

Book Reviews

Thiophene and Its Derivatives, Parts Two and Three. Edited by Salo Gronowitz. Wiley, New York. 1986. xiii + 906 pp. 16 × 23 cm. ISBN 0-471-83832-2. \$195.00; xi + 1272 pp. 16 × 23 cm. ISBN 0-471-83833-0. \$260.00.

These two books constitute Vol. 44, parts 2 and 3 of the series of monographs by Interscience, entitled *The Chemistry of Heterocyclic Compounds*, and edited by Arnold Weissberger and Edward C. Taylor. Part 1 of Vol. 44, previously published, dealt with the synthesis, properties, and reactions of simple thiophenes, including natural occurrence and pharmacologically active compounds. Part 2 of this four-part volume begins with a review of the important subject of electrophilic aromatic substitution of thiophenes, followed by systematic treatment of alkyl-, halo-, nitro- and aminothiophenes. Part 3 begins with chapters on derivatives of thiophene having thiophene-to-oxygen and thiophene-to-sulfur bonds, followed by chapters on carbonylthiophenes, thiophene-carboxylic acids, and thenyl derivatives. Part 4 is projected to review nucleophilic aromatic substitution, physical properties, and metal derivatives of thiophenes, as well as thienylethenes, thienylacetylenes, and arylthiophenes.

It was a real pleasure to review these volumes, and consider how far we have come in thiophene chemistry in a few short years. The basic book of 40 years ago was *Die Chemie des Thiophens* by Wilhelm Steinkopf (1941). My well-thumbed copy was published by the Alien Property Custodian and distributed in the Public Interest in 1944. "Old Stonehead", as my boys irreverently called it, consisted of 232 pages and perhaps 500 or 600 references. Within a few short years, Hartough's book on *Thiophene and Derivatives* appeared as one of the early volumes in the series on *Chemistry of Heterocyclic Compounds* (1952). This was a volume of 533 pages, with about 1700 references, covering the literature to 1950. Even so, thiophene chemistry was still in its infancy, as Hartough predicted in his preface. The present work professes to cover the literature from 1950 to 1982, taking up where Hartough left off, but some of the chapters contain references as recent as 1985. The present two parts alone contain over 2000 pages, more than 7500 references, and some 500 tables, which describe nearly every thiophene compound now known. Of course one author could not cover all aspects of such enormous literature, and editor Gronowitz, no mean contributor to this cornucopia of thiophene knowledge himself, has assembled an able group of specialists to treat the entire field. They are to be congratulated on this definitive monograph.

Part 2 consists of five chapters: *Electrophilic Substitution of Thiophene and Its Derivatives* (119 pages, 13 tables, 584 references) by Roger Taylor; *Alkylthiophenes and Their Reactions* (38 pages, 14 tables, 243 references) by P. Cagniant, D. Cagniant, D. Paquer, and G. Kirsch; *Halothiophenes* (363 pages, 84 tables, 997 references) by Manfred G. Reinecke and P. Pedaja; *Nitrothiophenes and Their Reactions* (106 pages, 23 tables, 544 references) and *Aminothiophenes and Their Derivatives* (168 pages, 37 tables, 861 references) both by Robert K. Norris.

Part 3 also consists of five chapters: *Synthesis, Physical Properties and Reactions of Compounds Containing Thiophene-Oxygen Bonds* (133 pages, 29 tables, 292 references) and *Synthesis, Physical Properties and Reactions of Compounds Containing Thiophene-Sulfur Bonds* (172 pages, 45 tables, 482 references) (both by Salo Gronowitz and Anna-Britta Hornfeldt); *Formyl and Acyl Derivatives of Thiophenes and Their Reactions* (254 pages, 30 tables, 1471 references) by Richard M. Scowston; *Thiophene-carboxylic Acids and Their Derivatives* (407 pages, 173 tables, 1266 references) by John M. Barker and Patrick R. Huddleston; and *Side-Chain Reactivity of Thiophenes, Thenyl Derivatives* (178 pages, 52 tables, 792 references) by Giuseppe Musumarra.

These two volumes are remarkably free of errors. It has been

my observation that any careless proofreading in an extensive monograph of this type is apt to show up in the structural formulas, but I found none here. Minor nomenclature problems occasionally occur. For example, 5-amino-2-thiophenecarboxylic acid is indexed under 2-amino-5-thiophenecarboxylic acid, in direct opposition to IUPAC rules. A curious reference to 2-*tert*-butylbenzene is made on p 65. It must refer to 2-*tert*-butylthiophene.

Every thiophene chemist will need Vol. 44 on *Thiophene and Its Derivatives* on his working shelf. It is unfortunate that the price must be so high, but man-hours spent finding this material in the original literature will be much more expensive.

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Handbook of Chemotherapeutic Agents. Volumes I and II. Edited by Matthew Verderame. CRC Press, Inc., Boca Raton, FL. 1986. Volume I: 276 pp. 18 × 26 cm. ISBN 0-8493-3286-9. \$125.00. Volume II: 354 pp. 18 × 26 cm. ISBN 0-8493-3287-7. \$125.00.

These two volumes present a series of reviews on clinically important chemotherapeutic agents for all the major infectious disease entities. Chapters, each written by different authors, cover either major drug classes, e.g., β -lactam antibiotics, sulfa drugs, or agents for specific diseases, e.g., antifungals. The organization of each chapter is similar and each generally includes topics on historical development, mechanism of action, resistance, structure-activity relationships, toxicity, physicochemical properties, in some cases testing methodology, as well as monographs of specific drug products. The chapters generally are well written, but vary significantly in length and number of reference citations at the end of each chapter. With the exceptions noted below the literature covered is through 1982. Hence, the information is not as up-to-date as it might be. The Tables of Contents for both volumes are very brief; they do not indicate chapter authorship nor do they list chapter subheadings. Consequently, if one is looking for specific information it is necessary to page through the chapter. The few errors in chemical structures do not detract significantly from the quality of these volumes. Incorrect structures in Volume I include ceftazidime and cefatrizine (p 64) and ethambutol (p 213) and in Volume II methenamine (p 73) and metronidazole (p 135).

The first volume contains five chapters entitled "Sulfa Drugs", by L. A. Cates (29 pages, 47 references); "Beta-lactam Antibiotics", by P. Actor and A. Lentnek (67 pages, 466 references); "Nonlactam Antibiotics", by L. A. Mitscher and F. G. Martin (94 pages, 138 references); "Antimycobacterial Agents", by P. Sensi (22 pages, 42 references); "Antifungal Agents", by D. T. Connor (40 pages, 143 references). The chapter on β -lactam antibiotics is essentially a review of the penicillins and cephalosporins with only one-half page devoted to newer β -lactam classes such as monobactams and carbapenems. The chapter on nonlactam antibiotics discusses tetracyclines, chloramphenicol, macrolides, lincosaminides, aminocyclitols, peptide antibiotics, and a number of miscellaneous agents. Though brief descriptions are given for antibiotics such as vancomycin and virginiamycin, no references are cited for these agents. Cross-referencing between chapters is of variable quality; for example, it would have been useful to cross-reference the discussions of viomycin and capreomycin in the chapter on antimycobacterial agents to the preceding chapter where their chemical structures are depicted.

The second volume contains seven chapters, the titles of which are "Synthetic Nonsulfonamide Topical Antibacterial Agents", by D. M. Sedlock (39 pages, 258 references); "Synthetic Antibacterial Agents", by J. B. Cornett (52 pages, 469 references);

"Anthelmintics", by M. Verderame and J. Mackiewicz (83 pages, 435 references); "Antimalarial Agents", by R. D. Pick and D. L. Klayman (48 pages, 44 references); "Antineoplastic Agents", by K. C. Agrawal (66 pages, 138 references); "Antiviral Chemotherapy", by Y.-C. Cheng and W. F. Prusoff (41 pages, 43 references). The first chapter in this volume on topical antibacterial agents is an especially well-written and thorough discussion of chemical "degerming" agents, e.g., hexachlorophene. The second chapter focuses on synthetic antibacterial agents such as the quinolines, nitrofurans, and trimethoprim. A number of

1984 literature references are cited. The chapter on antimalarial agents presents a concise, well-written overview of this area. References as recent as 1985 are cited.

Despite some shortcomings, these two volumes will serve as a valuable library reference for use by students and by researchers in the health professions.

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