The book is reproduced directly from typewritten copy and, as a result, both the clarity and ease of reading suffer considerably. Subscripts and superscripts are in the same size type as the body of the text, resulting in a cluttered, crowded appearance. Furthermore, the references are given as superscripts in the identical manner as are the isotopic masses. The quality of paper and binding appear adequate.

As is usual in a collection of this kind, there is considerable variation in style among the different authors. The differences are unnecessarily intensified by use of differing formats and conventions by each author. Some use letters, some numbers, some both, and some no numbers at all to identify a particular synthesis. Different systems of denoting the isotopic labeling also are used. The book certainly would have been improved by more vigorous editorial direction.

The initial chapter entitled General Procedures is so brief and simplified that it is almost useless and could well have been replaced by a list of well chosen references. The chapter on deuterium labeling is very specific with complete directions for a great number of syntheses. However, a number of the descriptions are rather long and over-complicated (*i.e.*, p. 20, the synthesis of LiD, where $1^1/_2$ pages describe the preparation of D_2 from D_2O and $^1/_4$ page the actual synthesis of LiD), and frequently no evaluation of competing methods is made. The preparation of compounds containing tritium is more succinctly yet adequately described in Chapter 3 but suffers from failure to recommend the more desirable methods. Chapter 4 on the use of N^{15} is extremely verbose, far beyond the needs of any reasonably well trained chemist. This chapter also contains a large number of typographical errors. The introduction of O^{18} into compounds is lucidly described in Chapter 5 with a recommended method described for each synthesis and literature references to other methods. The longest chapter is the one entitled Radiophosphorus. It would have been much better if only one-half as long. On pages 161–165, for example, six methods for preparing PCl_3 are given in detail and then only two are recommended for use. Each synthesis is assigned a number and then a different number in brackets is assigned to the particular equation pertinent to the synthesis. Then reference to that synthesis in the text is made by a bracketed number following a formula, the bracketed number referring to the equation number and not to the bold face synthesis number. This needlessly complicated system took the reviewer some time to unravel.

The final three chapters on sulfur, chlorine, and iodine present the syntheses in an orderly and efficient way without going into excessive detail and seem to be at least as useful as the very long chapters.

The index is by subject only and appears to be adequate in its coverage.

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Advanced Inorganic Chemistry. By F. A. COTTON and G. WILKINSON. Interscience Publishers, John Wiley and Sons, Inc., 440 Park Avenue South, New York 16, N. Y., 1962. xv + 959 pp. 23.5 × 16 cm. Price, $14.50.

This is an excellent and modern text, suitable for a senior or beginning graduate course in inorganic chemistry. The organization is, briefly, as follows. An 85-page introduction reviews general electronic theory of atoms and chemical bonding. The approach, while mathematically restrained, does make fluent use of simple wave mechanical formulations in a way calculated to convince a student that the subject is perhaps not so difficult after all. Then follows some 400 pages of fairly standard coverage of the chemistry of non-transition elements. The emphasis is more on structural and bonding considerations than on either preparative chemistry or chemical kinetics, but in general a fair balance is maintained. From time to time simple molecular orbital diagrams are given along with the older line-bond representations.

The final section of the book falls into two parts. The first comprises a survey of transition metal chemistry, mainly that of Werner type complexes, and mainly from a constitutional point of view, followed by a somewhat sketchy, although authoritative, presentation of crystal and ligand field theory. The remaining, and longer part consists of about 300 pages of detailed description of first row transition elements and of the lathanide and actinide series. There is a short appendix and a shorter index.

It is no disparagement to say that the book by no means exhausts inorganic chemistry; no one volume could. It follows that while the book should be fairly useful to the practicing chemist, inorganic or otherwise, it should function best as a textbook for presenting the subject in a modern light to students. While there are no detailed literature references, suggestions for collateral reading are provided. While these are somewhat erratic in ranging from broad reference collections to highly specific articles, they do reflect the intimate acquaintance of the authors with an amazing breadth of inorganic chemistry. From a textbook point of view, however, it is to be regretted that no problems or study questions are provided.

There are a fair number of errors, omissions, and other nondesiderata. While on p. 56, resonance structures are carefully described as having no real existence, elsewhere, as on pp. 58–61 and p. 69, the authors fall into the practice of talking about resonance structures as though they were separately existing ingredients of a chemical bonding situation. It has been noticed that the figures on p. 17 of balloon representations of p-orbitals are confusing. They are signed plus and minus, corresponding to angular wave function plots, yet are oval rather than round, so must actually be the squares of the function; they reach to the origin, yet in the text are described as 90% contours. Also, the figure depicting atomic orbital energies (p. 496) seems unnecessarily confusing. Representative errors or misprints noticed include a sign omission in eq. (2–5), an upside down figure on p. 48, ΔF instead of ΔF° on p. 138, a formula error on p. 531, an inversion of the ^4D and ^4P levels in the diagram on p. 702, and a fair scattering of misprint-type spelling errors. There is noticeable variation in style, indicating the writing to be truly coöperative. Finally, it is unfortunate the publication date allowed the statement on p. 145 that rare gases form no compounds.

The above and other items will presumably be corrected in the further printings this book undoubtedly will enjoy. Over-all, it is indeed a pleasure to welcome it with much appreciation to the authors for their excellent job.

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Argon, Helium, and the Rare Gases. Volumes I and II. Edited by GERHARD A. COOK, Research Laboratory, Linde Co., Tonawanda, N. Y. John Wiley and Sons, Inc., Interscience Division, 440 Park Avenue South, New York 16, N. Y., 1961. xxvii + 818 pp. 15.5 × 23.5 cm. Price, $17.50 per volume.

Theoreticians have long suffered the frustration of finding scanty and scattered data on the inert gases, which are ideal substances for verifying theories of the structure of matter. A monograph on the group 0 elements should indeed be welcomed. Cook and his collaborators set themselves the task of critically reviewing the state of knowledge of the inert gases, assessing the validity of various conflicting measurements and experiments, and finally reporting the "best" values of properties and behavior. The end result is extremely useful and should stand for a number of years as the basic reference on the subject. Fifteen authors have collaborated to produce 20 chapters distributed through two volumes of approximately 800 pages. The