

As might be expected in a work of this scope and magnitude, there are some errors and omissions. These, however, appear to be of minor nature and do not detract from the value of this scholarly book—a book which represents a truly outstanding contribution to the literature of primatology.

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Theoretical Physics

Proceedings of the Fifth Annual Eastern Theoretical Physics Conference. Providence, R.I., Nov. 1966. DAVID FELDMAN, Ed. Benjamin, New York, 1967. x + 248 pp., illus. \$6.95.

A question may be asked as to the purpose of publishing proceedings of *theoretical* conferences. To those active in the field the results presented in any particular paper are probably well known, and in general the presentation is too concise to be of practical use. The conciseness of the papers likewise limits their utility to a physicist interested in starting research in a new area. Even if he is too lazy to search the journals, a random sampling of recent summer-school notes will provide a more detailed exposition. A good purpose such published proceedings might serve is to give a professional survey to physicists not directly involved in research discussed in a particular article. If we keep this view in mind, then the proceedings under review here do a good job. The topics discussed cover three fundamental, active, and exciting areas of theoretical research. These are astrophysics, high energy physics, and topics loosely grouped as many-body physics.

It is gratifying to note that, in spite of familiarity, those engaged in cosmology and astrophysics have not lost awe for the large numbers they play with. There is excitement generated in discussing processes, already encountered in undergraduate physics, occurring at 10^{10}°K with a density of 10^{10} g/cm^3 over a period of 10^{10} years. Most of the articles in this section are down-to-earth discussions of everyday physics applied in a sophisticated way to stellar or nebular occurrences. Among these we have a talk on the application of molecular physics to the cooling of gaseous clouds or the joint use of hydrodynamics and nuclear physics in setting up models for

the last gasps of a star. This section demonstrates that in astrophysics we have a synthesis of all of physics.

Approximately two-thirds of these proceedings are devoted to high energy or elementary particle physics. One has a sampling of most of the current ideas about fundamental interactions. The talks are mainly evaluative in nature. The results of current algebra as well as its difficulties are aptly presented. Likewise, various recent developments of the dispersion and field theory approach are reviewed. One talk in this section stands out as having interest to a broader audience than just high energy physicists. A. S. Wightman's paper should be of value to those desiring a deeper understanding of some mathematical details of ordinary quantum mechanics.

The talks on many-body problems do not do justice to all areas now being investigated, but what is covered is covered in an interesting and easy manner. F. Dyson's discussion of the status of quantum mechanics for systems of many charged particles and bounds on their energy will be of interest to many physicists.

One minor objection that may be raised to these proceedings is that several of the talks are either inadequately referenced or not referenced at all. With the need for better referencing obvious, it is hoped that editors of future proceedings will pay more attention to this matter.

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Microbial Metabolism

Respiration and Phosphorylation of Bacteria. NINA S. GEL'MAN, MARINA A. LUKOYANOVA, and DMITRII N. OSTROVSKII. Translated from the Russian edition (Moscow, 1966). Gifford B. Pinchot, Translation Ed. Plenum, New York, 1967. x + 238 pp., illus. \$12.50.

This volume is an excellent summary of the information available on the respiratory pathways in bacteria (in contrast to the animal). The first two chapters discuss the nature and structure of bacterial membranes, which are the sites of the respiratory mechanisms. There are in this discussion some dubious statements; for example, "there is no respiratory control mechanism in bacteria" (p. 3) and "It is obvious that

obligate anaerobes . . . will not contain membranous structures" (p. 7). These may result from the translation, for later, in the detailed discussion of the literature, such sweeping generalities are avoided and a careful consideration of the experimental observations is given which shows that there is such control and that there are membranes in anaerobes. A third chapter takes up the respiratory chain of bacteria, and the fourth and last chapter discusses oxidative phosphorylation in bacteria with detailed consideration of the five somewhat unrelated cases known. There is then a summary of ten pages, which is less useful. About a thousand recent papers are referred to. Most of the literature is from the West, and most of the Soviet literature is that produced by the authors.

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Halley's Activities

Edmond Halley. ANGUS ARMITAGE. Nelson, London, 1966. xii + 220 pp., illus. 42 s.

Edmond Halley flourished in England in the last half of the 17th century and the first half of the 18th—at the summit of what can be called the scientific revolution in the country most involved in it. Halley's contributions to many of the facets of this revolution, with only so much of his biography as is necessary to illuminate them, form the subject matter of this study.

Halley improved astronomical instruments, both those for use on land and those for use at sea. He urged the use of telescopic sights and visited and observed with Hevelius, who did not use them. Halley determined the positions of numerous stars in both hemispheres and catalogued them, traveling to St. Helena to chart southern stars. He devised a method for determining a planet's orbital elements from three determinations of the planet's position. He suggested many refinements of the methods for determining longitude at sea and made numerous observations of the moon for that purpose. He consulted with Newton on the theory of gravity, predicted the periodicity of a comet, explained the rainbow, plotted compass variations, charted the oceans, took barometer readings for a study of the atmosphere, observed eclipses, ob-

served transits of Venus to obtain distance measurements, devised a diving bell, edited the mortality tables of Breslau, thus pioneering in the application of statistical methods for sociological studies, wrote on meteors, grasped the nature of nebulae, thus anticipating Herschel, noted the proper motion of stars, investigated Roman excavations. He was a Deputy Controller of the Mint, Savilian Professor of Astronomy, Secretary of the Royal Society, Astronomer Royal.

To put Halley's work in its proper perspective the author of this book also presents other scientists and their work. Thus the reader can appreciate the importance or lack of importance of each of Halley's activities. The author has chosen to treat each of these activities as a unit. This leads to an understanding of the state of each project during Halley's lifetime and makes it possible for the reader to use the book as a reference and confine himself to the material dealing with one topic. On the other hand, it makes for a disjointed story, going backward and forward in time, with considerable repetition.

The author is well qualified to handle his topic and has produced a very useful book which will serve both laymen and scientists well. However, the question arises as to what audience was intended. Some passages or concepts which seem elementary are explained, whereas a considerable knowledge of geometry, trigonometry, and physics on the part of the reader is assumed.

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Chelation

Chelates in Analytical Chemistry. Vol. 1. H. A. FLASCHKA and A. J. BARNARD, JR., Eds. Dekker, New York, 1967. xii + 418 pp., illus. \$18.75.

This is the first volume in a series that intends to "employ chelation as a concept serving to unify a large area of analytical chemistry." The subjects to be covered fall into three categories: chelates formed by certain elements, selected chelating reagents and families of chelating reagents, and analytical methods and techniques employing chelation. This first volume contains seven chapters treating topics in these categories. For example, two of the chapters are "Chelates and chelating agents in

the analytical chemistry of molybdenum and tungsten" by Püschel and Lassner and "Xylenol orange and methylthymol blue as chromogenic reagents" by Buděšínský.

In addition, this volume contains a chapter by Szabadváry and Beck entitled "An outline of the history of analytical methods based on complex formation." This chapter has two main faults. The important contributions toward understanding the fundamentals of chelate formation made by certain researchers are not mentioned, and more space should have been devoted to chelating agents of current analytical importance. For example, the important research of Schwarzenbach on aminocarboxylic acid chelates warrants more than two sentences.

The chapter by Blasius and Brozio on "Chelating ion-exchange resins" presents a fairly complete picture of current research on chelating agents bonded to a resin matrix in the chromatographic separation of cation mixtures. The chapters "Chelates in inorganic polarographic analysis: fundamentals" and "Chelates in inorganic polarographic analysis: applications," however, do not contain many of the developments of the last five years. The remaining chapters, "Conductometric and high-frequency impedimetric titrations involving chelates and chelating agents" by Vydra and Štůlík and "The thermal dissociation of chelating agents and chelates of analytical interest" by Wendlandt, are complete and well referenced. However, the material presented by Wendlandt is also treated in his recent book.

The information compiled in this volume should prove valuable to those doing research on these specific subjects. Equally important, this volume will be useful to those developing analytical procedures or modifying already existing ones. The principles forming the basis for the analytical usefulness of particular chelating agents are presented, methods using these chelates for specific problems are recommended, and, in some cases, procedures are given in working detail.

Both research chemists and analysts should find this volume to be of interest. However, some of the topics discussed are quite specific and may be of only limited interest to many. Also, some of the topics have already been treated in other texts.

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Books Received

Aggression and Defense. Neural Mechanisms and Social Patterns. Vol. 5, Brain Function. Proceedings of the 5th conference on brain function, Los Angeles, Calif., November 1965, sponsored by the Brain Research Institute with the support of the U.S. Air Force Office of Scientific Research. Carmine D. Clemente and Donald B. Lindsley, Eds. University of California Press, Berkeley, 1967. xvi + 361 pp., illus. \$15. UCLA Forum in Medical Sciences, No. 7.

Alaskan Eskimos. Wendell H. Oswalt. Chandler, San Francisco, 1967 (distributed by Science Research Associates, Chicago). xviii + 297 pp., illus. Cloth, \$7.25; paper, \$4. Chandler Publications in Anthropology and Sociology.

Amateur Astronomy. Patrick Moore. Norton, New York, 1968. 328 pp., illus. \$6.95. Reprint of the 1957 edition. The Amateur Astronomer's Library.

Amino Acid Determination. Methods and Techniques. S. Blackburn. Dekker, New York, 1968. xii + 271 pp., illus. \$12.50.

Amphibien und Reptilien. Katalog der Subfamilien und höheren Taxa mit Nachweis des ersten Auftretens. Oskar Kuhn. Fischer, Stuttgart, 1967 (distributed in the United States by Abel, Portland, Ore.). viii + 124 pp. \$11.

Annals of the International Years of the Quiet Sun. Vol. 1, Geophysical Measurements: Techniques, Observational Schedules and Treatment of Data. C. M. Minnis, Ed. M.I.T. Press, Cambridge, Mass., 1968. xviii + 398 pp., illus. \$20.

Annual Report of the National Institute of Oceanography. 1 April 1965–31 March 1966. Natural Environment Research Council. Cambridge University Press, New York, 1967. x + 75 pp., illus. Paper, \$1.25.

Annual Surveys of Organometallic Chemistry. Vol. 3, Covering the Year 1966. Dietmar Seyferth and R. Bruce King, Eds. Elsevier, New York, 1967. xii + 456 pp., illus. \$27.50.

Applications of the Sciences in Marketing Management. Proceedings of a conference, Lafayette, Ind., July 1966. Frank M. Bass, Charles W. King, and Edgar A. Pessemier, Eds. Wiley, New York, 1968. xvi + 456 pp., illus. \$11.50. Wiley Marketing Series.

Arctic and Alpine Environments. Vol. 10, Proceedings of the 7th Congress of the International Association for Quaternary Research, Boulder-Denver, Colo., August–September 1965, sponsored by the U.S. National Academy of Science–National Research Council. H. E. Wright, Jr., and W. H. Osburn, Eds. Indiana University Press, Bloomington, 1968. xii + 308 pp., illus. \$12.50.

Assistierte Zirkulation. Mechanical Assistance of the Circulation. Colloquium, Bad Neuenahr, June 1967. F. Loogen, B. Bostrom, U. Gleichmann, and H. Kreuzer, Eds. Thieme, Stuttgart, 1967 (distributed in the United States by Intercontinental Medical Book Corp., New York). x + 170 pp., illus. Paper, 35 DM.

Basic Instrumentation for Engineers and Physicists. A. M. P. Brookes. Perga-

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