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Book reviews

Advances in Carbohydrate Chemistry and Biochemistry: Volume 34, edited by R. STUART TIPSON AND DEREK HORTON, Academic Press, New York and London, 1977, x+439 pages+Author and Subject Indexes, $42.50, £30.15.

This volume has a masterly, definitive review on 1,6-anhydroaldohexoses by M. Černý and J. Staněk, Jr. The length is over a third of the whole book, but the editors correctly decided to publish it in one issue, rather than in two successive ones. The literature is covered up to 1976, with over 830 references. The text discusses the preparation, and physical and chemical properties, of the 1,6-anhydrohexopyranoses and their derivatives, and there is a small, concluding section on the 1,6-anhydrohexofuranoses. The inclusion of tables of physical properties (*e.g.*, m.p. and [α]) of the anhydrides and their derivatives is very welcome.

Other contributors to the volume include H. Weigel, with an obituary of Professor E. J. Bourne, and one of Bourne's former research students, A. N. de Belder, with an article on cyclic acetals of aldoses and aldosides. The material updates his previous review on the topic published in *Advances* in 1965. Again, the literature, up to 1975, is summarised by tables of physical properties of the acetals. On page 202 is the sentence "The generally accepted mechanism for the hydrolysis of cyclic acetals is the A-1 mechanism, involving the rate-determining heterolysis of a protonated intermediate". It is, indeed, received truth that cyclic acetals open by the A-1 mechanism, but two reports [A. V. Willi, *Helv. Chim. Acta*, 56 (1973) 2094–2098; J. D. Kruger, Ph.D. Thesis, 1972, University of Washington, U.S.A.; *Chem. Abstr.*, 78 (1973) 135,277] suggest that *cyclic* acetals in fact open by the A-2 mechanism.

It is surprising that there had been no readily available review, specifically, on the well-known Koenigs–Knorr reaction. K. Igarashi has now successfully corrected the omission. The text, with references up to 1976 (one to 1977), discusses the scope of the reaction, but there are no tables surveying the reaction. Such tabular surveys are always very useful.

For his seventh article in *Advances*, R. L. Whistler, co-authored on this occasion by M. Chen, has collected widely dispersed material for the topic "Metabolism of D-Fructose". The main part of the review considers the role of D-fructose at various mammalian cells. A useful, self-contained sub-chapter is on the key enzymes in the metabolism of this sugar. The sixth and last article is by G. A. Jeffrey and M. Sundaralingam on the crystal structures of 50 carbohydrates, 15 nucleosides, and 16 nucleotides. The material mainly covers the 1975 literature, and all but two determinations are from X-ray crystallography.

As is customary for this series, there is a comprehensive Author Index to the references cited, and a good Subject Index. In a work of this length, there are in-

evitably some typographical and scientific errors, but these are minimal. It is a volume anyone practising in carbohydrates would wish to own, but its price will mean that it will have to be used mainly through a library.

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Hydrazony (*Hydrazones*), by YU. P. KITAEV AND B. I. BUSYKIN, edited by A. N. KOST (Head Editor) and B. V. KOPYLOVA, approved by the A. E. Arbuzov Institute of Organic and Physical Chemistry, Kazan, Academy of Science of USSR, "Nauka" Publishers, Moscow, 1974, 415 pages, 15.5 × 26 cm, cloth-back, 1450 copies published, Rubles 2.86 (~$3.00).

According to the preface, this monograph is the first attempt to put into one systematic unit all of the scattered information published on the chemistry of hydrazones, and the authors are to be congratulated on their success in this immense task. The book is designed for organic research chemists and chemical engineers working in the medicinal, pharmaceutical, dye, and agricultural industries. Although the monograph is primarily designed for the Soviet professional reader, a reader from the West can also benefit from it.

It is a well-documented monograph (2650 references, to the middle of 1973) that consists of 12 chapters and covers the historical developments and advances of the last ten to twenty years on the subject. Among the topics discussed are new trends, mechanisms, and synthetic methods employing hydrazones (*e.g.*, synthesis of complex heterocyclics); also, hydrazones as analytical reagents for the separation and identification of carbonyl compounds and metal ions, or for synthesis of organometallic compounds (*e.g.*, complexing agents).

In the Introduction (2 pages, 52 references), the authors suggest acceptance of hydrazones as a separate class, rather as derivatives of carbonyl compounds (such as hydrazones, hydrazides, formazans, and osazones).

In Chapter 1 (10 pages, 4 Tables, 34 references), the authors discuss at length some advantages and disadvantages of the current nomenclature for hydrazones and azines (*e.g.*, Rules C-922 and C-923 of the IUPAC Nomenclature), and propose an alternative one. According to the authors' nomenclature, the simplest of hydrazones, namely formaldehyde hydrazone, is chosen as the key hydrazone; all other compounds of similar structure are regarded as derivatives thereof. For example, benzaldehyde methylphenylhydrazone becomes 1,3-(C,N)-diphenyl-3(N)-methylhydrazone; similarly, 1,2-bis(phenylhydrazono)glyoxal is 3,3′-diphenyl-1,1′-dihydrazonyl, and acetaldazine is 1-methyl-3-ethylidenehydrazone.

Chapter 2 (17 pages, 112 references) is concerned with the methods of preparation of hydrazones. These include: condensation reactions of carbonyl compounds or their derivatives (*e.g.*, azines, azomethanes, oximes, and thioketones, and derivatives of other hydrazones) with hydrazine (or substituted hydrazines, *e.g.*, phenylhydrazine),