

## BOOK REVIEWS

**Plant Growth Substances 1979**, edited by F. SKOOG.  
Springer, Berlin, 1980. 527 pp. DM 98.

This substantial volume contains the proceedings of the 10th International Conference on Plant Hormones, which was held in Madison, Wisconsin in July 1979. Thanks to an excellent editor, it has most of the virtues and very few of the vices of symposia volumes. Thus it is almost entirely restricted to the review lectures delivered at the meeting, although there are some short review reports derived from contributed paper sessions.

Held within a year of the 100th anniversary of the publication of Charles Darwin's *The Power of Movement of Plants*, the Conference appropriately included a historical retrospect by J. Heslop-Harrison of Darwin's contribution to the science of botany. More recent studies of plant movements are also described here in seven review chapters derived from a minisymposium held during the meeting under the chairmanship of A. W. Galston.

The remainder of the volume is concentrated expectedly on the five major classes of growth substance, their role in the regulation of plant growth and their practical utilization in agriculture. Once again here, there is a fascinating historical chapter, with illustrations, by the doyen of present day plant physiologists, K. V. Thimann, who recalls in these pages the last 60 years of hormone research beginning with Choldnody's 1927 paper on tropisms and concluding with Skoog and Miller's discovery of kinetin. The other chapters variously review recent developments in hormonology and only a few highlights can be mentioned here. The complexity in the conjugation in plants of growth substances is becoming more and more apparent; Bandurski here lists over 10 deriva-

tives of GA that have been found in *Zea mays* seed alone. Much progress has been made also in identifying hormone metabolites. This is particularly true of the cytokinins and some of the metabolites of zeatin are recorded in a chapter by D. S. Letham and his co-workers. Gibberellin and abscisic acid metabolites are likewise numerous, as reviewed here by V. M. Sponsel and B. V. Milborrow in respective chapters on these compounds. The further metabolism of ethylene has only very recently been scrutinized but as reported by E. M. Beyer and D. C. Blomstrom, ethylene glycol and its glucoside are now well established intermediates in the removal of ethylene from plant tissues.

While our understanding of the biochemistry of growth substances moves securely onwards, our appreciation of the control on growth exerted by these substances is still far from clear. There are still many problems to be tackled. This is clear from an account by P. F. Wareing and A. M. V. Jennings of their unsuccessful attempts to understand tuberization in the potato and their frustrated efforts in the isolation of a factor in tuberization, which appears to be as intractable as the flowering hormone, florigen.

Unlike the proceedings of some of the earlier conferences on growth substances which were of rather limited appeal, this 1979 volume can be warmly welcomed as an attractive and worthwhile contribution to the plant physiology literature. Its particular merit is that it provides a concise, up-to-date overview of the subject, by leading workers in the field, which is not available in any other form. It can be recommended to interested phytochemical readers, as well as to botanists in general.

*Plant Science Laboratories,* JEFFREY B. HARBORNE  
*University of Reading*

**Progress in Pesticide Biochemistry**: edited by D. H. HUTSON and T. R. ROBERTS. John Wiley, Chichester, 1981. Volume 1, 346 pp. £24.

Pesticide biochemistry impinges in many ways on ecological biochemistry so that this book will be of interest to others besides those scientists directly concerned in developing new pesticides. In the volume under review, plant, insect and mammalian biochemistry are each represented in one or other of the seven chapters. Even microbial biochemistry is mentioned, for example, in the chapter by J. A. Guth, which considers experimental approaches to studying the fate of pesticides in the soil. Emphasis on the possible environmental threats of new pesticides is such today that even before new compounds come onto the market, much information has already accumulated on their further metabolism. Thus in this volume, one of the editors T. R. Roberts is able to write with authority and at length on the turnover of the recently developed

synthetic pyrethroid insecticides in both plants and soils.

Although the metabolism of the new pyrethroid insecticides has not yet been studied in man, D. H. Hutson in a later chapter is able to refer to work on their turnover in rat, mouse, dog, goat and cows to indicate how safe they are. Their very favourable mammal-insect toxicity ratio is apparent from the data on deltamethrin, which has an LD<sub>50</sub> to houseflies of 0.0003 µg but which is only toxic to rats at doses as high as 50 mg/kg.

In contrast to the synthetic pyrethroids, phenoxy-acetic acid herbicides have been around for a long time, and yet the biochemistry of their toxicity is scarcely known and the reasons for their selectivity have not been fully defined. Progress over the last 5 years in outlining the fate of these herbicides in plants is reviewed by J. B. Pillmoor and J. K. Gaunt.

Compared to the novel pyrethroids, insecticides which are juvenile hormone analogues have not so far