

Newer Methods of Preparative Organic Chemistry, Volume IV. Ed., W. Foerst, Verlag Chemie GmbH, Weinheim/Bergstr., Germany. 1968. 348 pages \$15.00.

This volume consists of seven selected reviews written by experts and characterized by the same high quality and general format as those in the previous volumes. The reviews have been brought up to date and expanded, particularly in regard to the number of detailed experimental procedures, since they first appeared in "Angewandte Chemie." Each contribution presents historical material, the scope, limitations and variations of the synthetic technique, tabular summaries of literature examples, detailed representative procedures, and extensive literature references. The latter include pertinent publications up to the period about 1964-67.

The reviews are: (1) α -Additions to Isonitriles. Triple Additions and Four-Component Condensations (I. Ugi). An illustrative triple addition is the general synthesis of an α -acyloxy carboxamide *via* the reaction of an isonitrile with a carboxylic acid and a carbonyl compound (the Passerini Reaction). The major portion of this review summarizes the "four-component condensation" (or Ugi Reaction)—the condensation of an isonitrile with an amine derivative, an aldehyde or ketone, and an acid. Such condensations can be used to generate a variety of product types including amides, thionamides and selenomides of α -amino carboxylic acids, 1,5-disubstituted tetrazoles, hydantoin and thiohydantoin imides, amides of α -acylamino carboxylic acids, oligopeptide derivatives, β -lactams, penicillanic acid derivatives, urethanes, diacyl imides, and hydrazine derivatives. (2) Isonitrile Syntheses (I. Ugi, U. Fetzer, U. Eholzer, H. Knupfer, and K. Offermann). Mainly a summary of isonitrile synthesis *via* the dehydration of N-substituted formamides using phosgene and a tertiary amine. (3) Reactions of Sodium Hydrazide with Organic Compounds (T. Kauffmann). The reagent is a versatile one, affording addition, substitution, reduction or cleavage products with a variety of substrates. (4) Ethynylation Reactions (W. Ried). A summary of the addition of acetylene and terminal alkynes to carbonyl species, particularly quinones. (5) Syntheses with Nascent Quinones (H. W. Wanzlick). Treatment of hydroquinones with an oxidizing agent in the presence of a nucleophile affords products viewed as arising from Michael-type addition of the latter reagent with the quinone produced *in situ*. (6) Cyclization of Dialdehydes with Nitromethane (F. W. Lichtenthaler). This contribution describes the syntheses of cyclic nitrodiols and aminodiols *via* the base-catalyzed condensation of nitromethanes with aliphatic, aromatic, and sugar dialdehydes. (7) The Use of Complex Borohydrides and of Diborane in Organic Chemistry (E. Schenker). This review, the longest by far in the volume, probably represents the most complete summary of the subject that is currently available. It covers all aspects of the subject, has nearly 2000 literature references, and gives 49 detailed procedures for the reduction of diverse functional groups and the transformation of organoborane intermediates.

Schenker's review alone makes this volume a particularly valuable reference work for synthetic organic chemists.

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