

## Parts of phycology

Howard Pearson

### Introduction to the Algae, 2nd Edn.

By Harold C. Bold and Michael J. Wynne.

Prentice-Hall: 1985. Pp. 720. \$53.95, £49.15.

UNDERGRADUATES requiring an up-to-date text on the algae, which concentrates on cell structure, reproduction and classification, will benefit greatly from this factual, well-written, concise and well-presented book. Researchers who spend most of their time "torturing" the physiology and biochemistry out of algal cells, but want to know how their "tame" species fit into the greater scheme of things, will also profit from reading it.

The book was not written to cover all aspects of modern phycology (a point acknowledged by the authors), but to complement other texts on algal ecology, physiology, biochemistry and genetics. In this respect it is not adequate for an introductory phycology course, or for students attracted primarily to the algae by an interest in their potential biotechnological applications.

This second edition retains the format of

the first, with an outstanding introductory chapter (worthy in itself of publication as a booklet) preceding accounts of the algae division by division. The blue-green algae are included, as are new sections on *Prochloron* and algae of uncertain affinity. There are also other minor additions and changes to some of the keys. Mercifully, Bold and Wynne have dropped the unnecessary "phyco" from the algal division names so that, for example, the Chlorophycophyta revert to being the Chlorophyta. The glossary of terms is retained and aids the use of the simple-to-follow keys to the genera of each division, while the updated reference section provides a good lead into further reading. However, I regret the deletion in this edition of the very useful appendix on culture methods as the basic information greatly helps those embarking on the culture of algae.

In all this is an excellent book, full of useful pieces of information. The many photographs and line drawings complement the text and merit special praise. Bold and Wynne have managed to bring alive what even to many dedicated phycologists is a less than stimulating, albeit essential, area of the subject. □

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## Eye to revolution

C.J. Leaver & S.M. Smith

### Plant Molecular Biology.

By Donald Grierson and Simon Covey. Blackie/Chapman & Hall: 1985. Pp. 176. Hbk £17.95, \$39.95; pbk £8.95, \$17.95.

THE application of recombinant DNA techniques to the study of plant biology has led to the establishment of the new field of plant molecular biology. Yet it is only now that a book on the subject can be justified by the available data. In this short and up-to-date summary, Grierson and Covey have succeeded in conveying the present state of knowledge, as well as indicating the potential for genetic modification of higher plants which has raised hopes for a new green revolution.

The basic structures of plant genes are not dissimilar to those found in other organisms. However, the exciting questions in molecular terms arise from the presence in the plant cell of three interdependent genetic and protein-synthesizing systems, coupled with the unique developmental characteristics of higher plants.

The first chapter is a brief, obligatory introduction to recombinant DNA technology, which like the rest of the book would have benefited from the inclusion of a glossary to explain some of the necessary jargon. Subsequent chapters deal with the structure, organization and expression of

nuclear, chloroplast and mitochondrial genomes. The chapter on hormonal and environmental factors affecting gene expression reflects our level of ignorance in this important area, and is disappointing in its lack of coverage of some of the better understood aspects of the responses of plants to stress, such as heat shock and anaerobiosis. The accounts of plant-bacterial interaction in nitrogen fixation and in the natural gene transfer system of the *Agrobacterium* Ti plasmid are excellent introductions to each subject, as is that describing plant viruses, and lead logically into a final discussion of the prospects for genetic engineering of plants. This chapter illustrates the fact that although it is possible to list some of the goals for plant improvement, we still have little idea of the identity or mode of regulation of the genes we might modify or transfer.

The text contains errors, but this failing is partly compensated for by the up-to-date bibliography which allows ready access to original papers. The authors have produced a book which provides a solid basis for undergraduate courses on plant molecular biology, and which will also be useful to the inquisitive postgraduate and the informed entrepreneur requiring scientific background on the investment potential of plant biotechnology. □

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