BOOK REVIEWS

Advances in Chromatography

This book is the first volume of a series of advances dealing with critical reviews of chromatography. The scope of the series is to provide “responsible surveys” covering all aspects of the subject, including gas chromatography, ion-exchange chromatography, thin-layer chromatography, and paper electrophoresis. As the editors point out in the introduction to the series, the explosive growth in chromatography has made it extremely difficult for any single individual to digest all the original literature on the subject.

The present monograph (Vol. 1) contains four chapters under the heading of “General Chromatography,” another six chapters cover certain aspects of “Gas Chromatography.” Papers included with the first group are: Ion-Exchange Chromatography; Chromatography and Electrophoresis on Paper and Thin Layers; A Teacher’s Guide; The Stationary Phase in Paper Chromatography; and The Techniques of Laminar Chromatography. The papers on gas chromatography are: Qualitative and Quantitative Aspects of the Separation of Steroids; Capillary Columns: Trials, Tribulations, and Triumphs; Gas Chromatographic Characterization of Organic Substances in the Retention Index System; Inorganic Gas Chromatography; Lightly Loaded Columns; and Interaction of the Solute with the Liquid Phase. It is not within the scope of this review to critically evaluate the various contributions, which, incidentally, were written by specialists in the field. However, a cursory examination revealed that the volume is a whole is very worthwhile. It is hoped that equally high standards will be maintained in subsequent volumes. Those soil scientists whose research involves the use of chromatographic techniques will definitely want to have the series conveniently located for easy reference.—F. J. Stevenson, Dept. of Agronomy, University of Illinois, Urbana.

The Control of Soil Fertility

This well-written reference and textbook encompasses the principles of soil fertility and its control and is mainly documented with the results derived from many British experiments. The book is divided into five parts: the plant nutrients that control fertility; fertilizers and manures for the control of soil fertility; plant nutrient cycles; the practical use of fertilizers to control fertility; and soil productivity as influenced by cropping systems. The last three parts are ones which are seldom covered extensively.

The conclusions expressed in this book are based largely on recent research findings which are supplemented with the long-time research results from classical experiments. The significance of farmyard manure and of soil organic matter is given special attention since these have not been treated extensively elsewhere and particularly since views on their significance have changed in recent years. Additional noteworthy sections include those on residual effects of fertilizers, factors that modify recommendations, methods of measuring soil productivity, and a discussion of the position of soil testing and plant analysis in British agriculture.

This book reports and interprets, on a subject-matter basis, the results of many field experiments conducted in Britain. This makes it a useful reference book since this information was scattered in many separate publications. Since the research was done in British soil fertility problems, some areas, such as micro-nutrients, receive lesser attention. There is, however, a discussion of fertility problems of tropical soils, an area of increasing interest in the agricultural scene of many developing countries. The discussion of definitions of terms common in Britain but not in America is helpful.

Dr. Cooke’s lucid style makes this book easy reading. Each section is written as a unit with a minimum of reference to other sections of the book. This volume is a valuable addition to the library of soil fertility workers.—STANLEY A. BARKER, Dep. of Agronomy, Purdue University, Lafayette, Ind.

The Solid-Gas Interface, Vol. I
Edited by E. Alison Flood, Marcel Dekker, Inc., 95 Madison Avenue, New York, N.Y. 10016. 514 p. 1967. $31.75.

The increased interest in interfacial phenomena is manifested by the number of books on this subject which have been published in recent years.

The Solid-Gas Interface is the first of two volumes. This volume is concerned with the theoretical description of the basic phenomena that occur during the adsorption of gases on solids. The 16 chapters are written by scientists who are actively conducting research involving the solid-gas interface. The views of the individual authors are presented with no attempt to present a unified view of adsorption. This book is quite specialized and is not written for the novice in surface chemistry. It is directed to the reader who has background and working knowledge of advanced physical chemistry, and will be of maximum benefit to the well-trained soil physicist or chemist.

A unique feature of this book is the last chapter which is a critique, written by G. D. Halsey, Jr., covering the preceding 15 chapters. This section alerts the reader of possible alternate approaches or pitfalls in the subject matter treated. Each chapter covers, in a rigorous fashion, a single subject which includes such topics as: surface forces, surface energy and tension of solids, structure of surfaces, adsorbate equation of state, thermodynamics of adsorption, heats of immersion, Gibbs and Polanyi adsorption concepts, and various adsorption theories using intertwining physical and mathematical models.

This book is an up-to-date treatment of some of the more important aspects of gas interaction with solids and is highly recommended for research workers involved in the interfacial chemistry and physics of the natural soil or soil mineral systems.—JEROME J. JURINAK, Professor of Soil Chemistry, Utah State University, Logan, Utah.

Advances in Agronomy, Vol. 18

This book, the eighteenth in the series published under the auspices of the American Society of Agronomy, reviews articles pertaining to a range of subjects relating to the soil-plant-livestock theme. The following subjects are treated: (i) Ecology of the Mediterranean annual-type pasture by R. C. Rosseter, CSIRO, Western Australia; (ii) Soil aeration and plant growth by Albert R. Grable, USDA, ARS, and Colorado State University; (iii) Dynamics of soil aggregation by R. F. Harris, G. Chesters, and O. N. Allen, University of Wisconsin; (iv) The energy environment of plants by Sherwood B. Idso and Donald G. Baker, University of Minnesota, and David M. Gates, Missouri Botanical Garden; (v) The fate of nitrogen applied to soils by Franklin E. Allison, USDA, ARS, retired; (vi) Turfgrass management in the United States by W. H. Daniel and E. C. Roberts, Purdue University and Iowa State University, respectively; and (vii) Soil-water behavior as described by transport coefficients and functions by Dale Swartzendruber, Purdue University.

Rosseter has ably reviewed ecological studies and physiological investigations relative to Mediterranean annual-type pasture species. Parture productivity in the ecosystem and animal production in relation to species composition are discussed at length.

The subject of soil aeration and plant growth is treated in a scholarly fashion by Grable. He points out several anomalies in the literature that have characterized this important area of research as “the problem of soil aeration.” The physical processes by which O₂ and CO₂ move in soil plant systems, important interaction between aeration and other soil properties, problems in measuring soil aeration, and gaseous transfer within plants are discussed. The effect of soil aeration on plant, chemical, and biological processes, as well as plant diseases, are reviewed in the concluding sections.

The article by Harris, et al., on the factors and mechanisms governing the formation and destruction of water stable aggregates, is the most complete and the best one to be found in the