

Book Reviews

Survey of Chemical Notation Systems. A Report of the Committee on Modern Methods of Handling Chemical Information. Publication 1150. National Academy of Sciences. National Research Council. Washington, D. C. 1964. 467 pp.

During the first 40 years of the present century the principal routes to the world's collection of chemical structures were through Beilstein's "Handbuch der Organischen Chemie" and the Name Indexes in *Chemical Abstracts*. The former set up an arbitrary classification by structure; the latter evolved a nomenclature in which structural functions were identified by suffixes and prefixes under a most complicated system of written rules and verbal understandings. Although these two compendia served the user well, the arbitrariness of the systems and the complexity of the rules led to gradually increasing criticism from chemists and biologists interested in structure-activity relationships. The stimulus from the dye industry, the finding of a graded relationship between structure and antibacterial activity among the synthetic sulfonamides, and the large, organized chemotherapeutic studies in malaria and other tropical diseases supported by Federal funds during the Second World War led to the creation of several new types of structural codes for characterizing and arranging organic compounds. Perhaps the two most widely publicized codes are those of G. Malcolm Dyson, whose modified notation was adopted as a "standard" by the International Union of Pure and Applied Chemistry in 1959, and of William J. Wiswesser. The heated controversy among the partisans over the relative merits of these two codes has continued unabated for almost two decades.

"The Survey of Chemical Notation Systems" is a report of the Committee on Modern Methods of Handling Chemical Information, under the auspices of the National Academy of Sciences, National Research Council, with funds provided by the National Science Foundation. It represents the latest but, by no means, the final attempt to evaluate the Dyson and Wiswesser codes, together with others, less widely known, from the standpoint of utility, cost of input and output, machine requirements, intellectual demands on coders and users, as well as subjective appraisals by the groups involved in handling the operation. Dr. I. Moyer Hunsberger, project director, and his committee members interviewed the staffs of 46 different organizations and the Survey records in detail the various interviews. Perhaps the most cogent conclusion is found in the recommendation, "At present, there is no record of any experiment in which the same group of compounds has been used with different types of systems for performing generic searches and correlation studies in different ways in order to compare the effectiveness of the different methods of approach. Until such definitive experiments are performed on a large volume of encoded data on chemical structures, controversy will remain. . . . It is not reasonable to expect that any chemical organization will do work of this magnitude at its own expense. Since the federal government is the largest supporter of scientific research, it must supply the badly needed funds for research on the retrieval of scientific information."

This Survey adequately portrays the presently confused state in the organization of chemical data by structure. Unfortunately, one has the feeling that the coding groups are working on the problems of the 1930's and that, unless much more rapid progress is made, the development of satisfactory structural codes for the user will constitute an academic exercise rather than a major contribution to the very early hoped-for goal.

SQUIBB INSTITUTE FOR
MEDICAL RESEARCH
NEW BRUNSWICK, NEW JERSEY

FREDERICK Y. WISELOGLE

Advances in Chemotherapy. Volume I. Edited by ABRAHAM GOLDIN and FRANK HAWKING. Academic Press Inc., New York, N. Y. 1964. xi + 579 pp. 23.5 × 15.5 cm. \$17.50.

Of the many recent first volumes of projected series of "Advances" and "Progress" in fields of medicinal science, this first volume impresses the reviewer as perhaps the best one. It offers not only descriptive and interpretative reviews of work

done, but in clear and understandable words points to new approaches and areas of future research with a good potential of success. Introduced by an interesting and anecdotal history of chemotherapy by E. K. Marshall, Jr., the book leans heavily on studies in the field of neoplastic and viral diseases and thus reflects the great contemporary interest in normal and abnormal nucleic acid metabolism. The chemoprophylaxis and chemotherapy of viral diseases is described by R. L. Thompson; cell culture and cancer chemotherapy is dealt with authoritatively by G. E. Foley and S. S. Epstein, and drug synergism in antineoplastic chemotherapy by J. M. Venditti and A. Goldin. A long-needed review of the chemistry, pharmacology, and clinical use of the *Vinca* alkaloids is presented by a group from the Lilly Research Laboratories led by N. Neuss. Two excellent chapters deal with antitrypanosomal chemotherapy (B. A. Newton) and immunoreactions in antiparasitic chemotherapy (F. C. Goble). But the first and last chapters of the book offer most food for thought for the not-too-specialized reader. C. G. Zubrod explains quantitative concepts in the clinical study of drugs; every clinical investigator is advised to read this outstanding section especially in these difficult days of controls and popular distrust of new drug investigation. For medicinal chemists searching for new leads, the chapter by N. O. Kaplan and M. Friedkin on new concepts of the use of inhibitors in chemotherapy should be of special interest. Although oriented towards aberrations of functional disorders and cancer, the intelligent planning of drug synthesis in any area on the basis of noncompetitive (allosteric) inhibition should lean on this review and its predictions. It shows clearly the deep impact of biochemistry on the design of therapeutic agents, and outlines some of the paths one should enter in the immediate future.

The editors and publishers are to be congratulated upon this volume. Scientists concerned with fundamental and practical questions of chemotherapy, from the chemical laboratory to the clinic, are advised to read it attentively.

UNIVERSITY OF VIRGINIA
CHARLOTTESVILLE, VIRGINIA

ALFRED BURGER

The Background to Chemotherapy of Virus Diseases. By C. H. STUART-HARRIS and LOIS DICKINSON. Charles C Thomas, Publisher, Springfield, Ill. 1964. xi + 175 pp. 23.5 × 16.5 cm. \$10.50.

The fly-leaf recommends this book to the general reader (for whom it is much too technical) and particularly the clinician to assess for himself the failure of chemotherapy against viruses as compared with its success against bacteria, fungi, and protozoa. The publisher's blurb does not do justice to the modern clinician who should no longer be classified as a general reader. Also the chemotherapy of fungal diseases has not progressed far beyond that of viral infections. Indeed, there are quite a few effective antiviral agents, even though most of them cannot be used clinically. Their structures contain with great frequency the N-C-N moiety, especially amidine and guanidine groupings. This does not hold, of course, for those antibiotics which are effective against the rickettsiae, and the psittacosis-lymphogranuloma inguinale-trachoma groups of "untrue" viruses. All these are considered in this book, as well as clinical procedures using such drugs. In addition, steroids, various serum fractions, and vaccinations are reviewed briefly. Interferon is given considerable space. Introductory chapters make informative reading on the chemistry, multiplication, and pathology of viruses.

The blurb is probably right that the clinician would enjoy this book and ought to read it. Nevertheless, medicinal chemists will find it informative, easy to understand, and not so heavily documented by clinical and therapeutic references that reading is constantly side tracked. On the other hand, some important experimental drugs published in chemical journals have not been mentioned. Those interested in contributing to antiviral chemotherapy will find the book a fair survey of explanations, of successes, and of failures which should stimulate new ideas.

UNIVERSITY OF VIRGINIA
CHARLOTTESVILLE, VIRGINIA

ALFRED BURGER