Book Reviews

Isaac Newton's Papers and Letters on Natural Philosophy and Related Documents. I. Bernard Cohen, Ed., assisted by Robert E. Schofield. Harvard University Press, Cambridge, 1958. xiii + 501 pp. Illus. $12.50.

One of the great intellectual phenomena of the present age is the increasing interest in the writings of Isaac Newton. The cause of this increased interest may be ascribed to two fundamental factors, namely (i) the rapid development of physical sciences and (ii) the demand for the historical antecedent for our present state of scientific progress.

The editor, I. B. Cohen, has done a great service to this intellectual growth of Newtonianism in producing an excellent source book for the layman and, more particularly, for the student of physical sciences, as well as for the historical scholar in science, who at this moment is on the increase, especially in the United States. Because of the many ramifications of Newton's writings and thoughts, this book should have a wide appeal. The preface and introduction are of a general nature in describing the papers and paying tribute to the contributing scholars for their work. Particular notice is given to the Bundy Library and its director, Bern Dibner, who has made publication of this work possible.

The book opens with Newton's 15 papers on physical optics. These papers are reproduced as they were published in the *Transactions of the Royal Society of London* during the period from 1671 to 1676, with a good historical introduction by T. S. Kuhn of the University of California. The paper on *Chemical Philosophy,* with an introduction by Marie Boas, indicates that Newton was more modern in his thoughts than has been recognized. Dr. Boas calls attention to a famous paper of Newton's which really marks him as a chemist of the Robert Boyle type. This rare paper, "Some thoughts about the nature of acids" (*Lexicon Technicum* 2 vols., 1710) is in the Stanford-Newton collection and its reproduction here is indeed appropriate.

For those who wish to know of the transcendental mind of Newton and his philosophy of nature, Perry Miller of Harvard University gives an excellent introduction to the four famous letters from Newton to Richard Bentley and to the Boyle lectures, *Confutation of Atheism.* The final paper on "Fontenelle and Newton" is probably the first authentic biography of Newton. It has an interesting introduction by Charles C. Gillespie of Princeton University. *Halley and The Principia,* with an introduction by Robert E. Schofield of the University of Kansas, was the first book review of Newton's great work.

The appendix, namely the comments on Birch's *History of the Royal Society,* brings to the public's attention further comments upon the papers printed in this volume and should not be overlooked by any student of Newton. The extensive footnotes in all six chapters are important to the continuation of sources for Newton's biography and papers.

The book is well printed, and the photographic reproductions are clear and sharp. Much more could be said of this valuable contribution to Newtonian literature, but space forbids. The beautiful portrait of Newton is reproduced from an original painting by E. Seeman, painted in 1726, and is probably the most authentic picture of Newton in his prime.

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Processed Plant Protein Foodstuffs. Aaron M. Altschul, Ed. Academic Press, New York, 1958. xv + 955 pp. Illus. $26.

This book is much more comprehensive than its title indicates and addresses itself to a far greater circle of scientifically and professionally interested people than those concerned with the manufacture and use of processed plant proteins. In a time of expanding world population and increasing demand for more and better foods and feedstuffs, attention of agronomists, nutritionists, plant breeders, husbandmen, demographers, and technologists is focused on the two-sided problem of how to provide mankind economically with a maximum of animal products by using scientifically grown forage and feedstuffs as well as farm and factory waste products to feed ruminating and nonruminating animals and how to provide an abundance of nutritionally adequate vegetable proteins for the large section of mankind which, for economic or religious reasons, consumes no animal products.

Any other author would have shrunk from the immensely difficult task of answering these crucial questions in one volume, but not Altschul, the scholarly and yet practical-minded principal chemist of the Department of Agriculture's Seed Protein Pioneering Research Laboratory in New Orleans. He realized the great need for such a book, especially in overpopulated and underdeveloped areas of the world where more and more emphasis is being placed on a qualitatively and quantitatively adequate vegetable diet, but he also realized that such a tremendous task requires the combined efforts of competent specialists in the field of animal and human nutrition, botany, biochemistry, microbiology, and food technology. He was successful in bringing together a group of eminent scientists and technologists, and while leaving each contributor utmost freedom to deal with those aspects of the subject matter with which he was most familiar, he himself provided such unity and consistency of treatment that one gets the impression that he is reading a book by a single author.

After a short survey of protein nutrition and plant proteins in general the book deals, in the first section, with the properties of processed plant proteins which affect use of these proteins as animal or human food. Since the great bulk of plant proteins are the meals or cakes of oilseeds, these are given the most exhaustive treatment. Here the chapters "Use of processed plant proteins as human food," by R. F. Dean of Kampala, Uganda, and "Vegetable protein isolates," by M. L. Anson of Cambridge, Mass., make fascinating reading indeed as they afford glimpses into the future in the field of nutrition. "Given Nature's supply of a cheap plant protein of high nutritional value" states Anson, "the technologist and the factory can do many of the manufacturing jobs that have been done, at high costs, only by animals."

The second part of the book deals with the processing of individual plant proteins and is remarkable in its comprehensiveness; it covers not only the numerous oilseeds but also alfalfa and other leaf meals, peas and beans, fermentation and milling by-products, and microbial and algal proteins. In a most interesting chapter—"Cottonseed meal"—Altschul and his co-workers show that the protein of cottonseed is of relatively high nutrient

value and could be made available for nutrition of nonruminants and human beings by removal or inactivation of toxic gossypol.

In my opinion the book is a "must" for every scientific and technical library and will serve for a good many years as a competent guide in an extremely important and rapidly progressing field in which scientists and technologists, agriculturists and industrialists, and economists and nutritionists work hand in hand for the welfare of mankind.

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Guide to Russian Medical Literature. Scott Adams and Frank B. Rogers, Eds. National Library of Medicine, Washington, D.C., 1958 (order from Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.). iv + 90 pp. $0.40.

The ascent of Sputnik in the fall of 1957 gave rise to a sudden realization that we knew little more about Soviet science than we did about what goes on in the minds of the leaders of the Soviet Union. However, in scientific circles at least, this awareness predated Sputnik by a number of years. As far back as 1949 or 1950, the British Department of Scientific and Industrial Research had begun issuing its *Translated Contents List of Russian Periodicals* to meet a need created by a 1947 policy change under which scientific publications emanating from the Soviet Union appeared in the Russian language only; the American Mathematical Society had undertaken, around the same time, a series of translations of basic Russian papers in mathematics, and various other groups in this country had begun publishing cover-to-cover translations of Soviet journals in physics and chemistry.

Medicine was a rather late entry in the Russian translation field. Major activity in translating in the field of medicine did not begin until 1956, when the U.S. Senate Appropriations Committee made available funds to the National Institutes of Health for the organization of a Soviet information program. *Guide to Russian Medical Literature* is an outgrowth of this program.

There is an obvious need for guides to Soviet scientific literature among scholars and librarians, and *Guide to Russian Medical Literature* serves very nicely in its field, covering both Western-language and Russian-language sources of Soviet medical information, sources of translation, and methods of procurement of Russian medical publications and listing basic Soviet books and journals in the field. The book is keyed to the practical question of "how to get it" and does a good job of providing the answer.

There is a hint of special pleading in some of the passages having to do with present translation programs in the United States, and one could argue with some of the points raised to justify these programs. However, neither the justifications nor any arguments against them seem necessary. Any effort to expand the availability of a relatively inaccessible body of knowledge is bound to be a step in the right direction.

There are two rather unfortunate chapters at the end of the book which are translations of Russian articles on the development of Russian medical libraries and Russian medical publishing. Both chapters exhibit the Soviet preoccupation with numbers and the Soviet willingness to stretch the truth and twist it a little in order to make a point. These two chapters mix a good deal of misguidance with the guidance they offer. The book would not have suffered and probably would have benefited from their omission.

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Quantum Mechanics of One- and Two-Electron Atoms. Hans A. Bethe and Edwin E. Salpeter. Springer, Berlin; Academic Press, New York, 1957. viii + 369 pp. Illus. $10.

It has been said that when a physics book first appears one cannot trust its equations and that by the time it has been reprinted the text is out-of-date. The present volume—an exact reproduction, with the omission of Dumond and Cohen's article, of volume 35 of the *Encyclopedia of Physics,* edited by S. Flügge—steers a happy course between these two accusations.

First of all, while the *Encyclopedia* article itself is partially based upon Bethe's article of the same title in the Geiger and Scheel *Handbuch* of 1933, the text of the joint Bethe-Salpeter work has very definitely been brought up-to-date. Second, the present book (which sells at 2.7 cents per page) includes nine pages of addenda and errata (mainly updating the *Encyclopedia* article to mid-1957), a preface, and two indexes, in addition to the article from the *Encyclopedia* (which sells at 5.3 cents per page).

The aim of this book is twofold. First, as a reference work, it summarizes the calculations that have been performed on hydrogen-like and helium-like atoms and compares them with results obtained by experiment. Second, it is also a practical text for the study of applied quantum mechanics, especially in view of the vast array of generally useful mathematical tricks and approximation techniques which are included. Only the elements of quantum theory are presupposed.

The authors begin with a nonrelativistic treatment of the free hydrogen atom, including a detailed solution (in 23 pages) of the relevant Schrödinger equation in spherical coordinates. There follow sections on the Dirac theory and on radiative and other relativistic corrections for the free hydrogen atom. In the next part, the free helium atom is handled both nonrelativistically and relativistically. In part 3 the influence of external fields is described in sections on the Zeeman effect and the Stark effect. The final part considers interactions with radiation—the discrete spectrum, the photoeffect, and bremsstrahlung.

The book is definitely pedestrian when it comes to field theory. No formal derivations of quantum electrodynamics are given, but specific application to atomic systems of general field-theoretic results is described in detail.

Despite its pedigree, this volume contains some typographical errors. I noted about five such errors, all of them obvious. For example, note 3 on page 354 should read 0.124 and 0.160 rather than 1.24 and 1.60.

Nevertheless, this book is and will remain the standard treatment of the one- and two-electron atoms. It is an orderly, integrated summary of all that has been done, rendered in the simplest way compatible with the calculations.

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The Sloane Herbarium. An annotated list of the *Horti Sicci* composing it; with biographical accounts of the principal contributors. Based on records compiled by the late James Britten, with an introduction by Spencer Savage. Revised and edited by J. E. Dandy. British Museum (Natural History), London, 1958. 246 pp. Illus. + plates. £7 7s.

The remarkable herbarium assembled by Hans Sloane during the latter part of the 17th and first part of the 18th centuries (now preserved in the department of botany of the British Museum of Natural History) contains numerous valuable type specimens and is a virtual "mine" of botanical and horticultural historical information. That the abundance of source material present in this collection has not been appreciated or adequately drawn upon by those concerned with the natural history of the period has been amply demonstrated by the authors of the volume under review.