

## BOOK REVIEWS

**Chemistry of Plant Protection. 1. Sterol Biosynthesis, Inhibitors and Anti-feeding Compounds:** edited by G. HANG and H. HOFFMANN. Springer, Berlin, 1986. 151 pp. DM 98.

Although apparently the first volume of a new series, this book actually continues an earlier collection of handbooks on pest research edited by R. Wegler. One advantage to U.K. and U.S. readers is that the reviews are now all written in English. This first issue, a rather slim one, contains four reviews of which no less than three are devoted to fungicides which cause their damage by inhibiting sterol biosynthesis in the fungal pathogens. Most of them block  $14\alpha$ -demethylation in the pathway from lanosterol to ergosterol. Other sites of inhibition include  $\Delta^8$ - $\Delta^7$  isomerization,  $\Delta^{14}$  reduction and  $\Delta^{22}$  unsaturation. In 1985, this series of systemic fungicides made up about 15% of the fungicide market. They can be successfully applied to the control of powdery mildews and rusts and have the advantages of being effective at low

dosages and the fact that resistance has not yet appeared on any scale. In this volume, T. Kato provides a general background review, while W. Kramer discusses their chemistry and K. H. Kuck and H. Scheinplugg describe their biology.

The fourth review by D. M. Norris deals with plant substances which have antifeedant activity. It is a useful article, which deals especially with the perception by insects of antifeedants, particularly those of the naphthoquinone type. It suffers to some extent from an apparent delay in publication. There are very few post 1980 references and the latest is 1983. The recent work of Wiemer and his colleagues on antifeedants effective against leaf cutting ants, for example, is not mentioned. Overall, then, this is a welcome new series but the editors need to ensure prompt publication if it is to succeed.

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**Advances in Botanical Research, Vol. 12:** edited by J. A. CALLOW. Academic Press, London, 1986. 284 pp. £54.

One of the major purposes of a good review series is to introduce the general reader to topics which he might not otherwise encounter. All four reviews of volume 12 might be regarded as belonging to the byways rather than the mainstream of botanical research and yet they command attention and provide fascinating and instructive reading. To the phytochemist, the most obviously interesting is the review of algal toxins by Wayne Carmichael. The hepatotoxins of *Microcystis* appear to be cyclic heptapeptides, similar in structure to the poisons of the fly agaric fungus, while those of *Anabaena* are neurotoxic alkaloids, which bear structural resemblance to the tropanes of deadly nightshade. Other toxins reported from algae such as the weird polyether derivatives of the dinoflagellates *Ptychodiscus* and *Dinophysis* are unique to the marine world; through their contamination of shellfish, these algae are responsible for diarrhetic non-fatal poisoning in humans. The ecological significance of these algal toxins has yet to be thoroughly explored. A bonus in this review is the presence of scanning electron micrographs of the toxin-producing algae.

The second review on plant transposable elements by Patricia Nevers and her colleagues covers a long-neglected topic which is only just becoming fashionable. These unstable mutable genes vary in their effects in the same

tissues. For example, they can produce variegated anthocyanin coloration in a white snapdragon flower, the degree of variegation being dependent on the temperature at which the plants are grown. The most famous work in this area is that of Barbara McClintock on maize, discounted for many years but now recognized as being of Nobel prize calibre. This review nicely brings the subject up-to-date by providing an interpretation of these genetic phenomena in terms of plant molecular biology. Transposable elements may well be important in both plant development and plant evolution.

The third review is of light/dark modulation of enzyme activity in plants by Louise Anderson. It is a nice example where a single, almost accidental observation by the Zieglers in 1965 on a pentose phosphate pathway enzyme in the resurrection plant *Myrothamnus flabellifolia* has opened up a whole new area of photosynthetic research. Light activation of enzyme activity, as tabulated in this review, has now been recorded in many metabolically important enzymes, including PEP carboxylase, nitrite reductase, glutamine synthetase and PAL. The mediators controlling the regulation of light modulation have also been studied. The final review, purely biological in nature, is by D. C. Sigee on the dinoflagellate chromosome.

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