

BOOK REVIEWS

Algal Physiology and Biochemistry: by W. D. P. STEWART (ed.). Botanical Monographs, Vol. 10. Blackwells Scientific Publication, Oxford, 1974. 989 pp. £15.50.

The Blue-Green Algae: by G. E. FOGG, W. D. P. STEWART, P. FAY and A. E. WALSBY. Academic Press, London, 1973, 459 pp. £8.50.

These books are only two of what appear to be a veritable spate of new texts on algae which have either just appeared or which are planned for publication in the near future. In view of the relative neglect of these organisms by plant scientists, these two books are to be welcomed, particularly since there seems, so far, to be relatively little overlap between the different volumes. This book on the Blue-Green Algae by Fogg and his co-authors, for example, steers a different course from the other recent text on the Cyanophyta edited by N. G. Carr and B. A. Whitton (for review, see *Phytochemistry* **14**, 604, 1975); it is more obviously an undergraduate textbook while the latter is intended for a more advanced audience of postgraduates and research workers.

The first book under present review on algal physiology and biochemistry, has also clearly been written at the more advanced level and indeed there will be few students who could afford over £15 for a textbook. It has been planned as a companion volume to Carr and Whitton's book and, of course, covers all 14 of the recognised classes of algae. It will be a key source book to anyone interested in comparative aspects of algal biochemistry since it considerably updates the earlier comparative review by Hegnauer in 1962 in Volume 1 of *Chemotaxonomie der Pflanzen*. The very first chapter by R. A. Lewin is entitled "Biochemical Taxonomy" and is a useful introduction to the rest of the book in that it pulls together many aspects of algal biochemistry and taxonomy which are dealt with in more detail subsequently. Since some of the most interesting and significant correlations between chemistry and taxonomy have been recognised among the algae—particularly in respect to pigment types, lipid synthesis and carbohydrate metabolism—I feel that Lewin's

chapter could have been more enthusiastic in outlook. He quite rightly points out the danger of making comparative statements regarding the biochemistry of an algal class based on an examination of only one strain of one species of a single genus. However, he fails to emphasize that at least with regard to some chemical features, adequate surveys have now been accomplished. For example, in the chapter by T. W. Goodwin on carotenoids and biliproteins, there is a table listing the distribution of siphonaxanthin and siphonein in some 90 green algae and, in a later chapter by the same author, it is clear that sterols have also been examined among an equal number of red algae. I firmly believe that the algae are one of the most fascinating plant groups for studying comparative biochemistry and phylogeny—a point which could bear emphasis in a work of this type.

Other interesting chapters for comparative biochemists include those of Beverley Green on "Nucleic Acids and their Metabolism" of B. J. B. Wood on "Fatty Acids and Saponifiable Lipids" and of W. Mackie and R. D. Preston on "Cell Wall Polysaccharides" and J. S. Craigie on "Storage Carbohydrates". A short chapter by J. A. Hellebust on "Extra-cellular products" reveals our lack of information on much of the chemistry of these organisms, e.g. regarding the volatile substances they produce and release into the environment. The recent interest in brominated phenols in algae should have been covered in this chapter; this is an important omission. The fact that some algae release toxins which can kill fish is mentioned and indicates there is an interesting field in chemical ecology here for further research.

In addition to the chapters on biochemistry there are an equal number of useful contributions on physiology including especially photosynthetic aspects and nitrogen metabolism. The book is well produced and illustrated, has both species and subject indices and is excellent value at present day prices.

The book on the procaryotic blue-green algae, as mentioned earlier, is a more straightforward biological textbook, written for advanced undergraduates. Although there are four co-authors they