sound waves in water. E. Meyer contributes two chapters, one on instruments for measuring the transmission properties and the other on the effects of air bubbles on sound transmission in water. Bubbles can have a marked effect on sound transmission and, in the limit of high sound intensity, produce the phenomenon of cavitation. A chapter by K. Tamm discusses the various linings that have been used to absorb sound waves in tanks used for underwater sound measurements. The "Fafnir" construction used in German technology is emphasized. The section closes with an account by H. Oberst of the resonant sound absorbers that were used to reduce the reflections from German submarines during World War II.

A third division, by A. A. Regier, H. H. Hubbard, and L. W. Lassiter, covers the timely subject of aircraft noise. Noise from propellers, engines, jets, rocket motors, and sonic "booms" are discussed and compared. A final chapter, by Richardson, discusses the sound of propulsion in water.

It seems to me that the objective of producing a handbook to cover all the technical aspects of ultrasonics, underwater sound, and airplane noise is admirably achieved. The separate writers are all well-known experts in their fields and produce an authoritative account of their subjects. The book should be very useful and should have a wide sale among engineers and physicists working in these fields.

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Handbook of Snakes of the United States and Canada. vols. 1 and 2. Albert H. Wright and Anna A. Wright. Comstock; Cornell University Press, Ithaca, N.Y., 1957. 1105 pp. Illus. $14.75.

Virtually every naturalist dreams, at some time during his career, of writing a great compendium, a thorough, outstanding reference work on his chosen subject. Albert Hazen Wright had such a dream four decades ago. Unlike the vast majority of his colleagues, he had the persistence and knowledge for translating vision into reality. And in the process he became the inspiration for an entire series of volumes on herpetology —the Comstock handbooks, which are almost indispensable for anyone deeply interested in this field.

In coauthorship with his wife, he first produced the *Handbook of Frogs and Toads of the United States and Canada*, now in its third edition, and the same team has just given us the two-volume *Handbook of Snakes*. A third volume, containing a bibliography of North American ophiology, is soon to be published. (Other authors produced the handbooks of salamanders, turtles, and lizards, but they drew heavily on the Wrights' photographic library and on their advice and counsel.)

One must admire the Wrights' tenacity in seeing this work to its fruition despite innumerable difficulties, not the least of which has been a rapid acceleration of interest in North American herpetology and a resultant flood of papers on serpents. Another problem was that of obtaining living, healthy specimens of almost every species and subspecies of the area. Each of these is illustrated by generally excellent photographs that show, in most instances, the top, side, and under surface of the head, three similar views of the body, and a portrait of the serpent taken from directly above, plus, in a great many cases, a ventral view. These make the book unquestionably the most thoroughly illustrated in its field, and, since the publishers have provided a better grade of paper than in other books of the series, the reproduction is first-rate. There are also dozens of line drawings that illustrate details of serpentine anatomy, and there are maps that show the geographic distribution of the 305 different forms included in the book.

The text is based on wide experience in the field and laboratory, visits to the major museums of the United States, and several years of peregrinations through the herpetological literature. In fact, the book is so thoroughly documented that sometimes the reader must make his choice between conflicting statements of opposing authors. The original manuscript was so long that a considerable portion of it had to be excised in the interests of economy of space. What is left is meaty and well organized under such subheadings as range, size, distinctive characteristics, color, habitat, period of activity, breeding, food, and authorities. The recommendations of the Committee on Herpetological Common Names of the American Society of Ichthyologists and Herpetologists were published too late to be used; hence, the *Handbook of Snakes,* in spite of the important place it is bound to have in the history of herpetology, will not aid in achieving the standardization of common names that seems so highly desirable.

Despite the fact that much of the book was written years ago, the Wrights have made a notable effort to keep it up to date. In many instances, recent papers are mentioned, with appropriate comments, even though they were published after the manuscript for the *Handbook* had been completed. This results in some inconsistencies, for the distribution maps do not always reflect the latter-day statements in the text. There are a few minor errors, as is inevitable in a large book of this sort, but I believe that a reviewer should report such errors directly to an author rather than follow the common, but dubious, custom of enumerating them in print. Certain practitioners of polemics seem to delight in listing all manner of minutiae merely to impress their colleagues with their ability to find mistakes.

As a general reference work on North American serpents, as a valuable aid in identifying the different species and their races, and as an outstanding example of pertinacity despite many difficulties, the *Handbook of Snakes* will be indispensable for any naturalist or, for that matter, any natural history library. The third volume, when it is published, will be *the* key to the technical literature on the snakes of the United States and Canada.

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Handbuch der Physik. vol. XXX, *X-rays.* S. Flügge, Ed. Springer, Berlin, 1957. 384 pp. Illus. DM. 88.

This comparatively thin volume of the *Handbuch der Physik* is entitled simply *X-rays*. There are five sections, dealing with the various aspects of the subject; all of these are in English except for the first, which is in German and deals with the production of x-rays. The second section is entitled "Experimental methods of x-ray spectroscopy at ordinary wavelengths." The third section, "Experimental methods of soft x-ray spectroscopy and the valence band spectra of the light elements," is followed by a section on "X-ray microscopy." The last section is a discussion of "The continuous x-ray spectrum."

It would be both tedious and superfluous to comment in detail on the contents of this volume. Each section is complete and thorough. In discussing the production of x-rays, Schaaffs (76 pages), after a very brief historical introduction, discusses the properties of x-rays and the techniques which have been and are being used for their production. Of the five sections, this is the one which, for the most part, deals, of necessity, with older papers, since this is the area which has been longest under study.

In the second section, Sandström (163 pages) deals with experimental methods of x-ray spectroscopy at the more common wavelengths, leaving the very soft part of the spectrum to Tomboulian (59 pages), who follows him in this volume. Both of these subjects, while long established, are fields in which very active

work is being carried on today; both reviews are thoroughly up to date. These sections will be referred to constantly, particularly because of the extensive tables of wavelengths of emission lines (including satellites), wavelengths of absorption discontinuities, energy levels, and band widths which are included.

Kirkpatrick's fundamental work in x-ray microscopy is, of course, well known, and I was pleased to find in this all too brief section ("X-ray microscopy," 29 pages), for which Kirkpatrick and Pattee were responsible, a discussion of techniques which possibly may not be properly classified as x-ray microscopy. There is a discussion of microradiography, of x-ray projection microscopy, and of the focusing microscopes.

The concluding section, by Stephenson (52 pages), on "The continuous x-ray spectrum" is, for the most part, devoted to comparatively early work, although appropriate attention has been paid to more recent developments.

The final 14 pages consist of a dual index, in German and English, which will prove very useful to English-speaking readers whose knowledge of German may not be adequate.

On first reading the table of contents of this volume, I was frankly disappointed at some of the authors who had been chosen to write some sections; I would perhaps have chosen others. However, the wisdom of the choice is finally decided by the quality of the product. There is apparently something about the *Handbuch der Physik* which is very special: being asked to contribute to it apparently brings out the best in an author. All the papers are excellent and adequately detailed and, in spots, even make enjoyable reading. The choice of authors, therefore, was a happy one.

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Books Reviewed in The Scientific Monthly, August

An Introduction to Cybernetics, W. R. Ashby (Wiley). Reviewed by J. Rothstein.

The Criminal, the Judge, and the Public, F. Alexander and H. Staub (Free Press). Reviewed by F. Wertham.

Through Soviet Windows, J. E. Evans (Dow Jones). Reviewed by W. S. Vucinich.

Logic without Metaphysics, E. Nagel (Free Press). Reviewed by J. Turner.

Eisame Inseln: Eine Forscherfahrt im Persian Gulf, H. Heberlein (Orill Fussli). Reviewed by W. R. Holleman.

Medical Research: a Midcentury Survey, vol. 1, *American Medical Research: in Principle and Practice*; vol. 2, *Unsolved Clinical Problems: in Biological Perspective,* E. E. Lape, Ed. (Little, Brown). Reviewed by B. Glass.

Common Frontiers of the Social Sciences, M. Komarovsky, Ed. (Free Press). Reviewed by B. H. Williams.

Machine Literature Searching, J. W. Perry, A. Kent, M. M. Berry (Western Reserve Univ. Press). Reviewed by K. F. Heumann.

The Land Called Me, E. J. Russell (Allen and Unwin). Reviewed by P. B. Sears.

Principles of Engineering Heat Transfer, W. H. Giedt (Van Nostrand). Reviewed by G. A. Hawkins.

Mission on the Nile, J. Dempsey (Philosophical Library). Reviewed by H. T. Straw.

Grasslands of the Great Plains, J. E. Weaver and F. W. Albertson (Johnson). Reviewed by H. G. Reynolds.

Weather, P. Lehr, R. W. Burnett, H. S. Zim (Simon and Schuster). Reviewed by S. S. Visher.

New Books

Radioastronomie. Raymond Coutrez. Edition du Patrimoine de l'Observatoire Royal de Belgique, Uccle, 1956. 391 pp. F. 250.

Lecture Notes on the Use of the Microscope. R. Barer. Thomas, Springfield, Ill., ed. 2, 1956. 76 pp. $1.50.

Organic Chemistry. Louise Kelley. McGraw-Hill, New York, ed. 2, 1957 (ed. 1 by G. Albert Hill and Louise Kelly). 765 pp. $7.50.

Comprehensive Inorganic Chemistry. vol. 6. *The Alkali Metals.* John F. Suttle. *Hydrogen and Its Isotopes.* Robert C. Brasted. Van Nostrand, Princeton, N.J., 1957. 242 pp. $6.

Cell Physiology. Arthur C. Giese. Saunders, Philadelphia, Pa., 1957. 552 pp. $10.

Mathematics for Everyman. From simple numbers to the calculus. Egmont Colerus. Translated by B. C. and H. F. Brookes. Emerson Books, New York, 1957. 266 pp. $3.95.

Educating Gifted Children. Robert F. DeHaan and Robert J. Havighurst. University of Chicago Press, Chicago, Ill., 1957. 285 pp. $5.

The Beginnings of Chinese Civilization. Three lectures illustrated with finds at Anyang. Li Chi. University of Washington Press, Seattle, 1957. 140 pp. $6.50.

The Astonished Muse. Reuel Denney. University of Chicago Press, Chicago, Ill., 1957. 271 pp. $4.50.

The Logical Problem of Induction. Georg Henrik von Wright. Macmillan, New York, ed. 2, 1957. 261 pp. $4.

The Science of Engineering Materials. J. E. Goldman. Wiley, New York; Chapman & Hall, London, 1957. 543 pp. $12.

The Modern Researcher. Jacques Barzun and Henry F. Graff. Harcourt, Brace, New York, 1957. 399 pp. $6.

General Chemistry. A. W. Laubengayer. Rinehart, New York, rev. ed., 1957. 614 pp. $6.50.

Trophoblastic Growths. Aclinical, hormonal, and histopathologic study of hydatidiform mole and chorionepithelioma. J. Smalbraak. Elsevier, Amsterdam, 1957. 354 pp. $12.75.

About Earthquakes. G. A. Eiby. Harper, New York, 1957. 168 pp. $3.

Advances in Enzymology and Related Subjects of Biochemistry. vol. XVIII. F. F. Nord, Ed. Interscience, New York, 1957. 440 pp. $9.

Nuclear Engineering. Charles F. Bonilla, Ed. McGraw-Hill, New York, 1957. 861 pp. $12.50.

The Making of a Moon. The story of the earth satellite program. Arthur C. Clarke. Harper, New York, 1957. 205 pp. $3.50.

Principles of Stratigraphy. Carl O. Dunbar and John Rodgers. Wiley, New York; Chapman & Hall, London, 1957. 356 pp. $10.

Pain and Pleasure. A study of bodily feelings. Basic Books, New York, 1957. 317 pp. $5.50.

The Caricature of Love. A discussion of social, psychiatric, and literary manifestations of pathologic sexuality. Hervey Cleckley. Ronald, New York, 1957. 329 pp. $6.50.

Experiments in Biochemical Research Techniques. Robert W. Cowgill and Arthur B. Pardee. Wiley, New York; Chapman & Hall, London, 1957. 198 pp. $3.50.

Miscellaneous Publications

(Inquiries concerning these publications should be addressed, not to Science, *but to the publisher or agency sponsoring the publication.)*

A Study of AEC Procedures and Organization in the Licensing of Reactor Facilities. 218 pp. *Development of Scientific, Engineering, and Other Professional Manpower* (with emphasis on the role of the Federal Government). 172 pp. Joint Committee on Atomic Energy, 85th Congress, 1st session. U.S. Government Printing Office, Washington 25, 1957.

The Nature of Shield Abnormalities in the Turtle Shell. Fieldiana, Geology, vol. 10, No. 29. Rainer Zangerl and Ralph G. Johnson. 22 pp. $0.60. *Notes on Amphibians and Reptiles from El Salvador* Fieldiana, Zoology, vol. 34, No. 42. A. Stanley Rand. 30 pp. $0.50. *Report on a Collection of Marine Fishes from North Borneo.* Fieldiana: Zoology, vol. 36, No. 3. Robert F. Inger. 65 pp. $1. *The Subspecies of the Bush Shrike.* Laniarius fulleborni (including L. poensis). Fieldiana, Zoology, vol. 39, No. 6. Austin L. Rand. 4 pp. $0.10. *Philippine Snails of the Family Endodontidae.* Philippine Zoological Expedition, 1946–1947. Fieldiana Zoology, vol. 41, No. 1. Alan Solem. 13 pp. $0.40. Chicago Natural History Museum, Chicago, 1957.

Improving the Organization and Management of Your Engineering and Research and Development Departments. Wallace Clark & Co., 521 Fifth Avenue, New York 17. Free.

The Thrips of California. pt. 1, *Suborder Terebrantia.* Bulletin, California Insect Survey, vol. 4, No. 5, pp. 143–220. Stanley F. Bailey. University of California Press, Berkeley, 1957. 78 pp. $1.50.