cial goals. Moreover, the noneconomist student may benefit from the frequent reminders that education is not immune to economic analysis: scarce resources are required, and, as a result, decisions about public expenditures should be made with an awareness of the costs and benefits of alternative allocations of funds.

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Russian Translation

Monogenetic Trematodes. Their systematics and phylogeny. Boris E. Bychowsky. Translated from the Russian by P. C. Oustinoff. W. J. Hargis, Ed. American Institute of Biological Sciences, Washington, D.C., 1961. 627 pp. Illus. Members, $9; $10.

This work is divided into three parts. Part 1 is concerned with the morphology, biology, and life cycles of monogenetic trematodes. Part 2 discusses and lists Monogenea and related hosts in a variety of ways. Part 3 treats the systematics and phylogeny of the Monogenea.

The chapter on morphology (in part 1) admirably summarizes scattered information but offers little that is new. The discussion on musculature is general to the point of being incomplete, and the information on the excretory system follows the traditional pattern for flatworms but does not mention that flame cells have not been demonstrated in many Monogenea. Contradictory statements are exemplified by ". . . at the time of development of the animal, the basic chitinous elements of armament are formed, not directly in the cuticle, but in the mass of parenchyma" (p. 37) *versus* ". . . in spite of the fact that the chitinous elements of the disc are incepted in the parenchyma, they are undoubtedly of cuticular origin . . ." (p. 424). The chapter on the biology of the Monogenea is very good. Chapter 3 and the supplement (part 1) are entitled in the table of contents (in order) "Embryology of monogenetic trematodes," and "Materials on embryology of monogenetic trematodes," but the corresponding chapter headings in the text are "Development of monogenetic trematodes" (p. 85), and "Data on the development of monogenetic trematodes" (p. 146). The chapter headings are more correct, for embryological studies are virtually nonexistent. Apparently the author meant postembryonic observations on developing larvae, which are discussed in chapter 3 and the supplement (part 1). These are extensive, sound, and contain much original information.

The discussion in part 2 is concerned with (i) the hosts of Monogenea, (ii) the occurrence of species, genera, and families of Monogenea on the species, genera, families, and orders of fishes, (iii) the occurrence of Monogenea on Amphibia and reptiles, (iv) general considerations concerning occurrence and specificity, and (v) Monogenea belonging to separate groups of hosts. This interesting section is encyclopedic in scope. However, some of the tables are misleading and very difficult to interpret.

Part 3, on the systematics and phylogeny of monogenetic trematodes, is extensive but fraught with inconsistencies and omissions. Substitution of the term Monogenoidea Bychowsky, 1937, for the established one, Monogenea Carus, 1863, as the designation of a class is unwarranted and violates a long-established usage of the suffix -oidea for superfamilies. This apparently was largely responsible for the recommendation (29A, 1961) that this suffix be recognized as such in the International Code of Zoological Nomenclature. The two subclasses, Oligonchoinea and Polyonchoinea, which were proposed by Bychowsky in 1937, are based on the number of haptoral hooks in the larvae. Two serious difficulties are immediately suggested in this separation: (i) there is a greater difference in the number of larval hooks found within each subclass than the difference found between the subclasses; (ii) the life histories necessary for the assignment of species to these subclasses are known for representatives of less than one-half of the families of the Monogenea.

Unfortunately, Bychowsky did not list species of any genera, although he had the information at hand (p. 242). Further, he failed to provide keys, which are always invaluable, and he also avoided the use of established nomenclature for the Monogenea.

Mistakes, clumsy and inept usage, misspelled words, and the lack of strict adherence to the *International Rules of Zoological Nomenclature* are conspicuous. The participation of author, translator, and editor in the present production makes difficult the assignment of errors. Awkward statements can be assigned to the translator and the difficulties inherent in the two languages. Inept and unconventional biological usage, misspelled words, careless mistakes, and some inconsistencies are the fault of the editor.

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New Methods and Techniques

Transplantation of Tissues and Cells. R. E. Billingham and Willys K. Silvers, Eds. Wistar Institute Press, Philadelphia, 1961. vi + 149 pp. Illus. $7.50.

Transplantation of Tissues and Cells deserves a special place on the bookshelf of anyone interested in problems of tissue transplantation. As the editors point out, the book is designed to present, in detail, certain procedures and principles used in experimental transplantation of tissues and cells. It is particularly valuable because each author attempts to stress the problems encountered in learning new techniques. These problems are rarely mentioned in individual publications, but they often account for the great difficulty encountered in mastering new methods. The book contains chapters on various techniques of skin grafting in birds (Billingham) and mammals (Billingham; Steinmuller); in addition to these technical problems, it includes a discussion of the principles of skin transplantation (Billingham), a chapter on the immunogenetic aspects of tissue transplantation (Palm), and one on the method by which transplantation antigens can be extracted (Billingham).

Other chapters deal with the transplantation of endocrine tissues (Palm; Russell), the transplantation of tissues to the chorioallantois of chicks or to the cheekpouch of the hamster (Billingham), and an experimental procedure for establishing parabiosis between animals (Wilson). A detailed account is presented of the materials, methods, and possible problems involved when tissues are transplanted in diffusion chambers (Amos). Another section is devoted to the induction of acquired tolerance to tissue homografts and the transfer of transplantation immunity

(adoptive immunity, Billingham) and to methods for procuring thoracic duct lymphocytes (Wilson).

Finally, attention is drawn to an often neglected subject—that of maintaining a strictly inbred colony of animals (Silvers). This includes a careful account of the principles and procedures required for producing and maintaining pure animal strains, efficient and accurate ways for keeping records, and means for appraising the isogenicity of inbred strains of animals.

The book is well illustrated and interesting to read; each chapter includes a fairly detailed bibliography.

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Notes

Ecological Vocabulary

Herbert Hanson's **Dictionary of Ecology** (Philosophical Library, New York, 1962. 382 pp. $10) is an alphabetically arranged vocabulary, with definitions, of more than 3000 terms often encountered in ecological literature. The terms are defined succinctly and well. Some definitions were taken from Carpenter's *Ecological Glossary* (University of Oklahoma Press, 1938; reprinted by Hafner, 1956) and from *Forestry Terminology* (Society of American Foresters, ed. 3, 1958), but most are Hanson's own.

No bias for or against any particular school of ecology is evident in the terms chosen for inclusion or in the definitions. An effort was made to present as full a spectrum of ecological thinking as possible. Current ecological trends, such as the de-emphasis of Clements' terminology and the attempted isolation of splinter groups behind a specialized terminology, are evident in the latitude or tentativeness of some definitions, the simplicity or naturalness of others, the omission of some terms, and the reasonableness in general. Hanson agrees with the first trend, not with the second.

Hanson had immense experience in plant ecology and an open and inquiring attitude; the catholicism of his tastes and the breadth of his understanding are nicely reflected in his dictionary. Perhaps a third of the terms are uniquely ecological; many strange ones are from genetics, animal ecology and behavior, geography, range management and forestry, and soil science. Statistical terminology is almost entirely omitted.

Most of the terms are widely used in ecology. Some are not. It is not unfortunate that the latter have been included, since most can replace more extensive verbiage (and all editors want shorter papers), but no one should attempt to use this dictionary as a *source* for ecological terminology. If a writer is not sufficiently familiar with certain terms to use them with some contextual feeling, these definitions will not provide that context. The book should find most use by those ecologists who read widely enough to become acquainted with ecologically interesting work by authors with a different background and vocabulary.

Critical users will wish for references to usages, but Hanson does not supply these. Carpenter did, to some extent. Hanson's list of current ecological and related texts offers a library for supplementary reading. About two-thirds of Carpenter's glossary was estimated by O. W. Richards to be useless or synonymous terms. Hanson has weeded out many of these, but some had to be retained because of historical interest and usage. Not more than a third (and not the ecological third) of Hanson's terms are probably useless.

It is to be hoped that individuals will use this volume not as a bible but as a point of departure. Most readers will find a few places they can improve. My changes would include: Correction of the spelling of the *chiono*-combinations, refusal to use character as an adjective, reminder that *erg* is also an energy unit, cross reference from *gilgai* to *mima-type microrelief*, revision of terms related to Schneetälchen, and so forth.

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New Books

Biological and Medical Sciences

Actions of Radiations on Living Cells. D. E. Lea. Cambridge Univ. Press, New York, 1962 (reprint of ed. 2, 1955). 429 pp. Illus. Paper, $2.95.

Biophysics. Concepts and mechanisms. E. J. Casey. Reinhold, New York; Chapman and Hall, London, 1962. 351 pp. Illus. $7.95.

Bone Marrow Therapy and Protection in Irradiated Primates. Proceedings of the international symposium held at Rijswijk, Netherlands, August 1962. Radiobiological Institute. T.N.O., The Hague (available from R. R. Overman, Univ. of Tennessee, Memphis, 1962. 458 pp. Illus. Paper, $4.

Drugs in Psychoanalysis and Psychotherapy. Mortimer Ostow. Basic Books, New York, 1962. 360 pp. Illus. $8.50.

The Enzymes. vol. 6, *Group Transfer Synthesis Coupled to ATP Cleavage.* Paul D. Boyer, Henry Lardy, and Karl Myrback, Eds. Academic Press, New York, ed. 2, 1962. 704 pp. Illus. $20.

Frontiers in Brain Research. John D. French, Ed. Columbia Univ. Press, New York, 1962. 297 pp. Illus. $9.

Irritation and Counterirritation. A hypothesis about the autoamputative property of the nervous system. Adolphe D. Jonas. Vantage Press, New York, 1962. 368 pp. Illus. $7.50.

Kreislaufdiagnostik mit der Farbstoffverdünnungsmethode. R. Hegglin, W. Rutishauser, G. Kaufmann, E. Lüthy, H. Scheu. Thieme, Stuttgart, Germany, 1962. 335 pp. Illus. DM. 66.

Laboratory Manual for Introductory Mycology. C. J. Alexopoulos and E. S. Beneke. Burgess, Minneapolis, Minn., 1962. 204 pp. Illus. Paper, $4.25.

Life: Origin and Development. Gösta Ehrensvärd. Univ. of Chicago Press, Chicago, 1962. 173 pp. Illus. $4.50.

Modern Problems in Ophthalmology. vol. 2, *Bibliotheca Ophthalmologica.* E. B. Streiff, Ed. Karger, Basel, Switzerland, 1962. 217 pp. Illus. $13.

Oxygenases. Osamu Hayaishi, Ed. Academic Press, New York, 1962. 600 pp. Illus. $17.50.

Processing Neuroelectric Data. Walter A. Rosenblith, Ed. Massachusetts Inst. of Technology Press, Cambridge, 1962 (reprint of 1959 edition). 136 pp. Illus. $4.

Selected Papers, Kaj Linderstrom-Lang. Selected by an international committee. Danish Science Press, Copenhagen; Academic Press, New York, 1962. 584 pp. Illus. $17.

Sensory Communication. A symposium held at Dedham, Mass., July–August 1959. Walter A. Rosenblith, Ed. Massachusetts Inst. of Technology Press, Cambridge, 1961. 858 pp. Illus. $16.

Space Medicine. Ursula T. Slager. Prentice-Hall, Englewood Cliffs, N.J., 1962. 399 pp. Illus. $11.

Starfishes. And their relations. Ailsa M. Clark. British Museum (Natural History), London, 1962. 119 pp. Illus. Paper, 11s.

The Student Physician as Psychotherapist. Ralph W. Heine, Ed. Univ. of Chicago Press, Chicago, 1962. 254 pp. $5.

Symposium on Muscle Receptors. Proceedings of the September, 1961 meeting. David Barker, Ed. Hong Kong Univ. Press, Hong Kong; Oxford Univ. Press, New York, 1962. 300 pp. Illus. $12.

Textbook of Virology. For students and practitioners of medicine. A. J. Rhodes and C. E. van Rooyen. Williams and Wilkins, Baltimore, Md., ed. 4, 1962. 616 pp. Illus. $13.50.

Third World Congress of Psychiatry, Proceedings. vols. 1 and 2. R. A. Cleghorn, Ed. Univ. of Toronto Press, Toronto, Canada, 1962. 1483 pp. Illus. $35.

Traité de Biochimie Générale. vol. 2, *Les Agents des Synthèses et des Dégradations Biochimiques.* P. Boulanger and J. Polonovski, Eds. Masson, Paris, 1962. 706 pp. Illus. Paper, NF. 150; cloth, NF. 155.