

Books

Careers in Physics. By Alpheus W. Smith. 271 pp. Long's College Book Co., Columbus, Ohio, 1951. \$4.00.

There are now more than 15,000 physicists in the United States, and if the present trend continues there will be more than 30,000 within eight years. Many of the new physicists-to-be will be interested in this book by Professor Smith, for here at last we have an excellent over-all view of what physicists are and do. A long lifetime spent as a professor of physics and as head of a large and flourishing physics department has fitted Professor Smith admirably to discuss physics as a profession. He goes very thoroughly into his subject, discussing at length the supply of physicists and the demand for their services, and the various types of careers open to them in education, in industrial research, in federal civilian research agencies, in military research agencies, and in research institutes and foundations. Again he discusses possible careers in physics from the standpoint of its branches, such as those dealing with illumination and vision, with communications, with transportation and mobility, with photography, with instrumentation, and with "materials and products for better living". Still again he attacks the problem from the standpoints of the contacts between physics and its neighboring sciences, devoting chapters to atmospheric physics, to food and health physics, to chemical physics, to astrophysics, to biophysics, and to geophysics. Two chapters are devoted to consideration of the development of physics in its classical phase and in its modern phase, and these should be very helpful in orienting the young student.

The book is well illustrated and has an excellent index. It concludes with two useful appendices, one listing industrial research laboratories which employ physicists, and the second giving references to the literature which bear on the subject matter of the book.

The entire work gives evidence of careful and thoughtful preparation. High school teachers will wish to use this book as a reference for students who want to know what branch of science they should choose, and the college undergraduate will find it helpful in sharpening his understanding of what physics is as a profession. Prospective employers of physicists, whose number is now legion, will welcome *Careers in Physics* as a timely aid in helping to bring the supply of physicists closer to the demand.

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Atomic Physics. By Wolfgang Finkelburg. 498 pp. McGraw-Hill Book Company, New York, 1950. \$6.50.

The tremendous growth of atomic physics in this century, together with its multitude of separate aspects, has led very naturally to an ever-increasing degree of specialization within its limits. This is evident in the advanced texts on the subject, where, rather than emphasizing the essential unity of the various elements of experimental and theoretical knowledge of the atom, these are for the most part isolated and treated individually with only the most cursory reference to each other. A procedure of this sort has many attractive features for an author or an instructor, but the needs of the beginning graduate student in physics probably would better be met today with an integration of the various bits and pieces of information thrown at him in his courses into a coherent whole. A book which "deals with our knowledge of the structure of matter, its constituent elementary particles, its properties and behavior" would therefore be a very desirable addition to the literature of physics if it accomplished such an integration, and *Atomic Physics*, from whose Introduction the above quotation was taken, attempts to do just this.

An idea of the scope of the book may be gained from a listing of its contents, which include, after a brief but valuable introduction, chapters on "Atoms, Ions, Electrons, Atomic Nuclei, Photons", "Atomic Spectra and Atomic Structure", "Atomic Theory According to Quantum Mechanics", "Nuclear Physics", "Molecular Physics", and "Atomic Physics of the Liquid and Solid State". Lest there be any fear that these all-inclusive topics are discussed in too abbreviated a fashion it might be mentioned that there are chapters of 98 and 124 pages and none contains less than 57 pages. The order selected for the various chapters follows from both historical and didactic considerations, with the part on quantum mechanics appearing after a discussion of atomic structure and spectra based upon the Bohr theory. This arrangement was chosen to convince the reader of the necessity of employing more sophisticated techniques for describing the atom completely and also to demonstrate the very considerable insight and information to be found in the older approach. Similarly, while nuclear physics should precede atomic physics in a strictly logical treatment, its dependence upon quantum-theoretical concepts necessitates the present inverted order.

The author presupposes comparatively little advanced knowledge on the student's part, and the greater portion of the text stresses a conceptual and logical approach to the subject matter rather than a more rigorous mathematical one. Accordingly *Atomic Physics* will probably find its widest application on the senior-first-year graduate student level and should ultimately replace a number of the older books now in use. The illustrations and tables have been selected to complement the text, succeeding in this most of the time, and the latter are in some cases quite extensive.