ligand atoms X or Y, whether they occur as parts of separate ions in salts and solutions or within the endless structures of crystalline solids or glasses, acting there as spectroscopical units, *i.e.*, as chromophores. M may be any element of positive oxidation number, comprising not only all the metals, but also hydrogen, the heavy halogens, and even some of the noble gases (*e.g.*, in the xenon compounds). The ligands range from fluorine all the way down the electronegativity scale to certain metallic elements in intermetallic compounds. Only the true organometallic compounds with alkyl and aryl groups σ-bonded to metals are outside its scope.

The author is, of course, particularly interested in the spectroscopic and magnetic behavior of these complexes. He gives innumerable positions of absorption bands and their interpretation. When the spectra have not been taken, at least the color of the compound in question is stated. Furthermore, the book gives an interesting account of the solution stabilities of complexes, including chelates, polynuclears, and even simple ion pairs, not only in water, but also in strong HCl (chloro complexes) and nonaqueous solvents. Whenever possible, the kinetic characteristics are also stated. Related phenomena of solid-state chemistry and physics are also discussed. The many literature references make up a bibliography with 1176 citations.

In only 180 pages, this book contains an almost complete review of that part of inorganic chemistry that has been the outstanding field of research during the past 20 years. In spite of the condensed form of presentation of a huge amount of experimental facts, the text is easy and entertaining to read. Every chemist will profit in doing so.

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Radiolysis of Hydrocarbons. Edited by A. V. TOPCHIEV, Director, Petroleum Institute, U.S.S.R. Academy of Sciences, Moscow. English Edition edited by R. A. HOLROYD, Mellon Institute, Pittsburgh, Pa. American Elsevier Publishing Co., Inc., 52 Vanderbilt Ave., New York 17, N. Y. 1964. xii + 232 pp. 15.5 × 23 cm. Price, $11.00.

This book, organized in seven chapters, is the English translation of a report of the Radiation Chemistry Laboratory of the Institute for Petrochemical Synthesis in Moscow. Acadamician Topchiev, who directed and edited this notable effort, died shortly after its completion. Although it may not be his *opus magnum*, it will certainly contribute to his good reputation.

It cannot be denied that language difficulties make for poor scientific communication between the U.S.S.R. and the rest of the western world. Thus, a book of this type serves two useful functions. Its bibliography reveals to us which of their own national works the Russians consider important in a particular field. On the other hand, it also reveals, by its omissions, a failure to appreciate or to understand, or even to know of the existence of, pertinent non-Russian literature. For Americans, this book is a very good introduction to texts which we might otherwise have overlooked.

The book itself is concerned to a very high degree with the radiation chemistry of heptane and closely related aliphatic hydrocarbons in the liquid and solid states. The mechanistic portion of the interpretation of the chemical facts is largely free-radical orientated, a not unnatural situation in view of the dominant position of Semenov in Russian reaction kinetics. Certainly, many fresh ideas are introduced, but the impression is given in the early chapters, at least, that the pertinence of the literature on the reactions of ions and excited species is not fully appreciated. However, it is clearly apparent that the essentially theoretical portion is intended to be sufficiently broad in its conception and presentation to cover the behavior of charged and excited species.

Certain facts emerge clearly from the presentation. In the work of the Institute, much attention was addressed to establishment of the chemical nature of the products which they presumed to identify. Also, there seems to have been some considerable use of e.s.r. techniques, in a preliminary way to be sure, in the identification of free-radical species present, particularly in solid systems. Further, as indicated mainly in the last chapter, the members of the Institute are very much concerned with the practical employment of radiation chemistry—for example, in what they identify as radiation thermocracking. In the experiments in the latter area, they have examined a number of compounds and mixtures not too closely related to heptane. It is also clear that the people doing the actual practical work concerned with the practical utilization of radiation chemistry have been very much supported in their efforts by people with primarily theoretical interest—although certainly it is difficult to understand how the theorists have permitted survival of an almost religious faith in the log–log method (pp. 55 and 56) for the establishment of precise reaction order.

Theoretical concern shows in the extensive use of free-radical theory in the interpretation of the kinetics, in the limited remarks on the radiation chemistry of hydrocarbons adsorbed on catalysts and on energy transfer in the radiolysis of hydrocarbons, and, very importantly, in Chapter 6 entitled "Some Aspects of the Theory of Hydrocarbon Radiolysis." The theoretical conceptions attempt to be rather general. There is an effort toward mathematical rigor which can encompass the behavior of a wide variety of chemical species. The treatments provide an excellent introduction to papers which are not generally read or whose existence is not even appreciated in this country. Although they reveal to some extent a lack of appreciation of some of the concepts which have been current outside Russia, the freshness of approach resulting from that fact is itself very stimulating to the reader. One gathers the impression that Russian scientific workers are rather generally acquainted with many of the ideas current in the United States, and even with the terminology employed—but not necessarily acquainted with the details or the authorship.

In Chapter 6, there is a clear attempt to develop all-encompassing generalized statistical theory of reaction kinetics applicable to the special case or cases of radiation chemistry. There is heavy emphasis on the theory of collective phenomena and a time criterion of a collective effect is clearly stipulated. Much of the discussion is given over to time and distance details of deposition of energy by a fast-moving charge particle.

Topchiev's "Radiolysis of Hydrocarbons" is a book which ought to be readily accessible to anyone working in the field of radiation chemistry, because it will put him in touch with many features of the Russian literature important both in radiation chemistry and in kinetics generally, which he might otherwise miss. On the other hand, the makeup is not esthetically pleasing; the book seems to have been printed by the photo-offset method and it contains a rather a large number of typographical errors as well as crudities of expression, again a reflection of semantic difficulties, which can result in misinterpretations. *In toto*, however, this book reveals that scientific communication does, in a curious way, surmount language barriers; it, itself, will do much to improve communication and understanding between radiation chemists in the Russian- and English-speaking worlds.

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Physical Properties of the Steroid Hormones. International Series of Monographs on Pure and Applied Biology. Edited by LEWIS L. ENGEL, Associate Professor of Biological Chemistry, Harvard University Medical School. Pergamon Press, The Macmillan Co., 60 Fifth Ave., New York 11, N. Y. 1964. viii + 488 pp. 18.5 × 25.5 cm. Price, $15.00.

Neither the title of this book nor the editorial note give any indication as to the reader for whom the book was primarily intended. Furthermore, there is no indication that there are any subsequent volumes to follow. It is distinctly surprising, therefore, that a book entitled "Physical Properties of the Steroid Hormones" should include no data and not even a single reference concerning mass spectrometry, circular dichroism, or nuclear magnetic resonance spectroscopy. Understandably, the editor does refer to available authoritative compilations of infrared, optical rotatory dispersion, and specific rotation data for steroids. Apart from a fine chapter on ultraviolet absorption spectroscopy by a group of authors from the Lederle Laboratories (almost half the book), this volume contains mainly data on the less well-studied physical properties of steroids—partition coefficients, chromatographic mobilities, fluorescence spectra, and absorption spectra in concentrated sulfuric acid. Thin layer chromatography receives minor mention. The choice of topics does give the reader access to information which is not gathered