

the substrate raises unusual difficulties. In a stimulating little note N. W. Pirie points out that a cheap source of potent cellulase would have great economic importance; he wonders, too, why evolutionary mechanisms have not provided the herbivorous mammals with a cellulase of their own (might there be some vital structure in the alimentary tract which it would destroy?), so that they are dependent on the inefficient aid of their symbiotic microorganisms, whose action is discussed in another chapter by A. T. Philipson. Lastly, R. G. Fargher whets rather than satisfies our curiosity with a brief sketch of the subject of damage to textile fibers by microorganisms, especially moulds, and of the very various methods that have been proposed as preventives.

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Chromatography: A Review of Principles and Applications.

By EDGAR LEDERER, Institut de Biologie Physico-chimique, Paris, and MICHAEL LEDERER, Institut du Radium, Paris. Elsevier Publishing Company, 402 Lovett Boulevard, Houston, Texas. 1953. xviii + 460 pp. 16 × 23.5 cm. Price, \$9.25.

The monograph under review constitutes an extended translation and combination of the following two books: "Progrès récents de la chromatographie, Première Partie, Chimie organique et biologique" by E. Lederer and "Deuxième Partie, Chimie minérale" by M. Lederer (Paris, Hermann et Cie, 1949 and 1953). Recently, the second of these texts has been reviewed by Steward.¹ The present English version has been carefully brought up to date.

In their Preface the authors state: "This book represents a review of the chromatographic methods developed in the last 10 to 12 years." The qualification of the volume (contained in the French titles) as a progress report could well have been indicated in the English title. While the book represents an authoritative review of the progress made in the field of chromatography during the last decade or so, as a rule it does not endeavor to present basic knowledge gained earlier.

The authors have collected and selected their material with patience and care, and their documentation is based on the evaluation of about 1900 literature references. Any writer surveying chromatography soon finds himself in the position of the Sorcerer's Apprentice on whom an avalanche of new data is descending every day. Thus, the authors had to supplement their Bibliography with an Addendum listing some 300 papers that appeared during the printing period.

No detailed discussion of the theories of chromatography is offered in this book, and the reader is referred to a forthcoming volume written by A. J. P. Martin and A. T. James. Such division of the material does not reduce the value of the volume under review since, unfortunately, theories have had but a limited influence on chromatographic experimentation so far.

The following main sections of Lederer's monograph appear to have been well balanced: general discussion (100 pages), treatment of organic compounds (182 pp.), of inorganic substances (67 pp.) and, finally, bibliography and indexes (111 pp.). Special emphasis has been laid on the presentation of the two most modern and astonishingly fertile methods, *viz.*, paper chromatography and ion exchange.

Considering the richness of the content and the available space, it is understandable that the reader in most instances will not be able to carry out experimental work without consulting original papers. Nonetheless, this reviewer would suggest that detailed experimental directions could have been included in a limited number of typical instances. With reference to details only a few critical remarks seem to be justified. Perhaps it should be pointed out that the

(1) F. C. Steward, *THIS JOURNAL*, **75**, 5772 (1953).

chromatographic tubes represented in Fig. 9 are inferior to those equipped with ground glass joints.

Lederer and Lederer's monograph is well printed and excellently illustrated by means of 88 comprehensive figures and a colored plate. Its use is recommended to everybody interested in the manifold laboratory methods based on fractional adsorption and in the influence of chromatographic techniques on the development of various branches of pure and applied chemistry.

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