

BOOK REVIEWS

Plant and Cell Culture: by H. E. STREET (ed.), Botanical Monographs, Vol. 11. Blackwell Scientific Publications, Oxford, 1973, 512 pp. £12.50.

Plant tissue and cell culture has rapidly become an important tool in plant physiology and biochemistry. Therefore, a book that provides a guide to the recent advances of culture techniques and points to the manifold possibilities that are opened up by these techniques must greatly be welcomed. Various authors have made contributions to this book, each an expert and authority in the respective field of plant tissue and cell culture. The book covers aspects of laboratory organization (Street), callus and cell culture techniques (Yeoman, Street), the isolation of protoplasts (Cocking and Evans), general cytology of cultured cells (Yeoman and Street), single cell clones (Street) as well as pollen and anther culture (Sunderland). In addition to these chapters devoted mostly to techniques, the book outlines some aspects of applications, e.g. organization-organogenesis and embryogenesis (Reinert), growth of plant parasites in tissue culture (Ingram) and finally Street reviews "Old problems and new perspectives". Excellently written are the reviews on growth patterns in callus cultures (Yeoman and Aitchison) and growth patterns in cell cultures (King and Street).

A biochemist reading this book must regret that very important features of the application of cell cultures to metabolism, and to the production of secondary plant products are mentioned only occasionally and the literature cited for this is fairly old and results are quoted without critical appraisal. However, a full coverage of biochemical aspects would go beyond the scope of the present volume.

The book is written for advanced undergraduates, graduate students and research workers and any individual who wants to become familiar with plant and cell culture techniques will find the book very useful. Even those research workers who are themselves actively involved in tissue and cell culture work will find much of interest to them.

The book is beautifully illustrated and can be highly recommended.

University of Tübingen,
Germany

E. REINHARD

An Introduction to Spectroscopic Methods for the Identification of Organic Compounds, Vol. 2, F. SCHEINMANN (ed.). Pergamon Press, Oxford, 1974, 354 pp. \$12.00 (hardback); \$7.00 (flexicover).

Volume 1 of this two-volume set appeared in 1970 and dealt with the practical use of IR and NMR spectrometry for organic structure identification at the level of advanced undergraduates and beginning graduate students. The present volume completes the assignment with discussions of organic structure identification using mass spectrometry, ultraviolet and ESR spectrometry. There is also a chapter which discusses new developments in NMR spectrometry such as use of lanthanide shift reagents and applications of the nuclear Overhauser effect; the regrettably brief treatment given to CMR spectrometry in this chapter will not be very useful to many, but more complete treatments of this rapidly-developing field are, of course, available.

Of particular value to students and to scientists in other areas who need to familiarize themselves with modern methods of organic structure determination are three chapters on problem-solving using mass spectrometry, ultraviolet and ESR spectrometry, and two chapters which outline the approach to solution of problems by a combination of spectral methods. Thorough perusal of this section should give the reader a practical introduction to procedures which are the *sine qua non* of modern structural organic chemistry.

A chapter on documentation of molecular spectra will be helpful to non-chemists who seek

sources of reference spectral information. However, this reviewer notes with regret the absence of a chapter on chiroptical methods.

*Florida State University,
Tallahassee, U.S.A.*

WERNER HERZ

Molecular Biology of Plants: A text-manual: by JOE H. CHERRY. Columbia University Press, New York, 1973. 204 pp. £6.00.

This book contains a selection of experimental procedures for an advanced laboratory course in plant biochemistry and, since there is very little else available of this kind, it is to be warmly welcomed. As the title indicates, it is mainly concerned with the separation and estimation of enzymes, nucleic acids and proteins (a total of 26 experiments) but there also are sections on plant hormones (four experiments) and on certain low molecular weight constituents (five experiments). Each of the 11 chapters begins with a brief introduction to the experiments which are then described with practical details and these are followed by a few key references. Further experimental details, such as the preparation of buffers and procedures for disc electrophoresis, are covered in a series of appendices which come at the end of the book. There is also a brief but adequate index.

In general, the experiments are well described and there are a number of helpful illustrations, e.g. of apparatus for gradient elution. Perhaps, more help could have been given to the student in places. Inclusion of more details of the type of result expected in some of the experiments might have been advantageous. For example, in the analysis of nucleotides, a table giving some representative R_f values, electrophoretic mobilities and spectral maxima would have been useful; as it is, the student must go to the original literature for this. Also, the range of experiments could have been widened by a better coverage of plant polysaccharides and by the inclusion of something on nitrogen metabolism.

In all, this is an invaluable book to have around in any plant biochemistry laboratory. It is unfortunate that the price (£6 for 200 pages) is rather too

high, even in these inflationary times, for the student's pocket.

University of Reading

JEFFREY B. HARBORNE

The Biology of Blue-Green Algae: N. G. CARR and B. A. WHITTON (eds). Botanical Monographs, Vol. 9. Blackwell Scientific Publications, Oxford, 1973. x + 676 pp. £13.50.

There has been a surge of interest in the biology of the blue-green algae in recent years, reflected in the fact that about two-thirds of the 2000 or so references quoted here were written during the last 10 years. How well is this activity digested and summarized for those unlikely to go to the primary publications?

This volume opens and closes with detailed accounts of metabolic intermediates, autotrophic and heterotrophic physiology, reflecting the interests of the senior editor. (Though one might note on p. 488 that "the physiological and biochemical diversity amongst the cyanophytes appears so low that the microbiologist... may find the group rather monotonous and uninteresting".) Next follow chapters on the fine structure and biochemistry of the internal and external membrane systems. Other important classes of biochemical compounds are then discussed before a sequence of morphological, physiological and ecological chapters. The penultimate chapters deal with phylogeny. There is very little to be gained by reading these chapters in sequence, since each is essentially complete in itself. For a book presumably aimed at those studying the physiology and biochemistry of the blue-green algae, the appendices on culture collections and culture methods will be appreciated even though they do not attempt to be comprehensive. On the other hand, it is unfortunate that the chapters on systematics fail to give an adequate guide to the development of an acceptable practical classification for experimentalists.

The production of the book is good, with few misprints, mostly obvious, such as the misplaced heading on p. 354, but the provision of a list of contents for each chapter, without page references, in what is essentially a reference work, is poten-