

both in the text and in the bibliographies. Then too, in this first volume, the word "Annual" in the title should not be taken very seriously, for it was necessary in numerous instances, in order to make the subject matter complete, that a much longer period of time should be included—in some cases, the author had to go back several years to make the narration fully understandable. Obviously, this will not be needful in later volumes of the series, once the subject has been discussed and brought down to date in a previous volume within the series.

Also, despite some fears to the contrary, it seems obvious that this newly inaugurated Annual Review series ought not to have adverse effects on any other publications in related fields—it covers a type of reference work that is not duplicated elsewhere. Now that a start has been made—now that the ice has been broken—it is easy to visualize that each succeeding volume of this series will average up gradually better in every way than those previously published, that minor flaws will be eliminated, that the scope of the whole plan will be expanded, and that the series will gain steadily in practical utility and general usefulness.

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Traité de zoologie. Anatomie, systématique, biologie. vol. XVII. *Mammifères*. Les ordres: anatomie, éthologie, systématique. Parts 1 and 2. Masson, Paris, 1955. 2300 pp. Illus. Paper, F.22,000; cloth, F.23,600.

The seventeenth volume of this important series of zoological monographs is devoted to a systematic account of the living and extinct orders of mammals. It is a large and impressive contribution. Some idea of its magnitude may be gained from the fact that the two bulky fascicles include a total of 2300 pages and are illustrated with 2106 text figures and four colored plates.

In scope and manner of presentation, there is a strong resemblance to the second volume of Max Weber's *Die Säugetiere*, which in its editions of 1904 and 1928 has served as a primary source book for two generations of mammalogists. This volume of the *Traité de zoologie*, along with the forthcoming sixteenth volume that is to be devoted to anatomy and reproduction, promises to provide a worthy successor to Weber's monumental work. The thirteen authors who have collaborated to produce it are leaders among modern French zoologists and paleontologists.

The orders of mammals are treated in sequence and in remarkable detail, which extends in some instances down

to the generic and even the specific level. The number of pages allotted to each order reflects in general the amount of zoological (and to a lesser extent paleontological) knowledge that is available for it. For example, the presentation of the order Insectivora totals 139 pages and consists of sections on anatomy and reproduction (68 pages, 89 figures), zoological affinities (11 pages, 1 figure), systematic accounts including habits and distribution (45 pages, 34 figures), fossil history (7 pages, 11 figures), and bibliography (8 pages, 238 titles). Relatively obscure fossil orders such as Astrapotheria, Embrithopoda, and Tillodontia are each disposed of in two or three pages. The section on primates including man occupies 353 pages and in itself is a major contribution to the fields of primatology and physical anthropology.

The system of classification adopted here represents an adroit blending of old concepts of classical zoology and the revolutionary modern ideas of paleontology. Some decades ago the initiative in mammalian classification at the ordinal and familial levels passed from the hands of zoologists into those of paleontologists, whose investigations reveal actual rather than speculative lines of evolution. Adjustment to radically new arrangements of orders has been especially difficult for those zoologists who are encumbered by pedagogic tradition. The centuries-old concept that a system of mammalian classification must culminate with the Hominidae would find few champions among modern taxonomists, yet it is honored in the present treatise at the expense of a necessary reallocation of orders related to the primates. Controversial groups such as the monotremes and the tree shrews are comfortably left in their traditional niches. Some supra-generic groups have received new names.

Anatomy and reproduction, although primarily reserved for another volume in the series, are treated at some length and in a highly competent manner in each account of a recent order. Habits, habitats, and geographic distribution, which can be most satisfactorily dealt with at the specific level, receive rather cursory treatment. There is no general coverage of subjects such as zoogeography and population dynamics, which claim a large share of the interest of modern mammalogists.

It is inevitable, in a compilation so large and so complex, that errors should occur. One may note, for example, the statement on page 7 that the geographic range of perameloid marsupials includes New Zealand, and on page 1653 that Simpson's classification of 1945 is followed in placing the Tupaiodea in the Insectivora. Fortunately these slips are not repeated in the detailed accounts of the respective groups.

The text figures, including drawings and halftone photographs, are remarkably clear and greatly enhance the usefulness of the work. The bibliographies are extensive and well chosen; they include some surprisingly recent titles.

Teachers, advanced students, and systematic mammalogists will find this treatise to be an indispensable reference and source book. Its publication represents an important milestone in mammalogy.

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Evolution, Genetics, and Man. Theodosius Dobzhansky. Wiley, New York; Chapman and Hall, London, 1955. ix + 398 pp. Illus. \$5.50.

This is an excellent text book for college students. It develops the orthodox genetic point of view on evolutionary mechanisms but includes enough of the dissenting opinions to show why this field of research is now very active and interesting. As befitting a textbook, a list of references to more comprehensive treatments of the various subjects that will be of interest to the reader is included at the end of each chapter. But this short book is more than a text. Dobzhansky has written a scholarly book that is fun for any educated man to read.

In view of the fact that the theory of evolution is the great central indispensable theory of biology, it is necessary and important to explain it to all men. Dobzhansky's wide interests, always centering around evolution, range from human creative effort such as the frontispiece reproducing Michelangelo's "Creation of Adam" and Old Stone Age art on the walls of the Lescaux caves to the short concluding discussion of the relation of science to ethics. The following quotation from the preface clearly states the intent and central theme of the book: "Biological evolution is a part of the evolution of the cosmos. The rise and the development of mankind are a part of the story of biological evolution. Man cannot reach a valid understanding of his own nature without a knowledge of his own biological background. It may, then, be that the study of evolutionary biology is the most important practical endeavor open to the human mind. Accordingly, an effort is being made in this book to show to the student that biology is not only a craft which is interesting to technicians and devotees but also a part of the fabric of modern humanistic thought."

Until this book appeared, there was no simple textbook of evolution that was centered around the genetic mechanisms. Dobzhansky has carefully integrated

many of the contributions of paleontology, anthropology, ecology, and the history of evolutionary thought with recent developments in population dynamics and adaptation.

There are a number of well-chosen illustrations that add to the interest of the text. In such a large framework, some subjects and much pertinent information is necessarily omitted in a short text. Nevertheless, the material covers most of the genetic and much other information that is very pertinent to an appreciation of current theories of evolution. The reader who is struck by Dobzhansky's optimism in his discussion of what is called "evolutionary ethics" may enjoy comparing his views with those expressed recently by Darlington in his volume *Facts of Life*. Evolution has produced mankind; in studying his greatness and limitations, we need to respect and understand evolution. Dobzhansky's *Evolution, Genetics, and Man* will help many students to do so.

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The Recent Genera of the Caridean and Stenopodidean Shrimps (Class Crustacea, Order Decapoda, Supersection Natantia) with Keys for Their Determination. (No. 26, Zoologische Verhandelingen) L. B. Holthuis. E. J. Brill, Leiden, Netherlands, 1955. 157 pp. \$3.60.

Students of the decapod Crustacea throughout the world will enthusiastically welcome this review of the recent genera of the caridean and stenopodidean shrimps of the world. Its keys bring up to date the corresponding portion of Borradaile's "Classification of the decapod Crustacea" [*Ann. and Mag. Nat. Hist.* 19, 457 (1907)] which, however, did not include categories below subfamilies; it goes beyond that classic endeavor in diagnostically keying out all known valid genera. For each genus, the type is indicated, and a pertinent though not exhaustive synonymy is given, which includes all changes in the spelling of the individual generic names. Highly commendable are the results of the effort that was made to illustrate each genus with a typical, where possible the type, species, usually by reproducing the original or best published figure or figures; the publications in which they appeared are conveniently listed by authors; in two instances, original drawings were prepared by the author for this paper. I find nothing to criticize in this exceptionally well done piece of work.

In itself a masterly contribution, it may be thought by some to be a relatively small one in view of the immense number of genera in zoology; however, in the ag-

gregate, it is an exceedingly significant basic step, one might say, toward the eventual realization of the much-needed synoptic treatment of the plant and animal kingdom that has been so earnestly advocated by T. K. Just of the Chicago Museum of Natural History before the National Science Foundation and elsewhere.

It is to be sincerely hoped that this is but the forerunner of a series of papers that, in time, will encompass, at least, the remaining genera of the Crustacea Decapoda.

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Medical Research: a Midcentury Survey. vol. I. *American Medical Research: In Principle and Practice.* xxxii + 765 pp. vol. II. *Unsolved Clinical Problems: In Biological Perspective.* xxxii + 740 pp. American Foundation, New York, 1955. \$15.

When a book fits no standard pattern, it is perhaps the reviewer's first duty to say what sort of book it is. The answer would be that this is a book of essays discussing medical research from every angle: scope, where done, support, objectives, and problems. They are good essays, not to be read at a sitting but to be savored of an evening. They are the product of 15 years of thought and compilation by Esther Everett Lape and her staff in the American Foundation, aided by consultants who included several Nobel laureates.

The thesis of the volumes is that medical progress comes through research and that, in the main, fundamental research at basic levels precedes clinical applications.

The first volume starts with and stresses medical research as related to biological, chemical, physical, and mathematical science. It goes on to a series of philosophical discussions of the meaning of research and to means of financing research, with particular reference to the influence of government. Then comes the principal section on the agencies that conduct research: universities, their medical schools, foundations, and institutes. This is really fascinating reading because of the illustrative detail from many institutions. Finally, there is a section on official and unofficial standardizing agencies and patent policies. One can pick nearly any subject in medical research, or in fact in medical education, and find it discussed in different settings through the various chapters. I cite the following examples of discussions on the problem of medical faculties and their teaching and service loads:

"The principle of full-time men as

heads of preclinical departments is everywhere accepted. In clinical departments, a major obstacle to full time has been the great disparity between a full-time salary and the amount a part-time clinical teacher can earn from private practice—according to some reports, from five to ten times the amount received for teaching. Yet of the value of full time in clinical as well as in preclinical departments there has been significant evidence. In one academic council debating whether or not to continue full time, a dean testified that by virtue of the full-time system the clinical departments of that school had become, in the broadest sense, university departments, carrying on teaching and research together, in accordance with graduate school standards" (p. 123). "Among dangers . . . in the practice of medicine by faculty members as a source of income for the medical schools is the possibility that the faculty may be selected on the basis of earning rather than of teaching capacity" (p. 153). ". . . all such arrangements simply put the medical school in the position of operating a business and sharing in the income; or of making the men who earn the income contribute to their own salaries or to the support of their departments. . . . All service beyond that necessary for teaching and research [is] alien to the primary function of education" (p. 272).

On the other hand, Phemister (University of Chicago) was quoted, ". . . under existing economic and social conditions in the United States, the most promising way of gradually placing education in clinical medicine on a uniform basis of organization and on an educational level that most nearly approximates the educational level of other university departments appears to be by the employment of full-time group practice for the clinical department of the medical school" (p. 272).

On university relationships, the following may be cited: "However remarkable the developments for enriching and enlarging observation outside the hospital, medical education designed to produce practicing physicians is not likely to dispense with the hospital . . . [but] there are those that would stress the need of drawing the medical school closer to the university for the stimulus and sustenance medical progress derives from biology, genetics, animal husbandry, chemistry, physics, psychology, anthropology. Medical schools today are, on the whole, better described as attached to rather than integrated with universities. The growing volume and significance of the contribution to medical research from non-medical university divisions and the advantages in the scientific training procurable in many of these divisions have prompted some to ask whether the urgent present need may not be a bold experi-