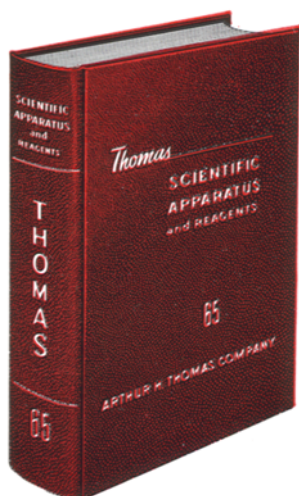


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NEW BOOKS

THE CHEMISTRY OF NATURAL PRODUCTS, Organic Chemistry Division, International Union of Pure and Applied Chemistry and the Science Council of Japan (Butterworth's London, Vol. 3, vii + 191 pp.; 1964; \$11).

This book contains the texts of eleven special lectures presented at the 3rd International Symposium on the Chemistry of Natural Products at Kyoto, Japan, in April of 1964. These lectures have also been published in *Pure and Applied Chemistry*, Vol. 9, No. 1 (1964). They are, however, of such high quality that those who take pleasure in owning works of art may wish to have copies in their personal libraries.

Three of the lectures deal with instrumental methods of structure elucidation. K. Biemann describes high resolution mass spectrometry and the use of "element mapping," in which account is taken of the composition of the lesser peaks as well as of the larger. C. Djerassi focusses his attention more directly on the fragmentation processes occurring in the mass spectrometer and shows how isotope labeling, particularly with deuterium, provides detailed insight into the pathways of these reactions. J. M. Robertson points out the importance of the phase problem in determinations of structure by X-ray analysis and shows how the introduction of heavy atoms reduces the problem to one that computers can handle conveniently.

Another set of lectures relates to the determination of structure of particular compounds. Th. Wieland's review of his studies of the toxic peptides of the mushroom, *Amanita phalloides*, reminds us that quite complex structures can be established by classical methods, particularly if stepwise degradation can be achieved. G. Büchi, however, makes it clear that there are important groups of natural products with higher orders of complexity—as the dimeric indole alkaloids—requiring all the instrumental methods, and good chemical thinking, too. This reviewer enjoyed most R. B. Woodward's account of his group's determination of the structure of tetrodotoxin, the poisonous material of the liver and ovaries of the puffer fish. Although X-ray analysis was used, it could be applied only to derivatives having structures different from that of the toxin itself. No accusation of "peeking" at the solution to the puzzle can fairly be leveled in this case. The reasoning involved in deducing the presence of a carbocyclic ring on the basis of analytical data was an exquisite highlight of that work. Synthesis is ably represented by G. Stork's discussion of annellation processes and his brief account of the syntheses of two indole alkaloids, *dl* aspidospermine and *dl*-quebrachamine. M. M. Shemyakin and V. K. Antonov describe an important reaction allowing insertion of hydroxy or amino acid residues into cyclic peptides, to produce medium and large sized rings.

The biological wave of the future continues to rise as organic chemists acquire the techniques to work with intact organisms or enzymes isolated from them. D. H. R. Barton speaks for workers with the higher plants, describing evidence for oxidative coupling of phenols as a key step in the formation of morphine and other alkaloids. V. Prelog offers a tantalizing but tentative insight into the details of the stereochemistry of hydrogen transfer reactions by oxido-reductase enzymes.

Mention should finally be made of the delightful but informative summary of the history of natural product research in Japan, by S. Sugasawa, which serves as an introduction and somehow seems to set the tone of confident relaxation and mature retrospection which pervades this book.

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