BOOK REVIEWS

Lumineszenz, Ergebnisse und Anwendungen in Physik, Chemie und Biologie, FRITZ BANDOW, Physik und Technik Bd 2. Wissenschaftliche Verlagsgesellschaft m.b.H., Stuttgart, 1950, 255 S., 80 Abbildungen.

As mentioned in the preface, the author's aim has chiefly been to communicate experimental data. Theoretical observations are as briefly worded as possible. The book is divided into eight parts; the last part, dealing with the relations between luminescence and photochemistry, will be of special interest to biochemists and biophysicists. For the benefit of non-physicists, however, some theoretical parts are more concise than the sub-title would suggest, *e.g.* the treatment of the FRANCK-CONDON principle (III, 3.7).

Many investigations—mostly German—are discussed. More than 500 publications are referred to. At the end of the book a list of important books is included. It is regrettable that the literature has not been gathered into a conveniently arranged list, but is mentioned in foot-notes. Moreover the name of the author has been omitted in these notes, when it has been named in the text.

The chapter on chlorophyll fluorescence chiefly deals with KAUTSKY's work. The author observes that it is his intention to give possibilities of application, rather than to depict the most complete picture of the problem involved.

Finally three practical tables are included in the work.

In summing up, it may be recommended as a book that can be of service to the investigator concerned with problems of luminescence.

J. B. THOMAS (Utrecht)

Chemistry and Biology of Proteins, by FELIX HAUROWITZ; pp. xii and 374, 52 illustrations, Academic Press Inc., New York, 1950, $ 5.50.

Anyone who has followed the rapid and widespread developments of research on proteins during the past fifteen years or so will be impressed by the ease with which the author has compressed into one smallish volume the pith of so much extensive knowledge. Proteins are today the objects of study to workers in many different fields of enquiry: advances all along the line have been rapid, in some cases dramatic, and it is probable that no one now has the necessary background for the writing on his own of a comprehensive treatise covering the whole subject. Dr HAUROWITZ has wisely recognised this and his account is centred largely around the fundamental aspects represented by the structure of proteins, their biological activity and their biosynthesis: he leaves more or less untreated the metabolism of proteins, their technology and advanced studies in their physical chemistry.

The standard textbooks on proteins available before the war have been out of print for many years past. Though in the meanwhile this has probably been very hard on the students it has really been to their ultimate good, for their embarrassment has been mild compared with that of the teacher who from time to time has felt obliged to warn them in his lectures that many parts of these good old books are best left unread today, *e.g.* those dealing with methods of analysis, which are now quite outdated, and those dealing with structure hypotheses, most of which are now known to be quite false. Dr HAUROWITZ's book is the outcome of a one semester course on proteins to graduate students and it is a pleasure to observe how skillfully he has woven the newer knowledge around the core of the old. The data is presented in seventeen very readable chapters, each of which carries

at the end an extensive bibliography of the original references cited in the text. The arrangement is good and results in a well balanced account of the subject matter covered. The last chapter, dealing with protein synthesis, is perhaps the most interesting of them all, embodying as it does the author's own personal views on a problem in which exciting advances are being made at the present time. One hazards the guess that when a new edition of the book is called for in the near future this particular chapter at least will need extensive amplification.

A. C. CHIBNALL (Cambridge)

Carotenoids, by P. KARRER AND E. JUCKER, Translated and revised by ERNEST A. BRAUDE. Elsevier Publishing Co. Inc., New York–Amsterdam, pp. x + 384, 31 illustrations and 2 coloured plates, $ 8.50 (65s.).

About twenty years ago Professor PAUL KARRER, one of the world's most distinguished organic chemists, made a fundamental contribution to the sciences of biochemistry and nutrition when he established the structural formulae of carotene and of vitamin A. Apart from their immediate interest these classical discoveries were of historical importance in making a start towards our present detailed knowledge of the chemistry of the vitamins, since at the time calciferol was the only other vitamin which had been obtained in a sufficiently pure state for chemical investigation. KARRER followed these early achievements with years of patient research on substances of biological origin. Although he has at times successfully ventured into other fields, such as the tocopherols, the carotenoids seem to have remained his abiding interest, and he has studied them with the enthusiasm of a connoisseur, irrespective of whether they are common pigments of great general importance or rarities only present in a few unfamiliar sources. As the result of these labours, and those of other investigators in the same field, he has been able, with JUCKER's help, to describe in the present impressive treatise nearly 70 carotenoid pigments, for 28 of which the structural formulae have been established with reasonable certainty. No less than 10 of these pigments, including unfamiliar substances such as torularhodin, echinenone and citroxanthin, have been found to act as provitamin A.

The book is divided for convenience into two main parts. The chapters of the short "General Part" deal briefly with topics such as the detection, isolation and estimation of carotenoids, their formation in plants and relation to vitamin A in the animal, *cis-trans* isomerism, the relation between colour and constitution, methods for elucidating the structure of carotenoids and their distribution in nature. The larger, and perhaps more important "Special Part" then gives detailed information on the individual pigments, with particulars of their sources, structure, physical constants, chemical properties and derivatives. Information on each pigment is given separately, beginning with reference to its original discovery, and about 1200 natural sources are indexed.

In their exhaustive treatment of the chemistry and distribution of the carotenoids the authors have fulfilled their obvious purpose, and their work fully deserves a place in all libraries devoted to organic chemistry, biochemistry, nutrition and botany. The general reader, however, must realise that space cannot allow both a detailed presentation of all available knowledge of the chemistry of the carotenoids and at the same time a full account of the application of this knowledge to problems of biochemistry and nutrition. We are given, in fact, a masterly exposition of KARRER's own specialised interests, and not a text book which attempts to cover its subject from all possible angles of approach. The book is admirably translated, printed and bound, and is illustrated with numerous figures, mostly showing absorption spectra, and with coloured plates showing the crystalline form of various carotenoids.

T. MOORE (Cambridge)