH, with a facsimile of the second edition of Hall's *Select Observations on English Bodies*, Hamden, Connecticut, Archon Books, 1964, pp. 15, 328, illus., 72*s*.

The commemoration of the 400th anniversary of Shakespeare's birth gave us many opportunities in 1964 of exploring the background of the great dramatist's life and times. There are still many personal details of his life as writer, husband and father of which we are ignorant and we should like to know much more than we can ever know of his relations with his son-in-law, John Hall. This young man came to Stratford around the year 1600 and settled there as a medical practitioner. He was a Cambridge M.A. but no record can be found of any medical training or qualification. Despite this, he seems to have pleased his patients and in 1607 he married Shakespeare's elder daughter Susanna, then twenty-four. One child, Elizabeth, was born of this marriage, in their first home at Hall Croft. After Shakespeare's death in 1616, they moved to New Place where John Hall died in 1635 and Susanna in 1649. It made little or no difference to Hall's practice of medicine that his life was so uneventful and that it was passed away from the centres of medical teaching. Hall treated his patients in much the same way as a Stratford practitioner would have done two centuries earlier or two centuries later, and in much the same way as his contemporaries were treating their patients in London or Paris or Bologna. Like many of his contemporaries, he kept records of his cases in abbreviated Latin, and one notebook containing 178 case-reports was translated, edited and published by Dr. James Cooke, another Warwickshire practitioner, in 1657, a corrected second edition appearing in 1679. It is this now very rare book which is reproduced in facsimile in this volume (without Cooke's own additional cases which were added to the original).

The text is introduced by Mrs. Joseph who not only recapitulates all that is known of Hall and his place in the Shakespeare family but also provides most useful notes on the patients and on the conditions for which Hall treated them.

F.N.L.P.

Surgery in World War II: Activities of Surgical Consultants, vol. II, Editor-in-Chief, Colonel JOHN BOYD COATES, Jr.: Editor for Activities of Surgical Consultants, B. NOLAND CARTER, Washington, Office of the Surgeon-General, 1964, pp. 1062, 365 illus.

The first of the two volumes dealing with the activities of the surgical consultants described their work 'in the office of the Surgeon General, the extension of the system