

be four times as long as that used for photographing a full moon. Actually nine would be a better factor for the first quarter and slightly more for the last quarter. However, if an amateur underexposes his first moon photograph, he can make corrections on his second try.

Paul suggests that one start by photographing star trails; as an illustration he uses an excellent photograph made by Paul W. Davis, of circumpolar trails. He might have mentioned that, by comparing such a photograph with one taken 50 years earlier, one can learn quite a bit about the precession of the equinoxes.

The book deserves a better binding and an index. It is an excellent book to recommend to amateurs seeking answers to questions about celestial photography.

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Cultures and Societies of Africa. Simon Ottenberg and Phoebe Ottenberg, Eds. Random House, New York, 1960. x + 614 pp. Illus. \$7.50.

Few editors have had the courage or the opportunity to present their intended readers, college and university teachers and students, with a selection such as this. The articles and excerpts reprinted here are largely by professional anthropologists, written mainly for fellow professionals. The volume is focused not on all the cultures and societies of Africa, but on those of Africa south of the Sahara; the primary stress is the traditional way of life in these areas. Anthropological "readers" are rarely organized within such strict limits. The editors and their publisher are to be congratulated for breaking new ground.

There are six sections: the 81-page general introduction by the editors; "People and environment" (five selections); "Social groupings" (seven selections); "Authority and government" (six selections); "Values, religion, and aesthetics" (eight selections); and "Culture contact and change" (six selections). There are, then, 32 articles and excerpts, by as many authors, included here. The majority deal with specific groups, and only four or five might be styled summary or survey articles. Most of the major areas of sub-Saharan Africa are represented, although unequally. For

example, western Africa claims a major share, ten groups, compared with four groups for the central African Republic and two for the Congo area. Ethiopia and the Cape are not touched upon. In general, the representation is more even in terms of types of groups; these range from the Pygmies to the Ashanti.

The editors evince a strong predilection for materials published originally in English, and only two of their selections are translations. For each item an introduction and a section of annotated references "For further reading" are provided. The volume concludes with a 33-page classified bibliography, biographical notes on the contributors and editors, and an index. There are 26 pages of plates. An attractive end-paper map gives the approximate location of 28 tribes mentioned in the selections. In some cases, the location is *very* approximate (for example, the Tswana and the Swazi), and in one case (the Luapula) it is an area, not a tribe, that is designated.

The editors, and their cooperative publisher, have set high standards and have largely succeeded in maintaining them. Prospective users of the book should be warned, however, that there are a few traps.

Although the selections treat only sub-Saharan Africa, the editors, in the introduction, devote substantial space to the northern regions, space which might well have been devoted to a fuller treatment of the area actually covered by the volume. There are aspects of the introduction's organization which may lead to difficulties in the classroom: for example, among 13 subheads, one is called "Climate and cultures" and another "Means of livelihood." The rationale of this organization is unclear, and the reader must work back and forth to see where there are, or are not, cross-correlations among climate, culture, and means of livelihood. Most students will not willingly do this, and the task will inevitably fall to the teacher. Again, the authors create unnecessary work for teachers by subsuming kinship under "Social groupings"; and by saying, "The three basic kin relationships are those of descent, filiation, and marriage," only to dismiss filiation with a few brief sentences (page 28 and following). Regrettably, these and other lapses render the introduction somewhat less useful than it could have been.

A quarter of the selections are by American anthropologists; not all of these anthropologists were trained in

this country, nor do they all write in the prevailing American tradition with its emphasis on culture. The remaining three-quarters are overwhelmingly by scholars who write in the British tradition of social anthropology. In fact, a majority of the more important British Africanists, with certain notable exceptions, are represented. This source of the selections means that, in most, there is a strong emphasis on problems, and even the more descriptive pieces often have a good deal of theory implicit in them. If a course happens to be organized on regional lines, or to be heavily factual in its orientation, the topical organization, in combination with the substantial theoretical content of the volume, may make this book a difficult one to use.

Many teachers and students will no doubt welcome the stimulating challenge of such a book. This challenge, met squarely, will prove richly rewarding.

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High Energy Nuclear Physics. W. O. Lock. Methuen, London; Wiley, New York, 1960. xi + 190 pp. Illus. \$3.25.

The latest volume in the Methuen monograph series on physical subjects is this pocketbook by Lock. I believe that these short books are the correct approach to providing excellent coverage of a limited subject which is part of a rapidly changing field. In contrast to some recent lengthy books on nuclear physics, to which a number of authors contributed incoherently on topics (and on the number of pages) assigned by an editor, this book, written by one person, provides a well-written, coordinated account of high-energy, pion, and nucleon physics, which is technically good and which is easy to understand.

The book is based on lectures given to first-year postgraduate students in nuclear physics at Birmingham University. Lock assumes that the reader will have an elementary knowledge of quantum mechanics and that he can supplement this knowledge by reference to the books and articles listed at the end of each chapter.

The text (188 pages) is subdivided into eight chapters: "Introduction"; "Properties of the pions"; "Fundamental concepts"; "The scattering of pions by protons"; "The photoproduc-

tion of pions from nucleons"; "Nucleon-nucleus scattering"; "Nucleon-nucleon elastic scattering"; and "Pion production in nucleon-nucleon collisions." No consideration is given to muons, strange particles, cosmic ray phenomena, electron scattering, or detailed theoretical models. The discussion of such specific topics as phase shift analysis, dispersion relation applications, and various phenomenological theories is adequate for graduate students, who will be able to understand their significance in the over-all concepts of meson and nucleon physics. Although some of the data are already a little out of date, this inexpensive book is, nevertheless, a detailed, well-rounded, and inviting account that deserves to be a part of every physicist's home library, whether he requires an introductory or a refresher course in high-energy nuclear physics.

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Théorie Relativiste des Fluides à Spin.
Francis Halbwachs. Gauthier-Villars,
Paris, 1960. x + 294 pp.

This book gives an admirable account of researches on the properties and possible types of relativistic fluids possessing intrinsic angular momentum. The study of such fluids goes back to the early days of wave mechanics, when attempts were made to obtain a hydrodynamical interpretation of the then new quantum equations and, in particular, of the intrinsic spin of the electron. The recent revival of interest in the possibility of a causal interpretation of quantum phenomena has led to a deeper study of the hydrodynamical possibilities inherent in the theory of relativity.

After discussing the earlier relativistic hydrodynamical models proposed by Frenkel, Mathisson, and Weyssenhoff, the author turns to the recent advances made by Takabayasi and by Bohm and Vigier, and to the important developments due to Halbwachs himself.

Some people may feel inclined to liken these researches to the old attempts to construct gyroscopic models of the ether, but the work may not be dismissed so easily. The investigation of the full resources of relativistic hydrodynamics is of considerable interest in its own right, and contains many surprises; moreover, Bohm and Vigier, by relaxing a restriction imposed by Weyssenhoff, have already shown that two reasonable types of mass center exist which do not necessarily coincide, and that the resulting additional degrees of freedom give a possibility of new insight into the significance of the recent classification of elementary particles by means of strangeness and isotopic spin quantum numbers.

Though the book makes only passing reference to such quantized aspects of the work, it stresses the quantum motivation for the study of the often unexpected properties of these relativistic fluids. To those people who seek an authoritative, up-to-date, and unusually clear account of the whole field, the book is warmly recommended.

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New Books

Biological Sciences

Asexual Propagation and Regeneration. M. A. Vorontsova and L. D. Liosner. Translated from the Russian by P. M. Allen. F. Billett, Ed. Pergamon, New York, 1960. 511 pp. Illus. \$12.

Biology and Comparative Physiology of Birds. vol. 1. A. J. Marshall, Ed. Academic Press, New York, 1960. 530 pp. Illus. 100s.

Discussions on Child Development. A consideration of the biological, psychological, and cultural approaches to the understanding of human development and behavior. J. M. Tanner and Barbel Inhelder, Eds. International Universities Press, New York, 1960. 199 pp. \$5. Proceedings of the fourth meeting of the World Health Organization study group on the psychobiological development of the child, Geneva 1956.

Elementary Biochemistry. Edwin T. Mertz. Burgess, Minneapolis, Minn., ed. 2, 1960. 300 pp. Illus. \$6.50.

Encyclopedia of Plant Physiology. vol. 5, pts. 1 and 2, *The Assimilation of Carbon Dioxide*. W. Ruhland, Ed. Springer, Berlin, 1960. 1053 pp.; 894 pp. Illus. DM. 530.

Handbook of Physiology. A critical, comprehensive presentation of physiological knowledge and concepts. Section 1, *Neurophysiology*, vol. 3, John Field, Editor-in-Chief. H. W. Magoun, Section Ed. American Physiological Soc., Washington, D.C., 1960 (order from Williams and Wilkins, Baltimore, Md.). 578 pp. Illus. \$20.

The Metabolic Basis of Inherited Disease. John B. Stanbury, James B. Wyngaarden, and Donald S. Fredrickson, Eds. McGraw-Hill, New York, 1960. 1490 pp. Illus. \$30. This book is intended to give a critical and comprehensive account of those heritable disorders of metabolism for which an appreciable body of knowledge exists; "the editors enlisted the collaboration of investigators [47] actively

engaged in the . . . study of specific heritable diseases."

Phenolics in Plants in Health and Disease. Proceedings of a plant phenolics group symposium held at Bristol, April 1959. J. B. Pridham, Ed. Pergamon, New York, 1960. 141 pp. \$7.50.

The Problem of Acute Hypothermia. P. M. Starkov. Translated from the Russian by R. E. Hammond. E. Neil, Ed. Pergamon, New York, 1960. 327 pp. \$12.

Radioactive Isotopes in Biochemistry. Engelbert Broda. Elsevier, Amsterdam; Van Nostrand, Princeton, N.J., 1960. 386 pp. Illus. \$11.50.

Reproduction in the Dog. A. E. Harrop. Williams and Wilkins, Baltimore, Md., 1960. 215 pp. \$7.

Steric Aspects of the Chemistry and Biochemistry of Natural Products. J. K. Grant and W. Klyne. Cambridge Univ. Press, New York, 1960. 144 pp. Illus. \$5.50. Biochemical Society Symposia No. 19.

Structure and Function of the Cerebral Cortex. D. B. Tower and J. P. Schade, Eds. Elsevier, Amsterdam; Van Nostrand, Princeton, N.J., 1960. 460 pp. Illus. \$17. Proceedings of the Second International Meeting of Neurobiologists, Amsterdam, 1959.

Toxicology. Mechanisms and analytical methods. vol. 1. C. P. Stewart and A. Stolman, Eds. Academic Press, New York, 1960. 791 pp. Illus. \$22.

Treatise on Invertebrate Paleontology. pt. 1, *Mollusca I*. Raymond C. Moore, Ed. Geological Soc. of America and Univ. of Kansas Press, Lawrence, 1960. 1374 pp. \$7.50.

Unity and Diversity in Biochemistry. An introduction to chemical biology. Marcel Florkin. Translated by T. Wood. Pergamon, New York, 1960. 410 pp. Illus. \$10.

Economics and the Social Sciences

Administration of Teaching in Social Sciences in the U.S.S.R. Syllabi for three required courses. Univ. of Michigan, Ann Arbor, 1960. 146 pp. The courses covered—dialectical and historical materialism, political economy, and history of the C.P.S.U.—are required of every Soviet college-level student, whatever his program of study.

The American Supreme Court. Robert G. McCloskey. Univ. of Chicago Press, Chicago, Ill., 1960. 272 pp. \$5.

Behaviour Therapy and the Neuroses. Readings in modern methods of treatment derived from learning theory. H. J. Eysenck, Ed. Permamon, New York, 1960. 490 pp. Illus. \$10.

Delinquency and Opportunity. A theory of delinquent gangs. Richard A. Cloward and Lloyd E. Ohlin. Free Press, Glencoe, Ill., 1960. 231 pp. \$4.

Doctoral Research on Russia and the Soviet Union. Jesse J. Dossick. New York Univ. Press, New York, 1960. 248 pp. \$6. The examination of 150,000 titles culled from several scores of sources resulted in a master list of 960 American, British, and Canadian doctoral dissertations on Russia and the Soviet Union. They are classified into sections, such as agriculture, anthro-