

methods, is uninspiring and out-of-date. As an illustration of the latter failing, the only reference to ionization chamber methods for determination of C^{14} dates from 1946, and there are only four references to papers or books published after the appearance of Calvin's "Isotopic Carbon" of 1949.

Despite its unevenness, there is no question but this volume will be a help to student and research worker alike as a source of information and inspiration for investigations of rates and mechanisms of organic reactions.

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Modern Mass Spectrometry. By G. P. BARNARD, B. Sc., Ph.D., A.M.I.E.E., F. Inst. P. of National Physical Laboratory, Teddington. The Institute of Physics, 47 Belgrave Square, London, S.W.1, England, 1953. 325 pp. 16 × 24.5 cm. Price, 50 s. 0 d.

"Modern Mass Spectrometry" was written by Dr. Barnard under commission by The Institute of Physics. As indicated in its title this monograph is of narrower scope than the volume on mass spectroscopy recently reviewed in *THIS JOURNAL*.¹ It is concerned exclusively with the design and application of mass spectroscopes that employ electrical means of ion detection. The purpose of the volume, as defined in the foreword by the Director of the National Physical Laboratory, was to bring together in one place a critical summary of the techniques of application of the mass spectrometer to problems in the various fields of engineering, chemistry and biology. The final monograph turned out to be a critical discussion of the design of mass spectrometers for application to these various fields with a brief discussion of the applications that have been made.

Barnard has done a good job of defining the problems into which the design and construction of a mass spectrometer may be resolved. He has done less well in clarifying the interrelations and particularly the relative importance of these problems. His discussion of the status of the solutions of the design and construction problems has been handicapped by the fact that much useful information acquired in this country during the war years has been inaccessible to him due to the lack of publication of the pertinent results. It may be that the appearance of this volume of Barnard's will stimulate various mass spectrometrists to publish their solutions to some of the problems he has defined. Barnard's clear definition of the problems should furthermore stimu-

(1) D. P. Stevenson, *THIS JOURNAL*, **75**, 3867 (1953).

late workers in this field to seek solutions to the unsolved problems.

The discussion of applications that have been made of mass spectrometers occupies slightly more than the last third of the book—five short chapters. Except for the chapter entitled "Application to Hydrocarbon Analysis," discussions are very sketchy, and the more detailed treatment of hydrocarbon analysis does not add to the extant reviews that have appeared in the last few years in various treatises on physical-chemical methods of analysis.

Workers in the fields of mass spectroscopy will probably want to have a copy of the book readily accessible. Other scientists will find the extensive bibliography helpful in finding answers to their questions with respect to the applicability of mass spectrometer methods to the solution of their problems.

SHELL DEVELOPMENT COMPANY
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D. P. STEVENSON

Substances Naturelles de Synthèse. By LEON VELLUZ, Docteur des Sciences Physiques. Masson et Cie, Editeurs, 120 Boulevard Saint-Germain, Paris 6, France. 1953. Volume V: 206 pp. 16 × 22.5 cm. Price, Broche, 2305 Fr.; Carton, 2690 Fr. Volume VI: 156 pp. 16 × 22.5 cm. Price, Broche 1730 Fr.; Carton, 2110 Fr.

These two volumes continue the very interesting series on the preparation of natural compounds and exhibit the excellence that characterized their predecessors. The technical makeup of the books is superb and the subject matter is skillfully handled, covering not only the detailed description of the preparative methods of specific substances such as calciferol, papaverine, histamine, adrenochrome, etc., but offering also a discussion of various topics of general interest to workers in the field of natural compounds such as partition chromatography, ion exchange resins, Diels-Alder addition, synthetic methods for imidazole and benzopyridine systems, etc. It is sometimes difficult to see why specific preparations were selected or the relevance of a particular discussion of a synthetic method to the syntheses described in the text, but this reviewer found the entire approach very fresh and satisfying, perhaps because of the very fact that the topics discussed, although sometimes surprises, are always pleasant ones. The literature coverage appears to be excellent, many references being to original literature published as late as 1952.

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