Chemical Analysis

Physical Adsorption of Gases. D. M. Young and A. D. Crowell. Butterworth, Washington, D.C., 1962. xii + 426 pp. Illus. $13.

The authors are to be congratulated on producing a thorough, well-coordinated, readable, and exceedingly well-annotated monograph.

Those who have worked in the field of physical adsorption are acutely aware that an immense number of papers have been published on this subject during the past 30 years, and the genuinely important contributions are so perversely scattered through the periodical literature that their retrieval, even by the most assiduous researcher, is nearly impossible. In my opinion, this text represents a surprisingly good and discriminating distillation of the adsorption literature to 1959, along with some sound critique by Young and Crowell. The book should prove to be an invaluable, concentrated source of information for both industrial and academic researchers, and it may well be the most complete treatment of physical adsorption.

To their credit the authors have confined their attention solely to physical adsorption phenomena, excluding even capillary condensation processes and other sources of sorption hysteresis. In the first five chapters (roughly half the volume) they deal with theoretical aspects of gas adsorption on solids—a concentrated treatment of intermolecular forces, adsorption thermodynamics, the various models of mono- and multilayer adsorption, and the formulation of adsorption isotherms, as well as their thermodynamic, molecular-kinetic, and statistical-mechanical origins. Methods for estimating specific surface areas from gas adsorption and other measurements are reviewed in the sixth chapter. In the seventh (which seems chronologically misplaced) theoretical and experimental aspects of adsorption on heterogeneous surfaces are discussed. The eighth and ninth constitute an excellent and lucid summary of experimental techniques for adsorption and adsorption calorimetry, which should be of invaluable assistance to the experimentalist in the field. The tenth is a brief but adequate survey of the electrical, magnetic, and optical properties of adsorbed layers, and the last is an analysis of theoretical and experimental gas-mixture adsorption. In this 400-page volume nearly 1400 references are cited; this will, no doubt, cheer the heart of anyone who embarks on a literature survey of the field.

The subject and author indexes are the weakest part of the text, and they are likely to be a source of endless frustration. The subject index, for example, is nicely organized for locating information on the theoretical aspects of adsorption, but it contains absolutely no entries for specific adsorbents or adsorbates, although much useful experimental data and many analyses are scattered throughout the book. The author index is equally aggravating: authors are referred to by page number, but within each chapter the references are separately numbered in chronologic sequence and the lists of references, which are placed at the end of each chapter, are arranged numerically rather than alphabetically. This means that, to find a specific reference, one must examine the page cited in the index, jot down all reference numbers on that page (often as many as 30), and then consult the list of references to find which number goes with the desired author. An author index in which chapter and reference number are cited would be far more helpful and less exasperating.

The above objections notwithstanding, this book should find a welcome audience and an enthusiastic following.

ALAN S. MICHAELS
Department of Chemical Engineering, Massachusetts Institute of Technology

Astronomy for the Layman

A Survey of the Moon. Patrick Moore. Norton, New York, 1963. xvi + 333 pp. Illus. $6.95.

In judging the quality of a book, it is important to consider the purpose for which the book was written. The author of this book, an amateur astronomer who has had more than a quarter century of experience, states in his foreword: "I have tried to give a picture of the moon from the viewpoint of the observational astronomer. . . ." This is his ninth book.

The text is divided into two main sections; the first, which consists of 17 chapters (195 pages) of purely descriptive material, touches on all phases of selenology. The chapters are well written and quite free of errors. However, all except the most casual reader will wish for much more material concerning the evidence, pro and con, that has divided selenologists on such subjects as the origins of the surface features.

The second section (132 pages) appears to be the more important part. It is composed of four appendices, the last of which is several times longer than the combined length of the others. Here the author has divided the lunar surface into 16 areas. For each area he has supplied a well-drawn, two-page map for almost 400 of the principal features. The lettering is large, and the maps can be used easily, even under a poor light. A paragraph of descriptive material is provided for each named feature. I have seen nothing else of this sort that pleases me as well. So far as I know, it is the most convenient aid for the amateur who has a moderate sized telescope and who wishes to become familiar with the lunar surface. Even the professional astronomer may sometimes find it useful.

DINSMORE ALTER
1627 Euclid Avenue, Berkeley, California

Notes

Zoologie 1 (vol. 14, *Encyclopedie de la Pléiade.* Librarie Gallimard, Paris, 1963. 1242 pp. Illus.), edited by Pierre-Paul Grassé and Andrée Tetry, is the first volume for zoology in this series; it covers the general concepts of zoology, especially phylogeny, reproduction, and ethology, and then proceeds from the protozoa through mollusks. (The next volume, which is now in preparation, will be devoted to arthropods.) The detail is much greater than in most popular encyclopedias; indeed, it is much more elaborate than in many invertebrate textbooks, especially with respect to the smaller groups (although mollusks are somewhat skimpily treated in proportion). The volume, which is a convenient size for the coat pocket, is printed on Bible paper, and it is well illustrated (with the exception of the coelenterates) and handsomely bound. Although I am uncertain about the audience for which it is intended in France, *Zoology 1* will be very useful to American students who wish to study French as well as zoology.

JOEL W. HEDGPETH
Pacific Marine Station