Phytochemistry, Vol. 20, p. 1765, 1981.
Pergamon Press Ltd. Printed in Great Britain.

BOOK REVIEW

Fortschritte der Chemie organischer Naturstoffe/Progress in the Chemistry of Organic Natural Products: Edited by W. HERZ, H. GRISEBACH and G. W. KIRBY. Vol 39, Springer-Verlag, Vienna, 1980. 316 pp. DM158, $93.30.

This book, in common with other volumes in the series, is full of good things for chemists and those working on the borderline of chemistry and the biological sciences. It contains four review articles: the use of carbohydrate derivatives as asymmetric starting materials for the synthesis of natural products, recent information on the chemistry and biology of vitamin D, methods for the establishment of the stereochemistry of carotenoids, and the chemistry and biochemistry of γ-glutamyl derivatives from plants.

The first article by B. Fraser-Reid and R. C. Anderson, provides an excellent and much needed review of the utility of carbohydrates and derivatives as chiral starting materials for the construction of natural products. Fraser-Reid has been active in this area for many years and thus writes with great authority on this subject. The review commences with a useful section on the attributes of carbohydrates as synthetic precursors, and then proceeds to give a lucid account of 22 well-chosen syntheses from the literature. The target molecules include prostaglandins, insect pheromones, antibiotics, and a vitamin—biotin. Each synthesis is illustrated, with reagents given for all of the key steps. This article will be essential reading for all carbohydrate chemists, and of considerable interest to synthetic chemists, who may even be tempted (if they have not already succumbed to temptation) to employ these chiral synthons in their next synthesis.

The second article, by H. Jones and G. H. Rasmusson, is also timely, since the last ten years have been a very exciting time for those studying vitamin D. Ten years ago biologically active metabolites of vitamin D_3 were first isolated and identified, and this discovery heralded a new era of research on these vitamins. The authors review the biology and biochemistry of vitamin D including clinical aspects, then turn their attention to recent partial and total syntheses, and conclude with a novel section on the photochemistry and thermal interconversions of the vitamins. This comprehensive article should be of interest to all chemists and biochemists.

S. Liaaen-Jensen is an internationally acclaimed expert on naturally occurring carotenoids, and is thus eminently qualified to write a review on the stereochemistry of these compounds. The account is primarily concerned with determination of absolute configuration, but recent advances pertaining to geometrical isomerism are also included. All of the modern spectroscopic and chemical methods for determination of stereochemistry are mentioned, and the review concludes with an interesting section on chirality and biogenetic relationships. This is the first review of the subject since 1970, and will be welcomed by all those studying carotenoids.

The final review article, by T. Kasai and P. O. Larsen, introduces a topic that has not hitherto been covered. The authors state that "... more than 70 γ-glutamyl derivatives of amino acids have been isolated from plants including mushrooms ...", and proceed to discuss these exhaustively. This is by far the longest article in the volume (113 pages), and includes 36 pages of tables. It is primarily concerned with accounts of the isolation and structure elucidation of the γ-glutamyl derivatives, but there are also short sections on synthesis, biosynthesis, and biological properties. It would appear that these three areas have been largely neglected to date, and this article should thus stimulate chemists and biochemists to enter this fascinating field.

Volume 39 is an excellent addition to the series, and although the price will probably preclude personal ownership in many cases, all scientific libraries should have a copy.

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