clinic on patient care; the financial aspects of medical practice; and the social process of introducing new medication into the office practice of medicine.

It is clear from this brief and incomplete descriptive summary that this book is a tasty *smorgasbord,* with something for everybody.

The book makes no attempt to show in what systematic relationship the concepts of medicine stand with respect to the concepts of the behavioral sciences. One would expect this attempt to be made before one could accord a distinctive scientific status to the varied areas of study discussed in these chapters. Nor does the book present a truly panoramic overview of what is offered as a distinctive scientific field. Rather, from the standpoint of medical sociology as science, we are shown a collection of intriguing snapshots taken from different vantage points in a relatively unexplored but fertile landscape.

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Radioactive Isotopes in Clinical Practice. Edith H. Quimby, Sergei Feitelbert, Solomon Silver. Lea and Febiger, Philadelphia, Pa., 1958. 451 pp. Illus. $10.

This book presents in its three parts one of the best introductions to the field of clinical isotope application that has yet appeared. The selection of the material and the arrangement of the problems, as well as the formulation and presentation of the facts, reflect the immense experience gathered by the authors in presenting this course material to about 225 students in eight classes since 1954. Consequently, the basic needs of the student and of the clinician who wants to include these important techniques in his work are met with great understanding.

Part 1 ("Basic physics"), written by E. Quimby, covers the basic facts of nuclear physics, nuclear radiation, interaction of radiation with matter, biological effects, and radiation hazards and their avoidance. It is stimulating reading because of the clear and precise formulation of the problems, spiced by short but dynamic sketches of the historical background. The sketch on the discovery of the neutron is unique—it illustrates the high spirits of physicists in these years and appeals to the creative imagination of the student. The chapter on waste disposal and removal of contamination is a useful conclusion of part 1.

Part 2 ("Instrumentation and laboratory methods"), written by S. Feitelbert, gives a comprehensive survey of modern equipment and methods for measuring amount, uptake, and distribution of radioactive isotopes in vitro and in vivo. It emphasizes the qualitative as well as the quantitative aspects of the different techniques and recommends—especially in connection with autoradiography—some personal instruction and practical supervised experience. A chapter on laboratory design gives welcome hints to the newcomer.

In part 3 ("Clinical applications"), a thoughtful contribution by S. Silver, the reader finds valuable information on the use of the more common isotopes. Five of the 14 chapters are devoted to problems involving I^{131}; the rest, to applications of P^{32}, Fe^{59}, Cr^{51}, Au^{198}, Sr^{90} and Co^{60} in the diagnosis and treatment of various diseases. The preface to part 3 and the well-selected references given with each chapter are welcome features for the future research investigator and give him guidance for supplementary reading in works highly recommended by the authors of this book.

At a time when the importance of tracer and isotope techniques in biology and medicine is underscored by the bestowal of the Atoms for Peace prize on the Nobel prize winner G. de Hevesy, the student and the clinician will welcome this book, and the instructor will use it advantageously for classroom and course work. In addition, specialists in other fields, such as radiology, gynecology, surgery, physiology, and radiation biology, will get information on ways of applying isotope techniques in solving their respective problems.

Some errors, such as that on page 30 (a discrepancy between the figure legend and the text) are more a challenge to the student than a handicap, forcing him to check his knowledge and to approach his work critically.

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A Source Book in Greek Science. Morris R. Cohen and I. E. Drabkin. Harvard University Press, Cambridge, Mass., 2nd printing, 1958. xxi + 581 pp. Illus. $7.50.

This book, first published in 1948, has become a standard text for those wishing to study the history of Greek science. It provides in English translation all the most frequently cited original passages from classical authors. For more than ten years it has been the greatest boon to teachers and students in elementary courses, and with the rapid spread of these courses it is apparent that it will continue to be invaluable for several decades to come. In 1956 the whole series of these "Source Books in the History of the Sciences" was taken over by Harvard University Press from McGraw-Hill Book Company, and it is a pleasure to compliment the new publisher on the usefulness of this printing.

The second printing differs little from the first. A few typographical errors have been corrected, and a short bibliography of recent publications has been added. In the "General Editor's Preface" (page v) one is relieved to find that all mention of a millenial plan which, a safe dozen years ago, provided for the publication, about 1960, of a volume which would contain the most important contributions of the major sciences from 1900 to 1950 has been deleted. More seriously, one could have wished for a few more editorial changes. For example, the highly misleading scheme on page 130, showing a central ellipse produced by epicycle and deferent, should have been omitted. Not only was it never used in classical astronomy and never could have been used, but it confuses the student through its apparent similarity to the noncentral Kepler ellipse orbits.

I would like to take this opportunity to point out that the similarly excellent *Source Books* in astronomy and in chemistry are also now available; it is to be hoped that the new publisher will speed the reprinting of other titles in this list and seek to extend the series further.

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The Chemical Behavior of Zirconium. Warren B. Blumenthal. Van Nostrand, Princeton, N.J., 1958. vi + 398 pp. Illus. $11.

This will be welcomed as the only recent book devoted to the chemistry of zirconium. Enough information on zirconium has become available to make it feasible to develop a systematic chemistry of the element, and this is the announced aim of the present book. On the whole, the author has succeeded very well. He discusses first the element zirconium under such headings as history, occurrence, extraction, and theory of zirconium chemistry. He then discusses interstitial solutions and intermetallic compounds. The remaining seven chapters discuss other zirconium compounds in the following order: halogenides, oxides and zirconates, zircon and complex silicates, sulfatozirconic acids and related compounds, compounds with other inorganic acids, carboxylates, and other organic compounds.

In discussing the theory of zirconium

chemistry Blumenthal makes the following basic points. The valence of zirconium is four in nearly all its compounds. Zirconium tends to reach the highest coordination number that is sterically possible by the addition of ions or molecules from the environment. Zirconium never forms a simple monatomic ion but is always covalently bound. In aqueous solution this means that all zirconium compounds are complex, and an explanation is thus provided for the slow reactions frequently observed, as well as for the fact that the behavior of a zirconium-containing solution often depends on its previous history. However, it will come as a surprise to many chemists to read, "it is incorrect to associate the positive charge of zirconium-containing cations with the zirconium atom. It is rather to be associated with the oxygen atom" (page 37).

Chapter 2, on interstitial and intermetallic compounds, treats zirconium carbide on the basis of Hägg's interstitial solution theory, with no reference to Rundle's work [*Acta Cryst.* **1**, 180 (1948)], which has invalidated much of this theory while providing a foundation for further advance in this field. The facts about formation and properties are, of course, not in question here.

Hafnium is mentioned only incidentally and is treated as a heavy isotope of zirconium for the purposes of this book. There are 1786 references (not all different, however), and 1866 authors' names are indexed. A thorough job of literature searching is thus indicated for this work, which will surely be a standard in the field of zirconium chemistry for many years.

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Nouveau traité de chimie minérale. vol. 4, group II. Glucinium, magnésium, calcium, strontium, barium, radium. Paul Pascal, Ed. Masson, Paris, 1958. xxxiii + 973 pp. Illus. Cloth, F. 8500; paper, F. 7500.

A review of volumes 1 and 10 of this work appeared in *Science* of 1 March 1957 [**125**, 401 (1957)], and that of volume 3 in the 18 July 1958 issue [**128**, 138 (1958)].

According to volume 4, the originally contemplated 19 volumes of the treatise have been extended to 20 volumes. The original volume 11, which was to cover arsenic, antimony, bismuth, vanadium, niobium, tantalum, and protactinium, will cover only arsenic, antimony, and bismuth. The other four elements named will be discussed in volume 12.

In volume 4, 125 pages are devoted to beryllium (in French, glucinium), 148 to magnesium, 266 to calcium, 200 to strontium, 182 to barium, and 28 to radium. At the end of each section bibliography the cut-off date of the literature is given.

The new volume maintains the standard of excellence of the previously published volumes; this is an indication of the care that is being taken in the preparation of this modern treatise on inorganic chemistry.

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Project Satellite. Kenneth W. Gatland, Ed. British Book Center, New York, 1958. 169 pp. Illus. $5.

There are four chapters to this addition to the rapidly growing space literature. The first, entitled "From small beginnings," was written by Wernher von Braun and reviews rocket work in Germany from the late 1920's through the famous Peenemünde effort. Chapter 2, "The satellite project," by Kenneth W. Gatland, presents early thinking on the creation of artificial earth satellites, reviews a number of rocket developments, such as the Aerobee and the Viking, and discusses the American and Soviet satellite programs. The third chapter, by Harry E. Ross, is entitled "Orbital bases" and gives the engineering problems involved in creating and operating manned space stations. Ross reviews a number of designs for such space stations and discusses briefly their military and scientific value. In the fourth chapter, A. V. Cleaver discusses interplanetary flight, with some discussion of the advanced techniques that will have to be developed in order to achieve flight into space. Cleaver ventures some predictions about how long it will be before man will be able to take a trip to the moon, or out to the near planets, and suggests appreciably longer times than many others have given in their predictions.

All of the authors have had close association with, and long interest in, the fields about which they write, and they represent considerable technical experience and competence.

Von Braun's chapter is written in a fast-moving, lucid style and makes enjoyable and informative reading. Interest for the reader is greatly enhanced by von Braun's personal and effective role in the history he portrays. The remaining chapters are informative but rather pedestrian in style. The presentation is uninspired and unimaginative from a teaching point of view, but clear enough. For the general reader who has as yet done little reading on artificial satellites and space flight, the book can be recommended. The reader who has already read several books on the subject will probably find little that is new in this one.

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Man the Maker. A history of technology and engineering. R. J. Forbes. Abelard-Schuman, New York, rev. ed., 1958. 365 pp. $5.

"The average American of 1776," says R. J. Forbes (page 328), "used the help of one servant for two weeks in the year, while today he is the owner of sixty slaves." It is astonishing, in view of this statistic, how little interest the average American has shown in how this came about. It is scarcely less astonishing how few attempts have been made to tell him, at least in other than economic terms. This being the case, almost any book on the history of technology is welcome. This book, essentially a reissue of the 1950 edition, is doubly welcome, for it is the work of a leading authority.

One of the principal difficulties in writing such a book is the problem of organizing its varied subject matter. Forbes has managed this well and has produced what is probably the smoothest narrative account of this subject to date. Unlike some earlier historians he has not eased his task by the arbitrary elimination of certain sectors of technology. He has also succeeded notably in reducing the barrier of technical terminology. In short, even if this were not almost the only book in English on this subject, it would deserve recommendation.

The condensation inevitable in a book of this sort (the period 1830 to 1930 is covered in about 90 pages) can only be accomplished through drastic oversimplification. Forbes' treatment of the history of the windmill, steam engine, and telephone illustrate this. He is evidently steeped in these subjects, but condensation has squeezed most of the juice out of his account of them. Condensation may also have led to such misstatements as the reference to Bernard Palissy's *Discours* as an important book on mining and metallurgy (page 165); the inference that Smeaton's analysis of wind- and water-power machines was merely a report based on his observation of foreign practice (page 184); and the apparent confusion of dates in his descriptions of early sulfuric acid manufacture (page 220) and transatlantic steam navigation (pages 263–264). These and other questionable passages seem partly attributable to the exigencies of condensation and partly to Forbes' evident determination to be definite about essentially