tic postulates, special effects such as steric, isotopic and α-heteroatom, and intramolecular displacements are included. The effect of structure on reactivity is emphasized. In all, there are 811 references, of which about 100 pertain to the Supplement.

Theoretical interpretations in terms of rates, free energy diagrams, atomic orbital diagrams and other unifying concepts are a feature of the book. It is not simply a collection of data from the literature, but an attempt to interpret, as well.

The Supplement covers a range of topics, including recent work on ion pairs, solvation effects, transition state structure, isotope effects, structure-reactivity correlations and "non-classical" ions.

While the literature coverage is quite complete through 1955, the coverage from then on is relatively selective. This is by intention, as the author points out in his Preface. The demand for copies of the original article was such that, even though the author could not undertake a major revision, it was directly reprinted with the addition of the short Supplement.

Present-day opinion seems well represented in this concise book. Some "minority" opinions, such as the idea that "non-classical" structures may be confined to transition states and not appear in intermediates, are not mentioned. However, the *data* are presented, and the critical reader can decide for himself about the interpretation. If any objection were to be cited, it might be that the author does not always convey the distinction between mechanistic features which have been conclusively *proved* and concepts which are *consistent with* experiment.

The book will be useful to physical organic chemists, particularly as a reference work. In addition, it may well be used as a textbook, because the work on solvolysis since 1955 has not changed the basic concepts greatly. With extensive discussions of reaction mechanisms finding their way into courses in advanced organic chemistry, courses in physical organic chemistry frequently include a detailed discussion of solvolysis reactions.

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Advanced Inorganic Chemistry. A Comprehensive Text. By F. ALBERT COTTON, Professor of Chemistry, Massachusetts Institute of Technology, Cambridge, Massachusetts, and G. WILKINSON, Professor of Inorganic Chemistry, Imperial College of Science and Technology, London, England. Interscience Division, John Wiley and Sons, Inc., 440 Park Avenue South, New York 16, N. Y. 1962. xv + 959 pp. 16.5 × 23.5 cm. Price, $14.50.

The accelerating expansion of interest and research in both theoretical and descriptive aspects of inorganic chemistry that has taken place during the past fifteen years has undoubtedly created a need for a book which aims to incorporate recent advances in these areas into the previously accumulated body of chemical knowledge. The text under consideration constitutes an attempt, for the most part highly successful, to meet this need.

The book differs from most earlier textbooks of inorganic chemistry in that the theoretical material, instead of being concentrated entirely in the opening chapters, is skillfully integrated with the descriptive material which it is used to elucidate. Part 1 of the text, entitled "General Theory," begins with a clear and concise presentation of the basic principles of wave mechanics and their application to the electronic structure of atoms. This is followed by a general treatment of the nature of chemical bonding, both ionic and covalent, including brief outlines of both the valence bond and the molecular orbital theories, as well as such topics as bond energies, electronegativities, bond lengths, polarity and molecular vibrations.

Part 2, entitled "Chemistry of the Nontransitional Elements," is characterized by its unconventional arrangement. The first two chapters, on hydrogen and the inert gases, are followed by a thorough treatment of the elements of the first short period, lithium through fluorine, on the ground that "there are, in several cases, sufficiently striking differences between the first and succeeding members of a group to detract considerably from the usefulness of regarding these first members as prototypes for their *congeners*." The remaining non-transition elements (including those of the zinc family) are then taken up, by groups, in the conventional sequence. In this section much descriptive chemistry, both old and new, is interestingly presented, together with interpretations in terms of current theory.

Part 3, entitled "Chemistry of the Transition Elements," constitutes nearly half (435 pages) of the book. The exceptionally thorough treatment of these elements and their compounds is the most distinctive feature of the text. This part begins with a second extensive theoretical section which includes a brief treatment of magnetic properties, a general (and in part historical) discussion of coördination compounds and complex ions, and, most notably, an extensive presentation, in a semi-quantitative manner, of the crystal field and ligand field theories. The ideas here developed are then applied to the interpretation of the chemical and physical (including magnetic and optical) properties of compounds of the individual elements of the three transition series. It is in this section that the integration of theoretical and descriptive material is most conspicuously carried out. The final chapters deal with the lanthanides and actinides, and include a brief but thorough and up-to-date treatment of the chemistry of the transuranium elements.

The book is well written, in a fluent style with no obvious discrepancies resulting from joint authorship, and gives evidence of painstaking study of the vast amount of recent inorganic chemical literature.

As is almost inevitable in a volume of this magnitude, there are a considerable number of errors which the authors will wish to correct in a subsequent printing. Most of these are obviously typographical and unlikely seriously to disturb the reader. There are a few, however, that might well perplex or mislead the unwary student. Thus, for example, on page 22, in the sentence beginning "Now, if the two electrons differ in their *m* values, they need not differ in spin...," the clause "but in fact they do" should evidently be replaced by "and in fact they do not." The solubility order of the rubidium halides is nearly, and of the cesium halides exactly, the reverse of that indicated on page 452. On page 501, the configuration of the Fe^{III} ion is erroneously shown as including $4s^2$ electrons, with seven subshells occupied instead of six. On page 510, "if we... plot the reciprocals of the χ_M^{corr} values against T, we shall obtain a straight line"; true—not "of slope C," however, but of slope $1/C$. In the last compound listed on page 538, the omission of the subscript 3 after the formula for the cation is disturbing. Finally, it is surprising to read on page 909 that "Uranium is the densest of metals," in view of the fact that all of the elements of atomic number 74 through 79 (tungsten through gold) have higher densities.

Such minor flaws, however, detract little from the general excellence of the book, which constitutes a valuable contribution to the teaching of inorganic chemistry, and will undoubtedly serve as a stimulus to further research in this field.

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