ynomial matrices," "Unitary and Euclidean spaces," "Bilinear and quadratic forms," "Linear transformations of bilinear-metric spaces," and "Multilinear functions. Tensors."

Much of the book's success stems from the author's wholesome attitude toward the various formulations from which the subject may be approached. "In linear algebra one studies three kinds of objects: matrices, linear spaces, and algebraic forms. The theories of these objects are so closely related that most problems of linear algebra have equivalent formulations in each of the three theories. The matrix point of view, which underlies the present exposition, is the one best adapted to actual calculations. On the other hand, most problems of linear algebra that arise in geometry and mechanics lead to algebraic forms, while the best understanding of the internal connections between different problems of linear algebra is obtained by means of linear spaces. Therefore the ability to pass from one type of formulation to another is one of the most important skills to acquire in the study of linear algebra."

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Rare-Earth Elements

The Technology of Scandium, Yttrium, and the Rare Earth Metals. Eugene V. Kleber and Bernard Love. Pergamon, London; Macmillan, New York, 1963. x + 205 pp. Illus. $7.50.

Within recent years scandium, yttrium, and the lanthanons, atomic numbers 57 through 71, have been prepared as "high-purity" metals. Their physical and mechanical properties have been investigated, and constitutional diagrams have been established for many metals with yttrium and the lanthanons. This book, a revision of a survey undertaken for the U.S. Air Force in 1958, is a compilation of available data on the properties of the pure metals and some of their alloys. It contains 939 references and considers work reported through the latter months of 1960.

A brief review surveys their abundance, occurrence, production, availability, recovery from ores, electronic structure, chemical properties, and nuclear properties. Separating the rare-earth elements, methods of analysis, and the economics of the metals considered are also discussed. Various methods used for reduction and purification are reviewed, and the available data, reported during recent years, on their physical, mechanical, and chemical properties are tabulated.

A chapter devoted to binary constitutional diagrams of the rare-earth metals, with one another and with other metals, contains more than 100 diagrams, many of which are incomplete, as one would expect. The alloying behavior of the metals, as it is related to basic physical principles, is briefly reviewed. The final chapter is a review of the use of the rare-earth elements in alloys, and it is interesting to observe that the only widespread use is that of misch metal, principally for lighter flints. The addition of rare-earth metals to magnesium does, however, increase its strength at elevated temperatures, and several commercial alloys are available. Reports with respect to the influence of rare earths added to steels are quite conflicting; some reports tell of dramatic improvement, but others say there is no improvement or that there is actual impairment.

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Adaptation Tolerance

Parasitism. An introduction to parasitology and immunology for students of biology, veterinary science, and medicine. J. F. A. Sprent. University of Queensland Press, Brisbane, Australia; Bailliere, Tindall, and Cox, London, 1963. x + 145 pp. 35s.

Among the several recent books that present the principles and general laws of parasitism, this little volume by J. F. A. Sprent, the 1962 winner of the Henry Baldwin Ward medal of the American Society of Parasitologists, will be approached with interest. In the first 30 pages Sprent presents concepts and definitions of parasitism and other associations. The rest of the book deals with immunity, which is taken as the central theme of parasitism. Other aspects of parasitism that are of general interest—for example, nutrition and life cycle, and behavioral adaptations—are given only token mention.

Parasitism is defined as an "association whereby one partner gains its nourishment from another, but in such a way as to establish an intimate macromolecular contact, whereby the host is potentially able to recognize the associate as foreign." Adult cestodes are thought not to meet that criterion and are regarded as commensals.

Immunity to heteroparasites and to homoparasites (graft, foetus, tumor), the concept of "self" and "not self," and the clonal selection theory of antibody formation are considered. Among the conclusions is the idea that there is evolutionary selection of hosts toward lower resistance, that is, "adaptation tolerance."

The treatment of parasitism, with concepts only and without description of any parasite, can hardly serve as an introduction to the subject. This is a book for the reader who has some familiarity with parasites and who wants a stimulating introduction to concepts and principles of immunology as it relates to evolution. There is a bibliography of 72 titles of which 18 deal with parasites and 50 with immunity. The very concentrated style may explain some unfortunate implications such as the following: the implication that plague and trichinosis are harmless to rodents (p. 13), that *Entamoeba histolytica* attacks only intestinal cells (p. 23), that yellow fever infects only man (p. 32).

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Uranium Concentrates

The Technology of the Treatment of Uranium Concentrates. N. P. Galkin, A. A. Maiorov, and U. D. Veryatin. Translated from the Russian edition (Moscow, 1960) by R. D. M. Hegarty. R. W. Clarke, Translation Ed. Pergamon, London; Macmillan, New York, 1963. xiv + 204 pp. Illus. $7.50.

This treatise on the technology of uranium production is published in the International Series of Monographs on Nuclear Energy. In their attempt to provide a very ambitious coverage of the subject, the authors range from the

physical and chemical properties of uranium and its compounds through descriptions of the various uranium minerals, major deposits, concentrating techniques, and flowsheets to analyses of the uranium refining processes used in France, England, Belgium, and the United States. A short chapter deals with the radiology and toxicology of the concentrates and compounds. Detailed treatment of such a broad area in 200 pages requires the use of terse and in some cases cryptic phrases, but this does not detract from the importance or usefulness of the monograph.

The volume was published in the U.S.S.R. in 1960, and papers published in 1958 are cited. Thus, much of the information about production is out of date. However, the completeness and accuracy of the work, compared with the material published in English up to that time, is very good in most areas, particularly with respect to occurrences, properties, and reactions pertaining to production techniques.

The material is well referenced; there are 261 specific literature citations of which more than half appear to be available in English. However the references to production and refining technology in the United States do not cover the field. Careful study of the book does not reveal definitive statements about the processing techniques actually used in the Soviet Union, although some deduction may be made.

This little volume is a welcome addition to a field in which only a modest effort has been made to collect this type of information and present it systematically.

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Note

Ornithology

The increasing interest of amateur bird observers in the biology of the creatures they find so absorbing to watch has created a need for nontechnical, compact, convenient books that will provide the kind of information bird watchers desire. Wesley Lanyon's little volume, **Biology of Birds** (published for the American Museum of Natural History by Doubleday, New York, 1964. 187 pp. Illus. $3.95), is of this sort. It is for nonresearch-minded dilettantes, and it should give such readers a good general picture of what is known about birds as living organisms and of their evolution, migrations, breeding habits, and structural adaptations for flying.

In keeping with its intended coverage, this book does not follow the approach of, and contains none of the material found in, the usual identification manuals—no color plates and no regional or local emphasis. A rapid perusal of the contents leads me to conclude that the author has succeeded in presenting a large amount of interesting information in readily assimilable fashion. Like any simplified account, the text will often leave more advanced readers with the wish that restrictions on space were less rigid and that a little more qualifying discussion were possible.

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New Books

General

Access to Higher Education. vol. 1. Frank Bowles. UNESCO and the International Assoc. of Universities, Paris, 1963 (order from Columbia Univ. Press, New York). 212 pp. Illus. $3.

AGARD Aeronautical Multilingual Dictionary. First supplement. A. H. Holloway, Ed. Pergamon, London; Macmillan, New York, 1963. 344 pp. Illus. 1287 terms (all are from the *Glossary of Aeronautical Terms* published by NASA). Definitions are given in English only, with equivalents in German, Spanish, French, Greek, Italian, Dutch, Russian, and Turkish. There is an index for each language.

American Education in International Development. R. Freeman Butts. Harper and Row, New York, 1963. 160 pp. $4.50.

Biographical Memoirs of Fellows of the Royal Society. vol. 9. Royal Society, London, 1963. 326 pp. Illus. $6. Seventeen biographical essays: W. T. Astbury, N. Bohr, H. G. Cannon, C. G. Darwin, J. A. Edgell, R. A. Fisher, F. G. Gregory, A. A. C. Hinton, W. B. R. King, O. Maass, J. I. O. Masson, A. M. G. R. Portevin, J. Read, L. Rogers, H. H. Thomas, M. W. Travers, and G. M. Trevelyan.

Biography of Physics. George Gamow. Harper, New York, (© 1961), 1964. 346 pp. Illus. Paper, $1.95.

Collegiate Dictionary of Zoology. Robert W. Pennak. Ronald, New York, 1964. 591 pp. $8.50.

Conference of Professional and Scientific Societies. Proceedings. Held at Chicago in June 1963. Lowell T. Coggeshall *et al.* Commission on Drug Safety, Chicago, Ill., 1963. 189 pp.

The Congressman. His work as he sees it. Charles L. Clapp. Brookings Institution, Washington, D.C., 1963. 464 pp. $6.

La Cybernétique. Louis Couffignal. Presses Universitaires de France, Paris, 1963. 125 pp. Illus. Paper.

A Dictionary of Biological Terms. I. F. Henderson and W. D. Henderson. Eighth edition by J. H. Kenneth. Van Nostrand, Princeton, N.J., 1963. 656 pp. $12.50.

The Dolphin in History. Papers by Ashley Montagu and John C. Lilly (a symposium at the Clark Library), October 1962. Univ. of California, Los Angeles, 1963. 61 pp. Illus. $2.

The First Book of Wildlife Sanctuaries. C. William Harrison. Watts, New York, 1963. 67 pp. Illus. (juvenile book).

Flora of Missouri. Julian A. Steyermark. Iowa State Univ. Press, Ames, 1963. 1808 pp. Illus. $18.50.

Foresters. And what they do. John Perry and Jane Greverus Perry. Watts, New York, 1963. 192 pp. $3.95 (juvenile book).

Further Explorations in Science. A second book of basic experiments. Harry Milgrom. Dutton, New York, 1963. 124 pp. Illus. $3 (juvenile book).

Josiah W. Gibbs. American theoretical physicist. Benedict A. Leerburger, Jr. Watts, New York, 1963. 128 pp. Illus. $2.95 (juvenile book).

A History of Physics. Charles-Albert Reichen. Hawthorn, New York, 1963. 112 pp. Illus. $5.95. A popularization.

How to Select Executive Personnel. Edith Sands. Reinhold, New York; Chapman and Hall, London, 1963. 231 pp. $9.75.

In the Beginnings. Early man and his gods. H. R. Hays. Putnam, New York, 1963. 575 pp. Illus. $10.

An Introduction to Cybernetics. W. Ross Ashby. Wiley, New York (© 1956), 1963. 305 pp. Illus. Paper, $1.65.

Making Friends with the Stars. Arthur J. Zadde. Revised by Theodore A. Smits. Barnes and Noble, New York (© 1948), 1963. 162 pp. Illus. Paper, $1.25; cloth, $3.50.

Marine Borers. An annotated bibliography. William F. Clapp and Roman Kenk. U.S. Department of the Navy, Washington, D.C., 1963 (order from GPO, Washington, D.C.). 1148 pp. $7. Literature published up to and including 1954 is covered. Unpublished reports on government sponsored research and "information on borers of microscopic size such as bacteria and algae" are not included.

Project Apollo. Man to the moon. Tom Alexander. Harper and Row, New York, 1964. 252 pp. Illus. $4.50.

Statistical Abstract of the United States, 1963. Prepared under the direction of Edwin D. Goldfield. U.S. Department of Commerce, Washington, D.C., 1963 (order from GPO, Washington, D.C.). 1048 pp. $3.75.

A Study Guide for Student X-Ray Technicians. Joyce Oliphant. Thomas, Springfield, Ill., 1963. 168 pp. $5.50.

Synthesis of Research in Selected Areas of Health Instruction. C. Harold Veenker, Ed. School Health Education Study, Washington, D.C., 1963. 200 pp. Illus. Paper, $2.

Wanted: Amateur Scientists. Robert Froman. McKay, New York, 1963. 120 pp. Illus. $3.25.