

ologist who wishes to broaden his teaching about nematodes is, however, still handicapped by his ignorance. The appearance of the books under review should help him, as well as the specialist, considerably.

The first, a two-volume work devoted almost exclusively to the plant parasitic nematodes, is, in some ways, an up-to-date version of the collective work edited by Sasser and Jenkins in 1960. There are 27 chapters in the two volumes, grouped into sometimes arbitrary sections. The 12 chapters of volume 1 deal with morphology and anatomy, taxonomy, and ecology; the 15 chapters of volume 2 are grouped in three sections dealing with genetics and cytology, biochemistry and physiology, and host-parasite interactions; the last is the largest section and contains, in addition to usual aspects of interaction, chapters on resistant races, nematode enzymes, virus transmission, and culture methods. An indication of the growing strength of the subject is that all contributors except one are active workers in the field of plant nematology whereas in the previous collection some of the most important contributions were by workers on animal parasites.

To detail specific criticisms of the contents of the various chapters would be out of place; they are far outweighed by the debt owed to the contributors for making all this material so readily available.

Specialists will find the work most helpful, and so too will students and teachers of the subject. Its value to more general zoologists, for whom the work is apparently also intended, though considerable, could easily have been increased. For example, Hirschmann's excellent chapter on morphology, the first after the introduction, is general enough and assumes little, yet the reader encounters such terms as "Secernentea" and "Adenophorea" without any warning or explanation. A simple outline of the basis of the relations within the phylum would have greatly helped the excellent chapters dealing with the systematics of the nematode groups of major importance. I also think it would have been helpful if the editors had ensured that the various contributors were more aware of what their fellows were saying; there are numerous instances in which this does not appear to be the case.

One of the most ludicrous features of the nematology scene is the division between nematologists working on animal parasites and those working on free-

living and plant-parasitic forms. In fact, they even go by different names, the former being known as helminthologists. The book by Bird, dealing as it does with the structure of all nematodes, is therefore welcome, not only because it is a very useful volume indeed, but also because it is a major contribution to bridging this ridiculous and harmful gap.

After a discussion of techniques for light and electron microscopy, each tissue is described in turn as observed by means of both instruments, an impressive amount of the observation having been made by the author himself. Function is equated with structure "where possible"—and elsewhere too—and "structure" is interpreted very broadly indeed; for example, a detailed description of embryological development is included. The plates, well chosen, are beautifully reproduced, and the author has obviously gone out of his way to label his diagrams adequately, a welcome departure from an irritating nematology tradition.

The section on techniques is a model of conciseness, although one might have been spared the detailed description of a stage micrometer and instructions on its use. Elsewhere the style is most discursive, and this makes the book very easy to read; but, evidently, the author was not troubled by shortage of space.

Bird is not afraid to speculate; sometimes, however, he is apparently prepared to back so many horses so many ways that it seems he is determined to be right. I am not too happy about his support for the view that the cuticle is bounded by a typical triple-layered membrane, and even less about his view that the eggshell may be bounded by one too. Though bold enough to propose different nomenclature for the shell layers when the facts demand it, he is, alas, not brave enough to call a pharynx a pharynx; his chapter on the gut is almost schizoid as a result of his mistakenly impartial use, synonymously, of "esophagus" and "pharynx," sometimes even in the same sentence.

The so-called "peripheral nervous system" is accepted in both works without question. This is particularly sad in the case of Bird's, for he underlines the nonspecific nature of staining techniques, and the claim, due to Croll and Maggenti, that a peripheral nervous system exists in nematodes is based solely on whole specimens treated with silver nitrate, which, of course, can be reduced by many things in addition to nerve. Smith and Stephenson, in my

laboratory, by careful examination of sectioned material by light and electron microscope, show that Retzius, in fact, was right; the structures Croll and Maggenti revealed are a system of hypodermal membranes (*Nematologica*, 1971).

Both works are remarkably up to date, and a tribute to the publishers and all concerned. But because the subject is advancing so rapidly, the books will also become very rapidly out of date. One wonders, therefore, about a policy which produces such works so lavishly and expensively.

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Books Received

Advances in Cytopharmacology. Vol. 1. A symposium, Venice, Italy, July 1969. F. Clementi and B. Ceccarelli, Eds. Raven, New York, 1971. xviii, 476 pp., illus. \$32.50.

Advances in Microwaves. Vol. 6. Leo Young, Ed. Academic Press, New York, 1971. xvi, 270 pp., illus. \$16.50.

Affinity and Matter. Elements of Chemical Philosophy, 1800–1865. Trevor H. Levere. Clarendon (Oxford University Press), New York, 1971. xviii, 230 pp. + plates. \$14.50.

Agricultural Development. An International Perspective. Yujiro Hayami and Vernon W. Ruttan. Johns Hopkins Press, Baltimore, Md., 1971. xvi, 368 pp., illus. \$10.

Air Tracks and Experiments. Allen Anway. Koch, Superior, Wis., 1971 (available from Wisconsin State University Bookstore, Superior). iii, 89 pp., illus. \$3.35.

American Medicine and the Public Interest. Rosemary Stevens. Yale University Press, New Haven, Conn., 1971. xiv, 572 pp. \$18.50.

An Analysis of Complexity. M. H. Van Emden. Mathematisch Centrum, Amsterdam, 1971. xii, 86 pp. Paper, \$3.

Atomic Safeguards. A Study in International Verification. Allan McKnight. United Nations Institute for Training and Research, New York, 1971. xxii, 302 pp., illus. Paper, \$6.50.

Biochemistry of Antimicrobial Action. T. J. Franklin and G. A. Snow. Academic Press, New York, 1971. xii, 164 pp., illus. \$7.

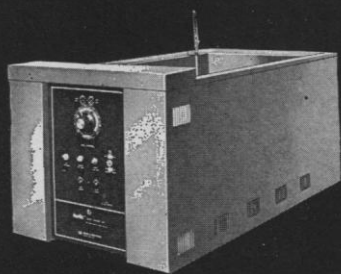
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Biological Principles. Burton S. Guttman. Benjamin, New York, 1971. xxvi, 742 pp., illus. \$12.95.

Biomembranes. Vol. 1. Lionel A. Man-

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son, Ed. Plenum, New York, 1971. xiv, 294 pp., illus. \$19.50.

Cosmopolitan World Atlas. Rand McNally, New York, ed. 2, 1971. Variously paged. \$19.95.

Cranio-facial Growth in Man. A conference, Ann Arbor, Mich., May 1967. Robert E. Moyers and Wilton M. Krogman, Eds. Pergamon, New York, 1971. x, 360 pp., illus. \$18.75.

Curves and Automation: The Scientists' Plot. Jesse Dilson. Lippincott, Philadelphia, 1971. 144 pp., illus. \$5.50.

Cybernetics, Art and Ideas. Jasia Reichardt, Ed. New York Graphic Society, Greenwich, Conn., 1971. 208 pp., illus. \$13.50.

Electron Scattering from Complex Nuclei. Part A. Herbert Uberall. Academic Press, New York, 1971. xvi, 480 pp., illus. \$24. Pure and Applied Physics, vol. 36.

Encyclopedia of Animal Care (Formerly Black's Veterinary Dictionary). William C. Miller and Geoffrey P. West. Williams and Wilkins, Baltimore, Md., ed. 9, 1970. viii, 1014 pp., illus. \$15.50.

Fabre. Poet of Science. G. V. Legros. Translated by Bernard Miall. Horizon, New York, 1971. 352 pp. \$7.50. Reprint of the 1913 edition.

Fast Reactions. David N. Hague. Wiley-Interscience, New York, 1971. viii, 160 pp., illus. \$8.50.

Food Study Manual. Helen Charley. Ronald, New York, ed. 2, 1971. xii, 276 pp., illus. Paper, \$5.50.

The Gary Schools. Randolph S. Bourne. M.I.T. Press, Cambridge, Mass., 1970. lxviii, 324 pp., illus. \$12.50. Reprint of the 1916 edition.

The Genetics of Human Populations. L. L. Cavalli-Sforza and W. F. Bodmer. Freeman, San Francisco, 1971. xviii, 966 pp., illus. \$27.50.

Ground Water. A Selected Bibliography. Frits van der Leeden, Ed. Water Information Center, Port Washington, N.Y., 1971. x, 116 pp. \$15.

Homeopathy in America. The Rise and Fall of a Medical Heresy. Martin Kaufman. Johns Hopkins Press, Baltimore, Md., 1971. xii, 206 pp. \$10.

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The Human Aviary. A Pictorial Discovery of New Guinea. Kenneth E. Read. Photographs by George Holton. Scribner, New York, 1971. 64 pp. \$6.95. A Scribner Portfolio in Natural History.

Immunity and Tolerance in Oncogenesis. A conference, Perugia, Italy, June 1969. Lucio Severi, Ed. Division of Cancer Research, Perugia, 1970. 2 vols., boxed. xcvi, 1310 pp., illus. \$60.

The Kaiser-Permanente Medical Care Program. One Valid Solution to the Problem of Health Care Delivery in the United States. A symposium, Oakland, Calif., March 1971. Anne R. Somers, Ed. Commonwealth Fund, New York, 1971 (distributor, Association of American Medical Colleges, Washington, D.C.). xii, 238 pp., illus. Paper.

The Language of Sociology. Charles W.

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Lachenmeyer. Columbia University Press, New York, 1971. xii, 130 pp., illus. \$7.50.

Languages of the Brain. Experimental Paradoxes and Principles in Neuropsychology. Karl H. Pribram. Prentice-Hall, Englewood Cliffs, N.J., 1971. xvi, 432 pp., illus. \$9.50.

The Logic of Science in Sociology. Walter Wallace. Aldine-Atherton, Chicago, 1971. 140 pp., illus. Cloth, \$6; paper, \$2.45.

Making New Schools. Joseph Turner. McKay, New York, 1971. xiv, 302 pp., illus. Cloth, \$5.95; paper, \$2.95.

Measure and Category. A Survey of the Analogies between Topological and Measure Spaces. John C. Oxtoby. Springer-Verlag, New York, 1971. viii, 96 pp., illus. Paper, \$7.50. Graduate Texts in Mathematics, 2.

Signal Processing, Modulation, and Noise. J. A. Betts. Elsevier, New York, 1971. xii, 292 pp., illus. \$12. Science and Technology Series.

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Spontaneous and Virus Induced Transformation in Cell Culture. J. Pontén. Springer-Verlag, New York, 1971. iv, 256 pp., illus. \$22.50. Virology Monographs, vol. 8.

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Stereochemistry of Carbohydrates. J. F. Stoddart. Wiley-Interscience, New York, 1971. xiv, 249 pp., illus. \$14.95.

A Stereotactic Atlas of the Brainstem of the Mallard (Anas platyrhynchos L.) A Stereotactic Apparatus for Birds and an Investigation of the Individual Variability of Some Headstructures. G. A. Zweers. Van Gorcum, Assen, The Netherlands, 1971 (U.S. distributor, Davis, Philadelphia). viii, 148 pp., illus. \$20. Studies in Neuro-Anatomy, vol. 10.

Steroid Protein Interactions. U. Westphal. Springer-Verlag, New York, 1971. xiv, 568 pp., illus. \$24.90. Monographs on Endocrinology, vol. 4.

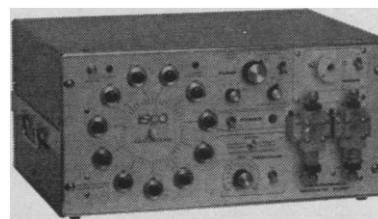
Stimulus and Sensation. Readings in Sensory Psychology. William S. Cain and Lawrence E. Marks, Eds. Little, Brown, Boston, 1971. x, 326 pp., illus. Paper, \$5.95.

Teaching Elementary Science. Through Investigation and Colloquium. Brenda Lansdown, Paul E. Blackwood, and Paul F. Brandwein. Harcourt Brace Jovanovich, New York, 1971. xiv, 434 pp., illus. Paper, \$5.95.

Trees. Structure and Function. Martin H. Zimmermann and Claud L. Brown. Springer-Verlag, New York, 1971. xiv, 336 pp., illus. \$19.80.

Twentieth Century Theme. A Philosophical Study. D. W. Gotshalk. Coronado, Lawrence, Kans., 1971. vi, 56 pp. Paper, \$2.

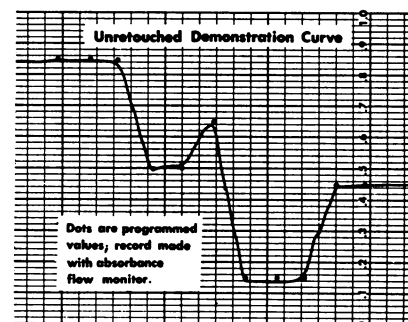
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