

Book Reviews

Photochemistry of Coordination Compounds. V. Balzani and V. Carassiti. pp. XVII + 432 - London, Academic Press, 1970- 150 shillings.

The book is divided into two parts. Part I, seventy-two pages, comprises six chapters covering material the authors consider introductory background to the main purpose of the volume. Part II, three hundred and four pages, contains twelve chapters reviewing the present state of knowledge of photochemistry of coordination compounds. The remainder of the book is taken up by extensive author and subject indexes. The relevant bibliography is listed at the end of each chapter.

Part I covers the kinetic treatment of photochemical processes, the temperature dependence of quantum yields, reaction mechanisms of complexes, the theory of radiative and non-radiative transitions, energy transfer, the crystal field and molecular orbital theories of complexes, types of electronic transitions and the assignments of spectra and the properties of excited states of complexes. Because of the scope the resulting account is very condensed but is nevertheless generally of a high standard. These sections are well-referenced and the reader who wishes to delve more deeply has his task lightened. An exception to this is the section on radiationless transitions where the discussion is very brief and some important papers and reviews have not been cited. Part I of the book would be of greatest utility as a digest and reference source to workers and students entering or interested in the field but is not intended to serve workers in the field.

Part II of the book contains review chapters on the photochemistry of compounds of chromium, manganese, iron, cobalt and platinum. Other chapters cover photoreactions of the uranyl ion, photoreactions of complexes with π -bonding ligands, photoreactions of sundry other transition metals and photolyses in the solid state. Transition metal ions from scandium to mercury are considered and there is a brief mention of lanthanides and actinides other than uranyl ion. The section ends with a chapter summarizing the kinds of chemical behaviour observed in these varied systems.

The authors should be commented on the thoroughness with which they have completed this large undertaking. The

reviewer was surprised by the large number of older studies which exist scattered through the literature and of which many of us were unaware. For example, the chapters on iron and uranium each list over three hundred references; some going back to the 19th century. Apart from providing very useful reviews the authors have further served their readers in that they have taken a constructive but critical approach. They have no qualms about rejecting or questioning work which they consider as unreliable, and frequently draw attention to systems worthy of reinvestigation of further study. Thus, to neophyte and expert alike, this part of the book is invaluable.

The book is written in an easy style with only a few noncolloquial usages to give away the origin of the authors. Some minor misprints were left uncorrected by the publishers and the authors can provide a list of these. The reviewer found a number of other minor misprints. A stoichiometric error which might be likely to cause a reader puzzlement is made on p. 149: statement three should read $2\phi(N_2) = \phi(Fe(CN_6)^{3-})$.

In a book such as this it is inevitable that a certain amount of overlap with literature reviews will exist and this is certainly no exception. Again, not everyone will agree exactly with all of the interpretations and opinions expressed by the authors. Despite this however, all workers in the field will find the book useful and informative, and because of it, will find it stimulating. The reviewer disagrees with the publisher's claim that it will be of great value to students as a logical course of instruction. However, as a research monograph and reference source its utility is unquestionable and it should be available to all those interested in photochemistry of coordination compounds. It is to be hoped that the authors and publisher will undertake the inevitable reviews necessary to keep abreast of this rapidly developing subject.

At its price of 150 shillings the book is priced at the going rate. One would wish that book prices were lower but it should be obtained by all those with a serious interest in inorganic photochemistry.

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