lysis will be predominantly interested in volume II, whereas those concerned with mineral processing and flotation will find their subject covered in volume III. Although the subject of biological surface chemistry is recorded in only a limited number of papers in volume IV, biologists will find these profitable reading.

The standards of printing, format, and binding are high. Errors are few, and though the editor attributes the success of the publication to his many contributors, one cannot help thinking that this is overmodesty on his part. The price for all four volumes is high, but justified, and for those readers concerned with only one or two areas of study, the volumes are available singly.

ERIC HUTCHINSON
Department of Chemistry,
Stanford University

Physique électronique des gaz et des solides. Michel Bayet. Masson, Paris, 1958. 246 pp. Illus. F. 4900.

This book is based on material taught in a course by the author at the Faculté des Sciences de Toulouse for candidates for the "electronics certificate"; the course material is augmented by a number of theoretical developments, which are in part original. The purpose of the book is to give a unified account of transport phenomena associated with the motion of electrons in gases and solids; the greater part of the book (174 pages) deals with gases, the remainder being devoted to metals and semiconductors.

In the first chapter, the author briefly reminds the reader of the elements of Boltzmann, Fermi-Dirac, and Bose-Einstein statistics; the second part of this chapter discusses the classical theory of collisions between two particles. Chapter 2 deals with the kinetic theory of gases; the Boltzmann transport equation, diffusion, viscosity, thermal conductivity, and so on are discussed along standard lines.

In chapter 3 the author gives a detailed mathematical discussion of the transport properties of a nondegenerate Lorentz gas—that is, of a mixture of two gases, A and B, in which the A-A interaction is negligible compared with the A-B and B-B interactions. The results obtained in this chapter are carried over to the next one, in which the electromagnetic properties of a plasma are investigated. In chapter 5 one finds a rather standard treatment of the fundamental processes in ionized gases, such as ionization, excitation, and recombination. The various types of gas discharges are considered in chapter 6, which constitutes the last chapter dealing with gases. The last two chapters deal with the electron theory of metals and semiconductors. The appendix contains mathematical details of derivations and gives properties of certain mathematical functions used in the text.

The general level of this book corresponds to senior undergraduate or beginning graduate physics courses in this country. It is clearly written and should serve a useful purpose for those who are interested in electron physics—particularly, of gases. The publishers should be congratulated on the good general appearance of this book.

ADRIANUS J. DEKKER
Department of Electrical Engineering,
University of Minnesota

The Origins of Modern Science, 1300–1800. H. Butterfield. Macmillan, New York, ed. 2, 1957. x + 242 pp. $3.

In the eight years since the first edition of Butterfield's worthy *Origins* appeared on the market, perhaps no single volume has been so widely used in introductory courses dealing with one or another aspect of the scientific revolution. This is surely proof positive of its basic correctness and balance as well as of its extreme readability, for which its author, master of Peterhouse in the University of Cambridge, has come to be justly praised. Perhaps no better indication can be found of the popularity of this relatively slight book as well as the esteem in which it is held than the fact that one repeatedly hears professional historians of science express two desires: (i) that comparable studies suitable for textbook purposes existed for other periods in the history of science, and (ii) that *they themselves* had written this particular book.

In view of such kudos, it is slight wonder that its author and publisher should wish to perfect it by correcting any noted errors or misprints, by adding relevant material to the existing chapters of the original structure, and by keeping it up to date through the addition and use of entries under "Suggestions for further reading." The result is a revised edition, some 55 pages longer than the first edition, as eminently sound as ever, and no doubt headed for even greater success.

While the general content and number of the original chapters remain unchanged, I note the following additions. Pages 34–36 add useful ideas concerning ancient, nonscientific elements in Renaissance thought—including the role of occultism and cabalistic speculation—which help to round out the chapter on "The conservatism of Copernicus." This brilliant chapter, supporting the view that Copernicus' work can more meaningfully be viewed as the end of the old astronomy and cosmology than as the beginning of the new, still, however, contains a possibly misleading concept. Of Copernicus we read, "To the old objection that if the earth rotated its parts would fly away and it would whirl itself into pieces, he gave an unsatisfactory answer. . . ." (page 32). Coupled with the allusion to Ptolemy on the following page, the reader could well get the erroneous impression that Ptolemy had faced "that whole question of centrifugal force." However, Ptolemy nowhere argues in such terms, or indeed says anything about what would happen if the earth were to rotate upon its axis. The truth of the matter is that Copernicus in *De revolutionibus* (book I, chapters 7–8) erroneously ascribed such an argument to Ptolemy and, unfortunately, most modern scholars writing about Copernicus have not bothered to check by reading Ptolemy.

Other material new to this book includes a section dealing with the work of Duhem and others on the theory of impetus (pages 14–16) and a section on the communications of scientists and early scientific societies in the 17th century (pages 71–76). Additional suggestions for further reading include such important work as T. S. Kuhn's paper on "Robert Boyle and structural chemistry in the seventeenth century" and E. Rosen's *Three Copernican Treatises.*

WILLIAM D. STAHLMAN
Department of Humanities,
Massachusetts Institute of Technology

Elements of Water Supply and Waste-Water Disposal. Gordon Maskew Fair and John Charles Geyer. Wiley, New York; Chapman & Hall, London, 1958. vii + 615 pp. Illus. + chart. $8.95.

Conventionally and traditionally the undergraduate student of civil engineering has been introduced first to the subject of municipal water supply and treatment, then later to a separate and largely unrelated course in sewerage and sewage disposal. Yet the basic disciplines and engineering sciences governing all aspects of water supply and waste-water disposal are similar, whether the water passes through municipal, industrial, or agricultural systems. Although chemical engineers have long recognized these mutualities by stressing "unit processes and unit operations" that are applicable to many industries, Fair and Geyer have pioneered in utilizing this approach for sanitary engineering. Sedimentation and flotation, for example, involve identical principles of fluid mechanics whether they are used for water treatment, sewage clarification, or the separation of solids and oils from industrial wastes. Fair and Geyer emphasize the similarities of the fundamental principles and then go