Physics

Strange Particles. Robert Kemp Adair and Earle Cabell Fowler. Interscience (Wiley), New York, 1963. viii + 151 pp. Illus. $4.75.

This brief tract has five chapters, the first a short history and an informal review of symmetry principles and the conservation laws associated with them. In the second chapter, the special properties of the strange elementary particles ("strange" is not just an ugly word but has quantitative meaning) are given. Unlike electric charge, some of the more recently discovered attributes of elementary particles are not inherited by their decay products, so that presenting the properties of strange particles requires careful discussion.

The following two chapters deal with the strong and the weak interactions. The forces that give rise to these interactions are respectively first and third in order of decreasing strength in the hierarchy of forces as they are presently understood. (No new light has been shed on electromagnetic and gravitational forces—second and fourth, respectively—by the discovery of the strange particles.) The final chapter gives a review of the quantum mechanical formalism used in treating particle interactions.

Adair and Fowler have achieved a miracle of compression; the whole book is of the order of only 50,000 words. Often this compression is so great that for a paragraph or two of text the reader will have to spend at least a day reading and digesting the many references and their antecedents. For example, in their treatment of the neutral K-mesons, the concentrated K°-ration first given contains only five sentences for the whole K°-$\overline{K}^\circ$ versus the K_1°-K_2° story! The reader welcomed in the introduction if he has "some familiarity with the physics of pions and nucleons" will have to give gallons of sweat to reconstitute this pure protein. Fortunately, but not foreseeably, he will find additional discussion of K°'s as he reads further.

Nevertheless the coverage in this book is broad and the depth is profound. Most of the questions asked by intelligent graduate students are answered here categorically and with exceptional insight. The authors wisely have not tried to include in detail the most recent attempts at theories of strong and weak interactions of strange particles, since the time lag in publication would make such an attempt a hopeless task in such a rapidly changing field as strong interactions, and a treatment of the weak interactions would be too long a story.

Strange Particles is a notable addition to the several superb little books on elementary particles that have been published in the past decade, among them the book by Marshak and Sudarshan, which thoroughly covers the formal application of the quantum theory of linear fields to elementary particles, Fermi's old and Feynman's new lectures, Jackson's survey, and many more specialized treatises. Perhaps the time has come to present such tracts in even smaller format, so that along with a little magnifying glass to read them, an up-to-date particle-physics wallet card, several Nonprofit Organization Transportation Tax Exemption Certificates, and a passport, the books can be carried in the pockets of the busy elementary particle physicist.

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Inorganic Chemistry Textbook

Modern Approach to Inorganic Chemistry. A textbook for higher national certificate and general degree students. C. F. Bell and K. A. K. Lott. Butterworth, Washington, D.C., 1963. x + 293 pp. Illus. $8.95.

This textbook, which is intended primarily for higher national certificate and general degree students in British schools, a group roughly equivalent to our bachelor's degree candidates, attempts to provide, within a compass of less than 300 pages, a survey of fundamental inorganic chemistry at the undergraduate level. The approach is reminiscent of Gould's in his *Inorganic Reactions and Structure* (Holt, Rinehart, and Winston, 1955), but this book is even more condensed and telegraphic. A criticism of Gould's book—that it was more an outline of study than a text—is even truer of this work; moreover, unlike Gould, there are no exercises. The references, mostly to books and review articles, are few (less than 45); the majority of these are English, and the most recent is dated 1961.

The theoretical portions, which constitute almost three-fourths of the book, assume only a limited mathematical background and succinctly present atomic structure, the Periodic Table, and chemical bonding. The authors emphasize structural and stereochemical aspects, coordination compounds, oxidation-reduction reactions, and acid-base theory. Frequent reference is made to thermodynamic data. Uses of physical measurement in inorganic chemistry are summarized in an appendix.

The comparative descriptive chemistry of all the elements is dealt with in two unusually brief chapters (only 80 pages), and necessarily the emphasis is on trends, with some groups of elements allotted less than a page. A welcome summary of transition metals cuts across conventional Periodic Table groups. Unfortunately, despite what was probably the most exciting discovery in inorganic chemistry in 1962, we find the statement that "there are no compounds of [the rare gases]" (p. 199). A passing reference to XeF_4 does little to correct this misconception. With this exception, most of the topics considered modern are included.

Instructors to whom the Gould approach appeals would do well to examine this volume. For actual class use, it undoubtedly would have to be supplemented; but in all fairness it must be noted that its coverage of certain topics is unusually good, and in this respect it may itself be used to supplement other texts. For example, a chapter on the distribution and extraction of the chemical elements summarizes elementary geochemistry, which is usually neglected in textbooks. Considering its length and other limitations, the price of the book seems excessive.

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Biogeography

Marine Distributions. M. J. Dunbar, Ed. University of Toronto Press, Toronto, Canada, 1963. viii + 110 pp. Illus. $5.

Biogeography has been unfashionable for far too long. The progress of ecology is hindered by our ignorance of animals and plants in the places where they live. This book is a modest attempt to demonstrate the need for a new quantitative biogeography incorporating the results of physical and chemi-