

This book mirrors the immense experience that Hughes, a leading scientist at Brookhaven National Laboratory, has had in presenting this subject in lectures to a wide variety of lay groups all over the world, both on this side of the iron curtain and behind it. Therefore his discussions on "The international atom" and on "Safety, security, and the AEC" are stimulating to the reader who is also interested in the impact of atomic energy on the social structure of our time.

The radiation biologist and the health physicist will be gratified to find in a book of this kind, written for the public and for lay groups, a competent discussion of the hazards of atomic radiation, of the genetic effects, and of the radiation safety limits.

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Progress in Nuclear Physics. vol. 6. O. R. Frisch, Ed. Pergamon Press, London, 1957. vii + 285 pp. Illus. \$14.

Annual Review of Nuclear Science. vol. 7. J. G. Beckerley, Ed. Annual Reviews, Palo Alto, Calif., 1957. viii + 478 pp. Illus. \$7.

In these days, when the *Physical Review* alone prints more than 6000 pages per year, the need for periodical reviews is clearly evident. No one can, without help, keep up with the developments even in his immediate area. The volumes under review are the compilations for 1957 of two series of annual reviews for the nuclear scientist. Both series have been able over the last few years to attract competent reviewers—the obvious prime requisite for success—and both have maintained high standards. Otherwise the two series, though covering much of the same ground, have quite different purposes.

The British compilation seeks to provide not-too-detailed and easily read general representations of the selected topics, with just enough references to the basic papers and current literature to guide the reader in further studies. The most valuable papers are probably those on the atomic masses, by J. Mattauch and F. Everling (*A* less than 40) and H. E. Duckworth (*A* more than 40), which provide a thorough and up-to-date discussion of the accuracies of current mass determination, a comparison of data obtained from nuclear reactions and from mass spectroscopy, and tables of the best values. The most enjoyable articles are those by G. N. Walton (on fission physics, with discussion of the fission process, the slowing down of the fragments, the effects on surrounding

materials, and the chemical properties of the products) and by R. J. Eden, who gives a short guide to the variety of nuclear models that have been introduced for various purposes. There are two articles on isotope separation, by T. F. Johns (on multistage methods) and by M. L. Smith (on electromagnetic separation). K. F. Smith gives a useful discussion on nuclear moments and spins, with a survey of methods of measurement and an up-to-date table. M. B. Stearns gives a rather dry compilation of work done in the field of mesonic atoms. The book is brought to a fitting close by a short but lively discussion of nonconservation of parity, by O. R. Frisch and T. H. R. Skyrme. Altogether this volume is pleasant to read, useful, and of ephemeral value. The price is high.

The American counterpart, *Annual Review of Nuclear Science*, represents a much more ambitious undertaking: It seeks to provide authoritative and detailed technical coverage of its topics, with complete literature references up to specified dates. The present volume includes three quite outstanding articles. F. Villars gives a searching discussion of the collective model. He brings out very clearly that the simplicity of collective dynamics, as demonstrated by the possibility of describing with high accuracy, and in terms of very few parameters, many data, such as energy levels and moments, is not yet accounted for by the presently available mathematical methods. He emphasizes the inadequacy of the hydrodynamic approximation, but he holds out the hope that the method of "redundant variables" may ultimately achieve the goal of giving a unified description of single-particle and of collective motion.

R. Hofstadter, in his report on "Nuclear and nucleon scattering of high energy electrons," succeeds admirably in his goals—to get across the fundamental ideas of scattering theory and to give an up-to-date report on experimental and theoretical results. M. Gell-Mann and A. H. Rosenfeld give a lucid and authoritative representation of the field of hyperons and heavy mesons and their decay properties. The "strangeness" systematics is fully discussed, as are the consequences of parity nonconservation in weak interactions. Three other physics topics ("Mu-meson physics," by J. Rainwater; "Collisions of ≤ 1 Bev particles with nuclei," by S. J. Lindenbaum; "Spins and static moments of radioactive isotopes," by W. A. Nierenberg) are all very competently handled, with emphasis on basic understanding of the physics situation.

The volume contains, further, six articles on chemistry and radiobiology: "Radiochemical separations by ion exchange" (K. A. Kraus and F. Nelson);

"Equipment for high level radiochemical processes" (N. B. Garden and E. Nielsen); "Cellular radiobiology" (E. L. Powers); "Biochemical effects of ionizing radiation" (B. E. Holmes); "Vertebrate radiobiology (lethal actions and associated effects)" (V. P. Bond and J. S. Robertson); "Vertebrate radiobiology (the pathology of radiation exposure)" (C. C. Lushbaugh). I, as a physicist, have no competence for judgment, though, because of my interest in nuclear energy, I certainly need information in these fields. In spite of my eagerness to learn, I found that all these articles made very dull reading. On the other hand, a radiobiologist, even with very good understanding of the physics required for his work, will find Villar's highly-rated article completely incomprehensible. Thus, while the physics part of this volume is truly excellent, it remains questionable whether it is wise to collect in one volume review articles, dedicated to the experts, covering such a large diversity of topics.

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Handbook of Magnesium-Organic Compounds. vol. I, *Reactions of Magnesium-Organic Compounds Nos. 1-7284*; vol. II, *Reactions of Magnesium-Organic Compounds Nos. 7285-13395*; vol. III, *Indexes of End-Products of Reactions, Magnesium-Organic Compounds, Authors and Co-Authors*. S. T. Yoffe and A. N. Nesmeyanov. Pergamon, London and New York, 1957. 2048 pp. \$72.

This monumental work is divided into three volumes, largely for more convenient handling. The first and the second volumes contain tables, of 13,395 entries, which list the empirical formulas (in the order used in *Chemical Abstracts* indexes) and abbreviated structural formulas of reactants; the Grignard reagents used in the respective reactions; the products formed from the particular reactant and Grignard reagent; and literature references to the bibliography contained in the third volume. Volume III also contains an index of end-products arranged in order of empirical formulas, as well as an index of RMgX compounds, excluding the simplest.

There is a foreword by W. Wardlaw. An English translation of the preface and of the introduction, by A. L. Mackay, is admirably suited for helping one make the fullest, most effective use of the volumes.

The preface of the book emphasizes, to an unusual extent, the contributions of Russian chemists to the development