Survey of Organic Syntheses, Volume 2; by C.A. Buehler and D.E. Pearson, Wiley—Interscience, New York/London/Sydney/Toronto, 1977, xii + 1104 pages, $ 25.00.

Volume 2 of Buehler and Pearson's "Survey....." is similar in organization to the first volume published in 1970. The authors attempt "to include all the newer methods of synthesis (appearing from 1969 through 1975) with perhaps less thoroughness existing, because of printing delay, in the last year or two." There are twenty chapters, each covering a functional group or a closely related family of functional groups. The organization is good. A detailed table of contents, preceding the text of each chapter, allows the chemist to find rapidly listings for the synthesis of a particular functional group by various methods and from various other functional groups. Each chapter begins with an excellent summary highlighting the recent chemistry of the functional group. The main text of each chapter is highly organized and subdivided into concise, manageable sections. For example, Chapter 11, entitled "Ketones", consists of nine sections each dealing with a particular method of ketone synthesis (e.g., oxidative, reductive, Friedel—Crafts, etc.). Each section is followed by the pertinent literature references. Four sections randomly chosen by this reviewer (6-A, 7-A, 11-A and 14-A) cited 233 literature references. Of these, 13% were prior to 1969, 83% were from 1969—1973, 3% were from 1974; one reference appeared from 1975. The latter two years are partially covered in addenda at the end of each section.

Buehler and Pearson's new volume is cross referenced with Volume 1 offering background for the reader and preventing much repetition. At the end of the book is a detailed, 86 page Subject Index, and a 105 page Reaction Index for Volumes 1 and 2. The latter index (prepared by P.F. Hudrlik) groups related reactions (e.g., Michael additions) together allowing the chemist to find alternative ways of converting one structure to another. Unfortunately, Volume 2 does not contain an Author Index, an excellent feature of Volume 1.

In conception, Buehler and Pearson's Volume 2 is excellent; in execution, at times it is not. Unlike Volume 1, the second volume has been reproduced photographically from a typed copy. Although the layout, typing and proofreading have been carefully done, the drawn structures are adequate but not uniformly good. More disappointing is the authors' occasionally careless treatment of information abstracted from the literature. Further, the scattered offering of mechanistic detail does not always reflect the thinking of the authors of the literature cited. A brief comparison of Buehler and Pearson's text with the chemical literature turned up the following examples.

Chapter 11 reports the synthesis of an aldehyde by a reverse aldol reaction of a strained bicyclic keto alcohol (p. 520): "This reverse aldol, surprisingly conducted in acid solution, probably is general provided dehydration, the more common reaction, does not occur." The paper referenced gives very different details for the reverse aldol: "Attempted vpc of III [the keto alcohol] on a Carbowax 20M column at 175° gave a product considered to be the keto aldehyde VII."

Chapter 13 accurately details the potassium persulfate/sulfuric acid (aq.) oxidation of ketones to carboxylic acids. The work referenced suggests that

this Baeyer—Villiger-type oxidation is "concerted and that RO^+ is never a true intermediate." Buehler and Pearson provide a structure of RO^+ (p. 671) and the conclusion "Apparently, ethyl migration occurs in the intermediate cation [RO^+] as indicated."

Chapter 11 discusses ketone formation by acid-catalyzed rearrangement of acetylenic alcohols (p. 572). The paper abstracted outlines a mechanism to "be used as a working hypothesis" Buehler and Pearson's mechanism, though plausible, is different.

An occasional mechanistic explanation may be helpful in a work on synthetic methods. The authors would do better, though, accurately abstracting the literature.

In the balance, Buehler and Pearson's Volume 2 is a welcome addition. The task of searching and evaluating the synthetic literature is becoming more difficult. Volume 2 will prove to be a useful and easily used index of recent synthetic methods, improving the chemist's access to the primary literature.

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