

Book reviews

Methodicum Chemicum. Kritische Übersicht bewahrter Arbeitsmethoden und ihre Anwendung in Chemie, Naturwissenschaft und Medizin, F. Korte, editor-in-chief, Georg Thieme Verlag, Stuttgart, and Academic Press, New York/London, Vol. 1, *Analytik*, F. Korte, volume editor, 1973. Part 1, *Reindarstellung, Nassverfahren, Strukturbestimmung*, x + pages 1–652 + 55 page index; Part 2, *Spurenanalyse, Biologische Methoden, Substanzklassen, Automatisierung*, x + pages 653–1263 (includes index), DM 496 (An English version of this series is in preparation).

The "Methodicum Chemicum" is a new publishing venture of some magnitude. It is meant to be a short and critical account of chemical methodology, of essentially all experimental procedures used in chemistry. Its purpose is to make available to all research workers a critical discussion of the proven and useful techniques of all areas of chemistry. The coverage of any area is not intended to be exhaustive, nor are detailed descriptions of such procedures provided. A series of eleven volumes averaging 900 pages each is envisioned to complete the "Methodicum Chemicum", which is divided roughly into three parts: (1) general aspects; (2) systematic synthesis; (3) specific topics.

We review here the two part Volume 1 which is devoted to analytical chemistry in the broadest sense. It covers, in 14 chapters written by a large group of authors, techniques for separation and purification, chemical determinations of functional groups and compound types, the various spectroscopic techniques, mass spectroscopy, diffraction methods for structural determination, equilibrium and kinetic methods (including electrochemical techniques and ion cyclotron resonance spectroscopy), molecular weight determination, temperature measurement, the excited state in photochemistry, surface measurements, dipole moments, trace analysis techniques, specific procedures for various technical organic materials, for carbohydrates, proteins and nucleic acids, biochemical and biological procedures and new directions in instrumentation and automation. In all of these chapters the emphasis is on modern techniques.

If one is at all familiar with a particular technique among those covered, one will not find the brief account in this volume useful, for the chapters are, in general, too short and sketchy to serve as more than a simple introduction. If, on the other hand, one is not familiar with one of these techniques, this volume can be of value. It will give a brief discussion of the technique, its theoretical background and chemical or physical basis, its applicability and an indication of the instrumentation used. Also, it will provide references for detailed reading.

This volume cannot be recommended without reservations. Some chapters do not serve adequately and do not appear to be useful to the expert or to the neophyte (e.g., the chapter on chemical calorimetry). Other chapters are not up-to-date, because of unfortunate timing rather than through fault of the authors. Thus, in the chapter on NMR spectroscopy of nuclei other

than protons, no mention is made of Fourier transform NMR spectroscopy, which has proven so valuable an addition to NMR methodology in recent years. One might carp about other omissions. For instance, magnetic susceptibility measurements are not covered at all. However, the coverage in this volume is surprisingly complete, and its main value will lie in its comprehensiveness: its breadth, not its depth of coverage.

Methodicum Chemicum, Vol. 8, Übergangselemente und deren Verbindungen, K. Niedenzu and H. Zimmer, volume editors, 1974, ix + 557 pages, DM 268.

This volume, the second of the "Methodicum Chemicum" to be published, is meant to provide its readers with the proven procedures for the preparation of compounds of all the transition metals, including those of Groups IB and IIB, an ambitious and difficult undertaking considering how vast and diverse the field is.

Each transition element is covered in a separate chapter, but the lanthanide elements and the actinide elements are dealt with collectively in two chapters. The volume ends with four chapters which are of the special topics type (transition metal carbonyls; ferrocene and its derivatives; other metallocenes and sandwich complexes; heteropoly compounds). Many of this volume's 32 chapters are written by well-known experts in the areas which they cover, but others are not. The organization of the volume is not uniform. Thus, most chapters on an element and its compounds are organized in terms of available oxidation states, but some others are not. Some of these chapters cover the organic derivatives of the metal; others do not. In fact, in some chapters the organometallic aspects are overly developed at the expense of the strictly inorganic chemistry of the element. Many of the chapters are quite short (e.g., actinides, 6 pages; titanium, 9 pages; ruthenium, 12 pages; rhodium, 7 pages, etc.), and even the longer ones (e.g., mercury, cobalt, nickel) do not exceed 35 pages. Thus the preparative chemistry covered can be presented in only a very sketchy manner, and so these chapters can only be considered as orientational in nature. The person who is interested in any given compound or compound class must then consult the references cited for details. However, as mentioned in the review of Volume 1, this is the intent of the "Methodicum Chemicum".

It is claimed that the literature has been covered through 1970, although some 1972 references can be found in some chapters. The delay in publication is due to the fact that most of the chapters in this volume were written in English and then were translated into German. (Was this really necessary?) Presumably, the English language manuscripts will be published as originally submitted in the English version of the "Methodicum Chemicum", but by that time they will be even more out of date.

Both Volumes 1 and 8 of the "Methodicum Chemicum" have excellent, carefully prepared subject indices which will enhance the utility of these books for their readers.