

BOOK REVIEWS

Progress in the Chemistry of Organic Natural Products. Volume 32: edited by W. HERZ, H. GRIEBACH and G. W. KIRBY. 560 pp. Springer-Verlag, Vienna. (1975). \$94.60

This volume maintains the high standard and wide scope of topic that we have come to expect from this series. Methodology of structural analysis is perhaps the dominant theme of volume 32 in that there are two wide ranging articles on the subject, one on newer methods of NMR spectroscopy (R. J. Highet and E. A. Sokolowski) and the other one on chiroptical techniques (P. M. Scopes). There is also a massive chapter on polynucleo-

tide synthesis by H. Kössel and H. Seliger and a shorter one on fungal products based on 2,5-dioxopiperazine by P. G. Sammes. The remaining two chapters are more biochemically oriented: a thorough review of carboxylic acids found in petroleum and sediments (W. K. Seifert) and an account of the chemistry and biosynthesis of plant galactolipids (H. C. Van Hummel). One's only quibble with this particular volume, is that the more dynamic aspects of plant natural products are less well covered than usual. Needless to say, this book is impeccably produced and extensively indexed.

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Recent Advances in Phytochemistry. Volume 9, edited by V. C. RONECKLES. Plenum Press, New York, 1975. 309 pp. \$33.

This volume contains eleven contributions presented at a Meeting of the Phytochemical Society of North America, the theme of which was *Phytochemistry as related to Disease and Medicine*. The chapters form a rather heterogeneous collection which reflects the very varied interests of the authors; their different approaches to the study of physiologically active compounds in plants nevertheless provide a useful reminder of the need for interdisciplinary collaboration in this area.

In the opening chapter Schultes summarizes present knowledge of hallucinogenic plants in the new and old worlds; where known, the active constituents or constituent are named. The data are tabulated and supported by a valuable list of references. The two following chapters are concerned more specifically with the hallucinogens of *Cannabis sativa*. In the first of these Wall deals with the cannabinoids found naturally in marijuana and the differences in chemical composition associated with varieties of *Cannabis sativa* from different parts of the world. Wall also discusses the chemical synthesis of the cannabinoids and related compounds and the use of these synthetic materials in studying the metabolic degradation of cannabinoids in man. In the second, Hoffman and his colleagues compare the chemical compositions of marijuana and tobacco smoke and the relative carcinogenicity of these. In bioassays marijuana smoke condensate was found to produce tumors and promote tumour growth on mouse skin; it was however less active than tobacco smoke condensate in these particular experiments.

Duke discusses the possibility of establishing a correlation between the known nutritional chemistry of plants and their use in the folk medicine of primitive peoples; using collected data from one thousand crop plants he points out some potential new correlations, but empha-

sises the need for a computerized system to test their real significance. The types of skin reaction produced in humans by contact with plant species are listed by Mitchell. The occurrence of cross-sensitization is discussed, as is the possibility of using such sensitization for taxonomic purposes. Kuc deals with the suggestion that constituents of healthy or blighted potatoes may have teratogenic effects in man, but concludes that present evidence is not sufficient to support the suggestion. Nevertheless the accumulation of toxic, though probably non-teratogenic alkaloids in some strains of potato is a matter for concern to those developing new varieties of potatoes. Ressler concerns herself with neurotoxins in plants and the manner in which they act. She also deals with the biosynthesis of cyanoamino acids.

The search for natural tumour inhibitors is described by Kupchan, who emphasises the importance of using biological assays continuously throughout fractionation procedures to avoid missing activity in minor or unexpected compounds. The structures of a significant number of tumour inhibitors indicates many of these are alkylating agents which may act by selectively alkylating growth regulating macromolecules. A detailed account of the developments in the chemistry and biochemistry of the indole alkaloids is provided by Scott. The recognition of a main biosynthetic pathway has made it possible to understand the biosynthetic relationships which exist between many of these compounds. This suggestion that some indole alkaloids are produced non-enzymatically in plants is also made.

Mitscher provides information on plants with anti-microbial and anti-fungal activity, and although the higher plants have not yet been found to synthesize molecules comparable in activity to penicillin, various long-chain fatty acids, phenols, quinones, glycosides, terpenes and alkaloids from higher plants show marked activity against microorganisms. The final chapter by Nakanishi deals with the structure of azadirachtin, a compound from *Azadirachta indica* which inhibits feeding in the desert locust at concentrations of 40 µg/l and produces