Book Reviews

Peroxide, Axes, and Aspirin

Mambu. A Melanesian millennium. Kenelm Burridge. Humanities Press, New York, 1961. xxiii + 296 pp. Illus. $8.50.

During the present century the native peoples of Melanesia have produced dozens of millenarian religious movements. These Melanesian movements are generally called "cargo cults" by Europeans. Comparable religious movements have been recorded among Indians of North and South America, among Negroes of Africa, and, indeed, among most of the tribal peoples of the earth. Historians and sociologists have studied similar events in the history of the major civilizations. Recently these movements, in both tribal and urban cultures, have attracted much attention from anthropologists, and there has been a small spate of theoretical and descriptive writing on the subject of what are variously termed nativistic movements, revitalization movements, cargo cults, and the like, particularly among tribal peoples in the throes of acculturation to Western civilization. In such movements there is usually a revolutionary code which defines the existing society as evil and which urges action—rational or irrational, magical or realistic, religious or political—to bring about a better state of affairs.

In the early 1950's Burridge spent some time with the people of Tangu, a small tribal group in the Australian Trust Territory of New Guinea. Although he did not observe a cargo cult in full flower, Burridge was able to learn much of the oral history of two such recent cults, and he was further able to study the climate of experience, belief, and emotion in which such cults develop. The title of this book, *Mambu*, is the name of one of the earlier prophets who led an abortive cargo movement.

Although the people involved in the narrative are few and their customs and beliefs exotic, or even bizarre, to Western eyes, the larger point which Burridge makes is obligatory for an understanding of the motive which brings many tribal (and civilized) peoples to participate in such movements generally. This motive is the desperate wish to establish an identity as competent and respectable human beings in some sort of morally equivalent relationship with a dominant alien people. The bulk of the book is devoted to analyzing the combinations of native culture, historical circumstance, and moral pressure exerted by missionaries and Australian administrators which have caused the Tangu to see the portal to manhood as a religious movement which anticipates a millennium. This millennium, with its cargo of hydrogen peroxide, axes, aspirin, rice, and so forth, is but the symbol of the achievement of equality with, and acceptance by, the "moral European."

ANTHONY F. C. WALLACE
Department of Anthropology, University of Pennsylvania

Chromatography Handbook

Handbuch der Papierchromatographie. vol. 1, *Grundlagen und Technik*. 1958. 860 pp. Illus. $14.60. vol. 2, *Bibliographie und Anwendungen*. 1960. 726 pp. $11. I. M. Hais and K. Macek, Eds. Gustav Fischer, Jena, East Germany.

The forerunner of these volumes, *Papirova Chromatografie* (I. M. Hais and K. Macek Eds., Czechoslovakian Academy of Sciences, Prague, 1954), was reviewed in *Science* 6 years ago [**122**, 473 (1955)]; but the volumes are not a translation into German of the earlier Czechoslovakian volume, nor are all of the collaborators the same. Volume 1 contains the work of 22 collaborators, including the editors.

As far as I can tell, they comprise the most authoritative monographs on paper chromatography available. Their distinction rests not only on the breadth of the literature coverage, which extends to the end of 1956, but also, and chiefly, on the approach. This combines, in volume 1, practical instructions with theoretical enquiry into the principles which can be derived from practice and which should guide new work. In other words, the subject of paper chromatography is treated as a science, as in the previous volume, but now with more years of experience and published work to draw upon.

Volume 1 provides a brief historical chapter in which are reproduced in color two plates from Runge's early work and six examples of capillary analysis. This chapter includes photographs of Consden, Gordon, Martin, and Synge. The second chapter deals with principles and theory in a clear and lavishly illustrated manner. Then follow five chapters in which every step of the process is described in detail, with discussion of the influence of various factors such as the nature of the paper, the effect of shape and position of initial spot (or zone), and so on. Included also are sections on outfitting a laboratory, working with radioactive substances, and carrying out paper chromatography on a preparative scale. These chapters complete the general part of the book: some 224 pages, including a bibliography for each chapter.

The special part of the book contains chapters into which separations are gathered in terms of functional group and molecular class: alcohols, carbonyl compounds, aliphatic acids, carbohydrates, phenols and aromatic acids, steroids, hydrocarbons and other lipophilic substances, amines, nitrocompounds, amino acids, peptides, proteins, purines and pyrimidines, alkaloids, other heterocyclic nitrogen compounds, organic sulfur compounds, vitamins, antibiotics, insecticides, synthetic pigments, and inorganic substances. Each chapter has its own bibliography.

The final part of the book continues an important feature of the earlier volume, namely a section on reagents (189 in number) for detecting spots, with recipes, and in many cases alternative recipes. This is followed by a section of some 144 items bearing on

the preparation and impregnation of paper, the choice of solvent systems, converting substances to forms more suitable for chromatography (such as converting acids to hydroxamic acids), preparing samples for chromatography, and carrying out quantitative analyses. These two sections are detailed and represent a valuable compilation of frequently needed data. Finally, there are author and subject indexes (39½ pages, each with two columns of entries).

Volume 2, an important adjunct to volume 1, contains a minimum of explanatory text and 10,290 bibliographic entries, each with author, title or indication of the subject dealt with, and reference. These are also organized into two main divisions: a general part (56 pages) and the special part which comprises the bulk of the volume. The special part is divided into chapters which deal with particular types of compounds, some of which have been added since volume 1 was published. Most of the chapters are further subdivided. For example, the chapter on organic acids is subdivided into general reviews, lower fatty acids, higher fatty acids, aliphatic hydroxy acids, di- and tricarboxylic acids, keto acids, phenolic and other cyclic acids, glycerides and other esters of organic acids. Most of these subdivisions are further classified in terms of techniques and applications, which are themselves further subdivided. This careful, logical organization makes the information extraordinarily accessible down to very narrow requirements. The volume concludes with a complete author index and an alphabetical index of substances that have been chromatographed. The references in volume 2 comprise four times as many substances as are referred to in volume 1.

Both volumes are printed on good paper in a clear and readable style. The illustrations in volume 1 are excellently chosen, and the authors do not avoid epistemological considerations where these are appropriate—that is, where such considerations help the reader to understand the reasoning behind the method. For all of these reasons the editors and authors are to be congratulated on providing paper chromatographers, from beginners to experts, with a first-rate text and reference work. I recommend the two volumes most highly.

HAROLD G. CASSIDY
Department of Chemistry,
Yale University

Quantitative Science

Experimental Immunochemistry. Elvin A. Kabat. With chapters by Manfred M. Mayer. Thomas, Springfield, Ill., ed. 2, 1961. xii + 905 pp. Illus. $26.50.

For those familiar with the 1948 edition of Kabat and Mayer, the publication of Kabat's new edition is an important event. Michael Heidelberger in the preview (an introduction) to the first edition predicted that *Experimental Immunochemistry* would be "more likely to gather acid spots and indicator stains on the laboratory table than to accumulate dust on the reference shelf," and I am prepared to produce the shreds of my second copy as the fulfillment of Heidelberger's prophesy.

Immunochemists and their forebears, immunologists, recognize that immunochemistry became a discipline in its own right through the brilliant and precise efforts of small groups of chemists and biologists to render quantitative an otherwise empirical science. The discipline, however, has evolved during the past decade into a bureaucracy, which even an author possessed of the breadth and clarity of Kabat finds impossible to treat fully in more than twice the linage of the first edition (900 two-column pages versus 550 single-column pages). Consequently, the author felt justified in omitting discussions of some newer offshoots of immunology, such as immunohistology and immunohematology, possibly because they do not as yet lend themselves to analysis by many of the precise quantitative methods with which the book is primarily concerned.

The original format has been preserved. There are four parts dealing with basic methodology and theory, applications, chemical and physical methods, and preparations. Several new chapters have been added to provide introductions to interim developments such as chromatography and measurements of radioactivity. Many chapters are greatly enlarged. The section on complement and complement fixation, by Mayer, is nearly three times more copious; it has new illustrations and tables. An excellent treatment of electrophoretic methods now includes discussions on the applications and limitations of various zone-electrophoresis techniques, including immunoelectrophoresis.

Gel-diffusion methods are now recognized among the most powerful tools available for analysis of complex antigen-antibody systems. They are treated extensively, but more from the theoretical than technical aspect. For the purposes of this book such a presentation is proper since the power and wide application of most techniques derive as much from their versatility as from their inherent physical or chemical qualifications. Because they are versatile, gel-diffusion methods have been modified in many ways by individual investigators to suit their particular problems.

The author's discretion in such matters demonstrates considerable insight into the basic questions which investigators pose for reference handbooks—for example: How can our results best be interpreted? Wherever appropriate, Kabat has provided theoretical and practical guideposts and danger signals in the application of physical and chemical methods to immunochemistry and in the use of immunochemical tools in approaches to biological or biochemical problems. In this respect *Experimental Immunochemistry* is not only an immunochemist's volume. It is a major contribution toward the advancement of the biochemistry of macromolecules, and it is to be highly recommended to all chemists and biologists whose fields are beginning to feel the impact of practical and theoretical immunochemistry.

CURTIS A. WILLIAMS, JR.
Rockefeller Institute,
New York, New York

Chloroplast

The Life of the Green Plant. Arthur W. Galston. Prentice-Hall, Englewood Cliffs, N.J., 1961. 116 pp. Illus. $2.95.

This concise, up-to-date summary of the fundamentals of plant physiology is chiefly designed for use in introductory courses in biology, but it should also be an ideal complement to more comprehensive texts used for beginning courses in plant physiology.

The sequence of topics is essentially the same as that in the larger text, *Principles of Plant Physiology,* by Galston and James Bonner. The most noticeable changes in content are the omission of the details of intermediary metabolism (which is to be expected, considering the audience for which this "Foundations of Modern Biology Series" is designed), the addition of a chapter on the green plant cell, and the emphasis on plant growth, differentiation,