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BOOK REVIEWS

Light Reaction Path of Photosynthesis: edited by F. K. FONG. Springer, Berlin, 1982. xi + 342 pp. DM 138, approx $US 65.

The preface to this book states that it "deals with the light reaction pathway in photosynthesis. The photophysicochemical events are presented in the order of their occurrence, beginning with the collection of sunlight by antenna systems, ending with the reduction of CO_2 to carbohydrates. Relationships between the structural properties and kinetic effects of primary and secondary events spanning time domains in the range 10^{-12}–1 sec are explored. Photosynthesis is examined in terms of "a light-induced redistribution of reaction intermediates common to the biosynthesis and metabolic degradation of carbohydrates". This is, in fact, quite misleading. The bulk of the book consists of quite adequate treatment of early events in light harvesting and energy conversion as follows: Phycobiliproteins: Molecular Aspects of a Photosynthetic Antenna System (H. Scheer); Structure and Excitation Dynamics of Light-Harvesting Protein Complexes (G. S. Beddard and R. J. Cogdell); Photooxidation of the Reaction Centre Chlorophylls and Structural Properties of Photosynthetic Reaction Centers (A. J. Hoff); Triplet State and Chlorophylls (H. Levanon and J. R. Norris); The Chlorophyll Triplet State and the Structure of Chlorophyll Aggregates (R. H. Clarke); and Synthetic Approaches to Photoreaction Centre Structure and Function (M. R. Wasielewski). In general these are well presented and illustrated, critical, reviews of the subjects as they stood at the time the manuscripts were written. However, most references are pre-1980 (although in some chapters 'notes added in proof' are used to update both ideas and references). This would indicate some delay between writing and publication.

Apart from these aspects of primary events, the rest of photosynthesis is dealt with in the last chapter written by the editor, F. K. Fong. The greater proportion of this chapter again considers early events related to chlorophyll, plus some reports of experiments carried out *in vitro* using the heavy isotope of oxygen to look at water splitting and carbon reduction by hydrogen generated using a platinum–chlorophyll electrode system. This leads to the suggestion "The results described above suggest the capability of a single chlorophyll photosystem to catalyze water splitting and CO_2 reduction"; and the statement is given prominence on both the book jacket and publicity literature that "Of particular interest is the finding that carbon reduction in photosynthesis is an integral part of the chlorophyll light reaction". Aspects such as electron transport, photophosphorylation, the role of NADPH, etc are not discussed. Carbon fixation itself is considered in two short sections where material produced by Calvin in the early 1950's is quoted, although the exact point being made is obscure. Terminology is also out of date, the author using diphosphate rather than the now accepted bis-phosphate. In general the impression is of someone who has, I am sure, an adequate background in physical chemistry, but is getting into areas of biology with which he has less experience.

This is a book for those actively engaged in research in the area of primary photochemical events in photosynthesis, although in view of the delay in publication its value is diminished. For those entering the field or wishing to expand their knowledge I would suggest that they do not take the claim (made on the cover) that it contains the "latest interpretations of the two-light-reaction scheme of photosynthesis" too seriously.

Bucklebury, Reading JIM COOMBS

Physiology and Biochemistry of Seeds in Relation to Germination: by J. B. BEWLEY and M. BLACK. Vol. II, Springer, Berlin 1982. 72 tables, 153 figs, xi + 375 pp. DM 128.

This volume maintains the high standards, the comprehensiveness, the meticulousness and the in-depth treatment of germination set by the first volume. It is organized in six chapters dealing respectively with viability and longevity, dormancy, release from dormancy, control of dormancy, perspective on dormancy, and environmental control of dormancy. Inevitably this structure causes a certain amount of overlap between the different chapters. For example the separation between dormancy and release from dormancy is a bit confusing, and the differentiation between mechanisms causing release from dormancy and the environmental control of germination is not always justified or useful. Some topics already referred to in Vol. I, e.g. gibberellin action or membrane behaviour, are also treated here. The organisation also made it necessary to refer extensively to hormones in both volumes. Since 4 years have elapsed since the appearance of Vol. I there is some advantage in this and it permits the authors to update the information previously brought. The book is profusely illustrated with diagrams and tables. However the two nomograms relating viability, moisture, etc. do not really add very much to understanding the problem of viability and some figures, e.g. Figs 2.22 and 4.2 or Tables 1.3 or 2.6 do not seem to be all that instructive. These points are mentioned only because they surely add to the cost of production. Some of the graphs require very careful and prolonged study and figure legends are sometimes very long and intricate and require considerable concentration on the part of the reader. Most of the discussions are extremely detailed and provide additional new insight into some of