

excluded by the conceptual framework presupposed. All others will be attracted to the opening paper, "The basic concepts of algebraic logic" (reprinted from the *American Mathematical Monthly*), in which the author's facility for mathematical exposition is well illustrated. Only those who have worked with Boolean algebras are likely to penetrate beyond this essay, and none but serious logicians can be expected to work through the entire volume. They will be rewarded by a thorough algebraic account of classical predicate logic and by a consideration of the difficulties inherent in algebraizing that part of logic, such as Gödel's incompleteness theory, which rests on the notion of recursive functions. Largely untouched are higher-order logic, intuitionistic logic, and various extensions of classical logic, such as extensions to systems with infinitely long formulas, which arise naturally in the algebraic context.

Clearly workers in the area covered will be greatly convenienceed by this collection, which is reprinted from eight journals published in four countries. Of course one may wonder why the author chose to scatter such closely connected papers originally. Beyond the case at hand, one is also led to speculate about the desirability of replacing general mathematical journals by more specialized ones.

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Theory and Interpretation

Advanced Inorganic Chemistry. F. Albert Cotton and G. Wilkinson. Interscience (Wiley), New York, 1962. xv + 959 pp. Illus. \$14.50.

This text is an attempt to incorporate into descriptive inorganic chemistry the modern physical and theoretical foundations upon which chemical and physical behavior are based. Along with this ambitious design, the authors include brief treatments of most of the material currently found in all other inorganic texts on the market, all the way down to such items as the commercial discovery of familiar elements from nature. Only those who have studied chemistry can comprehend the book but, in many places,

the authors seem to forget that the book's readers will have some chemical education. Perhaps the most striking illustration of this is the first sentence of part 1, chapter 1, section 1-1: "Every atom consists of a nucleus surrounded by electrons." The reader is then given definitions of atomic mass units, nucleons, mass number, atomic number, isotopes and the like, and before a dozen pages have been turned, he sees the wave equation for the hydrogen atom and a table of its solutions.

After the usual treatment of atomic structure and ionic crystals, covalent bonding is described, as well as the notions of ionic character, bond radii, electronegativities, and so forth, and there is a description of the empirical relations that are often used to systematize structural properties.

Part 2 deals with nontransitional elements and thoroughly illustrates the ideological and theoretical concepts that were treated in part 1. This is a strong section in which a lot of good descriptive chemistry is explained, in most cases as adequately as current models will permit. The choice of topics is decidedly modern, and most, if not all, of the results of interest in inorganic chemical spheres today are mentioned.

The third part of the book, comprising 50 percent of its pages, is devoted to transition elements. A very brief review of certain topics in classical physical chemistry is followed by a descriptive introduction to crystal and ligand field theories. This, and the subsequent application to the understanding of the chemical and physical properties of this important class of elements and their compounds, is the best feature of the book. The extensive discussion from a chemist's point of view is, in its scope, original with these authors, and it should attract and influence young readers as well as chemists who have not followed the current literature. This section also includes a compact, up-to-date exposé of the chemistry of relatively rare and unfamiliar elements, which is not found in previous treatises of this size and purpose.

There are no references to the literature, but there is a bibliography at the end of each chapter.

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Meteoritics

Meteorites. Brian Mason. Wiley, New York, 1962. xii + 274 pp. Illus. \$7.95.

A sufficient body of knowledge has been accumulated in the field of meteoritics so that it is practical and useful to offer a university course in the subject. This book admirably fulfills the requirements of a textbook for such a course; in addition, it should be a valuable compendium of data, ideas, and theories from the various disciplines that make up the integrated field, and, as such, it should be most useful to research workers.

The science of meteoritics is, as Mason states, a "borderline field par excellence." Other fields which are concerned with at least some particular aspect of the science are (in alphabetical order) astronomy and astrophysics, ballistics, geology, inorganic and organic chemistry (and, perhaps, biochemistry), metallography, meteorology, mineralogy, and nuclear and cosmic ray physics. Workers in these various fields should have a readable, decently indexed reference volume about meteorites per se. Until recently, none was available. Krinov's *Principles of Meteoritics* was the first reasonable attempt to fill this need. Mason's volume contains fewer details but is more readable and probably would be the better choice for a textbook. Insofar as the needs of researchers are concerned, Krinov's book is notably poor in its survey of current work by American and Western European scientists, but Mason is fairly thorough in this respect. Thus, the books complement each other rather well.

Meteorological aspects of meteorite fall are discussed in only a preliminary way. The complicated gallimaufry of meteorite classification systems is then set in order quite clearly, and this is followed by an alphabetically arranged description of extraterrestrial minerals. The various types of meteorites and the elements of their structural composition are described concisely but in sufficient detail. The chapter on meteorite ages, on the other hand, is rather sparse; the reader is referred instead to the recent article by Anders in the *Reviews of Modern Physics*, which gives a complete and detailed review of the subject. Theories of the origin of meteorites are briefly described, and a