

spectral composition of the incident light. In the final chapter the editor concludes the volume with stimulating speculation on important aspects, which relate to the preceding chapters, namely the mechanism of action, phytochrome control of development, and the function of phytochrome.

The participants at the Easter School unanimously approved the dedication of the volume to the late Dr. Harry A. Borthwick and Dr. Sterling B. Hendricks. There can be no doubt that it is a worthy tribute to the inspiration which those in this field owe to these pioneers of the study of photomorphogenesis, whose work originated in the problems raised by farmers in the U.S.A. The volume is very highly recommended for scientific

libraries, for specialists in this and related fields, and for those concerned with advanced studies. It is heartening to see in this volume a timely reminder of the importance of fundamental research. The complexity of the natural environment, of which light forms such an important component, is such that full understanding and the ultimate benefit from such knowledge will only come after continued painstaking and critical research. At the same time, substantial progress has been made and the complexity itself is the basis of the challenge extended to the researcher in this fascinating field of scientific endeavour.

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*Phytochemistry*, 1977, Vol. 16, p. 627. Pergamon Press. Printed in England

**Phytochrome and Plant Growth:** by R. E. KENDRICK and B. FRANKLAND. Institute of Biology's Studies in Biology No. 68. Edward Arnold, 1976. 68 pp. £1.50.

This book is a valuable addition to the series. Phytochrome and its physiology are usually dealt with inadequately in general textbooks, and even in many of those purporting to concentrate on plant development. Within the confines of 68 pages, the authors give a concise and clear account of a complex subject. It is particularly good in treating the basic work on photo- and dark transformations of phytochrome and its other physical and chemical properties. This in part reflects the interests of

the authors but also the state of the subject. Nevertheless, the student is given a brief but adequate account of phytochrome physiology in so far as it is understood at the moment. There is, however, little about its action in green plants or about the function of phytochrome in time-dependent processes. The book gives a clear introduction to a subject which many students find difficult to comprehend and can be highly recommended as introductory reading for courses which deal with the photobiology of plant development.

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**Nitrogen Metabolism in Plants:** by LEONARD BEEVERS. Contemporary Biology Series, Edward Arnold (Publishers) Ltd., London, 333 pp. 1976. Price £14.00 (Boards) £6.95 (Paperback).

Our understanding of plant metabolism only really began to progress when radioactively labelled precursors became available for feeding to living plant systems. In the case of carbon metabolism, the key experiments were those of M. Calvin and his co-workers in 1951 on the pathway of photosynthesis while with nitrogen metabolism, important early experiments were those of Yemm and his group at Bristol. Since those days, our knowledge of carbon metabolism has developed enormously and is now pretty complete. The same, however, can hardly be said for nitrogen metabolism since although many experiments have been

done with  $^{15}\text{N}$  labelled compounds, there are still considerable gaps in our understanding of the nitrogen pathway. For example, only in 1974 was it shown that the preferred pathway of entry of ammonia into organic combination in higher plants was via glutamine synthetase rather than glutamic dehydrogenase. This is probably one of the reasons why so few textbooks on nitrogen metabolism have been written; that there has been an absence of such books is clear since the present text is the first to appear since 1959. It thus has an enormous amount of ground to cover and enters a market where there are virtually no competitors.

The author, who has himself contributed much to our understanding of the subject, here provides in 289 pages of text, with 723 references, a concise and accurate account of this important area of plant biochemistry. Beginning with nitrogen nutrition he passes