

Book Reviews

FREDERIC LAWRENCE HOLMES, *Claude Bernard and animal chemistry. The emergence of a scientist*, Cambridge, Mass., Harvard University Press, 1974, 8vo., pp. xx, 541, illus., £9.00

Although recognizing the importance of Bernard's earlier researches, most biographers have concentrated on his later life when he had reached scientific maturity and was paying more attention to the philosophical aspects of biology and medicine, culminating in his classic, *Introduction to the study of experimental medicine* of 1865. Professor Holmes, who is Chairman of the Department of History of Medicine and Science in the University of Western Ontario, elects to focus down on the period when Bernard was still striving to establish his reputation as a scientist, that is 1842 to 1848. It might be that a study of this brief formative period would reveal more of his approach to scientific problems, his ability to carry out experiments, and his whole personality, rather than his later work when he had established himself. This has proved to be so.

By studying manuscript material, largely unused, and the few articles Bernard published during these six years, Professor Holmes has been able, where others have failed, to trace in detail his research progress. Thus the laboratory notebooks which cover the entire period, 1842–1848, are a mine of information and from them the whole pattern of his research can be reconstructed. The reader can follow his experiments clearly and in detail, and can see Bernard as a young scientist struggling against considerable competition, but already demonstrating his genius. This is surely the best way to understand the mind and work of a talented scientist, because the man himself in later years may, as Bernard did, survey in retrospect and erroneously his achievements, and discern a purposeful, planned progression, which is not confirmed when his day-to-day activities are today carefully examined and evaluated. Bernard's methods of carrying out his research, as here revealed, are especially interesting, because they differ somewhat from the idealized forms which he expounds in his *Introduction*.

Professor Holmes deals here only with Bernard's work on digestion, nutrition, and related problems, because they reveal best his general scientific development. He presents it all and without selection, believing correctly that omissions would distort the picture, and that the manuscripts offer a remarkable opportunity to see a gifted scientist at work. Moreover, as in the history of medicine in general, the ideas that did not work out, and therefore, did not survive, are just as interesting, as those that did, and in some instances more so. In the present case they often give a valuable insight into Bernard's mind and work. His contemporaries are also considered, Liebig and Dumas, the organic chemists, in particular. They provide additional depth to Professor Holmes' study and, of course, a good deal of the early history of biochemistry is here revealed.

Some may complain that too much detail has been provided by the author, but it is precisely this detail that makes the book an important contribution to the history of nineteenth-century science. As well as the broad sweeps of history, we need the painstaking recording and analysis of data, just as in the case of the scientist in his laboratory. Professor Holmes has not only given a revealing picture of Claude Bernard and his early work, and of some of his contemporaries, but also adds to

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our knowledge of the history of physiology, of scientific methodology, and of the early history of biochemistry. His book, which is attractively written and documented very fully and accurately, can be highly recommended, and will be especially important to all historians of medicine and biology who are concerned with nineteenth-century science.

EDWARD GRANT (editor), *A source book in medieval science*, Cambridge, Mass., Harvard University Press, 1974, 4to., pp. xvii, 864, £16.25.

There are twelve source-books in this excellent series, and Professor Grant's, the thirteenth, is one of the largest and most comprehensive. The general format of the book is as in its predecessors: an anthology of primary sources with scholarly introductions, critical commentaries, and copious annotations. Unlike them, however, many new translations have had to be prepared as no English version exists; in fact, about one-half appear here for the first time. There are approximately 190 selections from about eighty-five authors, and the type of material chosen represents medieval science as it was presented at the time, often contained in books on astrology, logic, philosophy, theology and other works that today would not be regarded as scientific writings. The chosen material deals with the mathematical, physical and biological sciences, but technology has been excluded. The time period extends from the Latin encyclopaedists of the Early Middle Ages (third to seventh centuries A.D.) to the Later Middle Ages (up to the fifteenth century). In the section on the Later Middle Ages, the selections are grouped by subject, those of main interest to readers of *Medical History* being optics, astrology, alchemy, chemistry, zoology, botany and medicine. However, the historian of medicine should also sample other parts of this book in order to add to his knowledge of the history of science, which is such an important part of the multi-discipline background essential to his studies. Most extracts are from the Latin West and it could be argued that the Arabic tradition has been given space less than it deserves.

This seems to be the case with medicine, to which are devoted thirty-seven pieces altogether (pp. 700–808). Professor Michael McVaugh of the Department of History, University of North Carolina, is responsible for this section and most of the admirable translations have been prepared and/or annotated by him specially for the book. The selection of authors and topics is adequately representative, except that Rhazes' account of smallpox might have been a better choice than that by John of Gaddesden and perhaps Albucasis should have been included. Anatomy, physiology, medical practice and diagnosis, treatment of specific disorders, therapeutic agents and surgery are all dealt with. In the case of leprosy, a piece describing the ways of handling the patient should have been included, in view of their important consequences, and because of the attitude to the disease resulting from them which lingers with us today.

However, it is very easy to criticize the editors' selections in this type of work and each person would select differently. Suffice it to say that the compilation reaches the high standards set by its predecessors, and that it should be in every library that serves historians of medicine, students of medical history, and those interested in it.