

Phytochemistry, 1976, Vol. 15, p. 244. Pergamon Press. Printed in England.

Phytochrome and Photomorphogenesis by HARRY SMITH. McGraw-Hill (UK), Maidenhead. 235 pp. £9.

This book can be highly recommended to advanced students in the plant sciences who wish to gain an understanding of the fascinating field of photomorphogenesis. As its title implies, the book is largely devoted to a consideration of phytochrome and its effects in the modulation of plant development, other pigment systems (such as that sensitized by blue light) are mentioned only briefly. There is a high degree of selectivity in the material given and this has enabled the author to present a lucid picture of a large and confusing subject. The result is an extremely readable text. Controversial aspects are not neglected, however, and the tentative nature of many of the conclusions about the mode of action of phytochrome is well brought out. The reader is given a chance to consider and evaluate the experimental evidence for

himself and to see where there are gaps in our knowledge; consequently he develops a feel for the present research trends in the field and for the kinds of difficulties in experimentation and interpretation that are encountered. This is easily the best student text book that has yet been produced in this field.

The book is in four parts. The first deals with some of the basic principles of photobiology and with the nature of the photoreceptive mechanisms. The second considers the chemistry and biology of phytochrome. In the third part an outline is given of the way in which phytochrome modulates two photoresponsive systems, seed germination and seedling development. The final chapters deal with the biochemistry of photomorphogenesis and attempt a synthesis of mechanisms. A useful appendix gives practical details of light sources for photomorphogenesis experiments.

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Plant Growth and Development (Second Edition): by A. C. LEOPOLD and P. E. KRIEDMANN. McGraw-Hill, New York, 1975. £9.50.

The first edition of this very successful undergraduate text book was published 11 years ago. During those eleven years nothing profoundly new has been added to the subject but an enormous volume of literature has been published essentially consolidating and elaborating existing knowledge. In the preparation of this up-dated second edition Leopold has taken on a co-author to help with the extensive rewriting and reorganisation that has been done. The book is divided into five parts: assimilation and growth, growth regulation, development, ecological physiology and chemical modification of plant growth. Chapters within each of these parts contain introductions and summaries which are both interesting and useful and should attract the student reader. One new chapter on ethylene has been added to the section dealing with growth regulation. As would perhaps be expected, this second edition reflects the current interest in ecology and sections dealing with this have been expanded from the first edition. The subject matter throughout is extremely well organised and the presentation is good. For this reason alone I am sure that this second edition will be just as successful as the first.

In common with a number of other plant physiology texts, this generally excellent text book is disappointing

in one particular area. Where the authors stick to descriptive plant growth and development physiology all is well, but their discussions of chemical and biochemical aspects are littered with erroneous statements which can only arise from their poor comprehension of the subject matter. As an example, it is stated that abscisic acid is unique among the plant hormones in having an asymmetric carbon atom. This is definitely not the case since each of the forty-odd gibberellins known have a minimum of seven asymmetric carbon atoms each. As if this was not enough on the subject of abscisic acid the authors proceed to draw the wrong absolute stereochemistry of abscisic acid and to tell us "... that both racemic forms are biologically active." In the chapter dealing with phytochrome it is wrong of the authors to present a particular tetrapyrrole structure and call it phytochrome, for no structure has been proved for the phytochrome chromophore. Surely, if plant physiology is to develop along the biochemical lines it has rightly set itself then plant physiologists must take the trouble to learn some basic chemistry. The erroneous statements above, and many others throughout the book, some of which are carried over from the first edition, will not help the education of the new generations of plant physiologists—hopefully they will be able to spot these errors.

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