

### Book Reviews

*A History of Chemistry*, vol. III, by J. R. PARTINGTON, London, Macmillan and Co., 1962, pp. xxiii, 854, 71 illus., £6 6s.

This third volume of a great new History of Chemistry, dealing mainly with the eighteenth century, appears only a short time after the second, which covered the sixteenth and seventeenth centuries (reviewed in this journal, 1962, 6, 189). Its dominating figure is of necessity Lavoisier (nearly 100 pages), but the accounts of Priestley and Dalton are not substantially less.

Lavoisier has mostly been allowed to speak for himself, attention being directed to the studied ambiguity of some of his statements which has misled so many who have read them . . . Lavoisier's theory of combustion, which had to provide an alternative to the theory of phlogiston, combined his chemical views (not always correct) with his false theory of caloric, and differs from that popularly presented. . . . His *Reflexions on Phlogiston*, supposed to have demolished the phlogiston theory, did nothing of the kind; the theory flourished for some time afterwards as is shown in a separate chapter.

These few sentences from the preface are a fair indication of the depth and breadth of original research and the use of first-hand sources on which the volume is based, just as was its predecessor. A random sample shows this even more incisively: Olaf Borrichius (1626–90) is briefly mentioned by Kopp in two places, first as a defender of alchemy whose experiments concerned the conversion of water into earth by repeated distillation—a result propounded earlier by van Helmont and Boyle and finally rejected only by Lavoisier (Kopp, H., *Geschichte der Chemie*, vol. III, Braunschweig, 1845, p. 255). The second place in which Borrichius is mentioned by Kopp deals with essential oils and their inflammability through nitric acid—a fact observed by Glauber in 1661 and mentioned by Borrichius in 1671 (Kopp, *loc. cit.* vol. IV, 1847, p. 395). Hoefer barely gives the name of Borrichius as the author of *Conspectus Chemicorum* and *De ortu et progressu chemiae* (*Histoire de la Chimie*, vol. II, 1842, p. 249). How different is Partington's account! Here we are given almost three full pages including a full bibliography and a note on Thomas Bartholinus who published many papers by Borrichius in his *Acta Medica Hafniensia*. What is more, we are reminded of Jørgensen's find (1909) that his 'most remarkable discovery, long overlooked, is that of oxygen. In his paper on nitre he says it is a salt full of windy particles which cause charcoal to burn as if it were blown by bellows. . . . Oxygen gas which had eluded Mayow in 1674 was now calling loudly on Borrichius, but without effect. In 1772 Priestley obtained it by the same method, but there was to be a weary interregnum of the phlogiston theory between the two events, which some acute mind, long before Lavoisier, could have prevented' (pp. 161–2). Again very little is said about the great Swedenborg (1688–1772) by Hoefer (*loc. cit.*, vol. II, p. 434) and nothing at all by Kopp, but a full account is found in Partington (pp. 164–7) drawing attention to his attempts 'to explain the properties of substances in terms of the supposed forms of their particles. . . .' Such examples could easily be multiplied. Partington's story takes the reader through the early French Paracelsists and textbook writers (Beguín, Davissou, Lemery) to Hales and Black, from there to chemistry in Scandinavia from Borrichius to Bergman and Scheele, to Priestley, Cavendish, Lavoisier, Berthollet, Fourcroy, then to chemistry in Germany (from Wiegleb to Goethe), the later phlogiston theory, the foundations of stoichiometry (notably J. B. Richter 1762–1807), to chemistry in Great Britain and Ireland (from Dobson via Wollaston to Donovan), to Brian and William Higgins and concluding with Dalton. Everywhere the contacts with the history of medicine and biology are close and given intimate attention. It is difficult to see how the medical historian can do without this further admirable

### Book Reviews

instalment of a new classic. This applies equally to the text and to the footnotes which contain vital information on the extensive literature which the author has used in his new and masterly appraisal of savants and facts.

WALTER PAGEL

*American Medical Bibliography, 1639–1783*, by F. GUERRA, New York, Lathrop Harper (Publication No. 40, Department of History of Science and Medicine, Yale University), 1962, pp. 885, 187 plates, 10 gns.

With the publication of this bibliography Dr. Guerra has achieved miracles of transmutation and compression; he has put into our hands a guide in which we can trace, almost day by day, the medical life of colonial America. Books, broadsides, almanacs, newspapers, periodicals, Congressional and provincial decrees—all are recorded in this one volume-work which also contains a luxuriant growth of indexes, tables and bibliographies.

Bibliographical appraisal of this book is best left to specialist journals. As a historical source, it is doubly effective as a chronicle of events and a stimulator of suggestive lines of research. We can trace, for instance, early signs of American nationalism in the rise of medical botany and the preference for home-grown remedies. In the *Boston Evening-Post* we can read of an Indian herb-cure for cancer; it is also revealing to follow the progress of one Edward Joyce who advertised himself in 1762 as able to cure 'venereal diseases in any stage' and, by 1768, was offering his 'Great American Balsam, made in Long-Island, superior by Trial to any imported from Europe'. Or in search of American eclecticism, there is the case of two negroes emancipated for their discovery of antidotes against the rattlesnake bite, scurvy, yaws and pox. There are amusing side-lights, too, none more so than the incident of the 'Granado-shell' tossed into Cotton Mather's room, bearing the legend: 'Cotton Mather I was once one of your Meeting; But the cursed lye you told of —— you know who; made me leave you, You dog, and Damn you, I will Enoculate you with this, with a Pox to You'.

Eighteenth-century America's greatest contribution to medicine was, as Dr. Guerra himself says, in epidemiology. On the other hand, a count of the number of references to surgery (31) and amputations (5) reveals, where many histories might not, the relative poverty of colonial American experience in this field. The emphasis on hygiene is seen very clearly, from Dr. Guerra's analysis of periodicals, to have owed a great deal to the War of Independence, and to the concurrent popularity of Benjamin Rush's gospel of cleanliness, diet and exercise. During this period hospitals were vitally necessary to both military and civilians, the interests of the one coinciding with those of the other.

Dr. Guerra conceived and carried through his work on a grand scale, as befits a grand theme; the high standard of printing and binding only add to the book's distinction.

E. GASKELL

*Scientific Books, Libraries and Collectors*, by JOHN L. THORNTON and R. I. J. TULLY, 2nd revised edition, London, The Library Association, 1962, pp. 406, illus, 68s. (51s. to members of the L.A.)

Historians of science and librarians alike will welcome the reappearance in print of this valuable work. Picking one's way through the vast primary and secondary literature of past science, to present a coherent and compact account, is no mean achievement. In many ways it is a more demanding task than to seek the illusory goal of encyclopaedic comprehensiveness. At every stage the authors had to evaluate