

itself, takes us only part way, because, as we saw, he deals with genes only one at a time. He shows us how to cope with the problem of red and white cows in our herds of black and white Friesians. He does not tell us how to cope with the problems of their milk production.

The student will find that this book well repays study. There are a few misstatements of genetical fact, as when it is said that in *Primula* species individuals homozygous for the thrum gene are nonviable, and a few of mathematical scope, as when it is stated that the recombination value can be estimated from F_2 data only when it is the same in both sexes. Nevertheless, this book is unique in the genetical ground it covers and in the attempt to explain the mathematical methods used. Having mastered it, the student will have a deeper insight into the formal properties of mating systems and the formal workings of selection, the principles of which, as Prof. Hogben suggests, are basic to the application of genetics in agriculture and human affairs. Before he can cope with the problem of applied genetics, however, the student will have to learn how these principles are used in a wider variety of situations, in some of which genetical complexity at present precludes mathematical rigor.

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The birds of North and Middle America. (Pt. X.) Herbert Friedmann (commenced by the late Robert Ridgway). (U. S. National Museum Bull. 50.) Washington, D. C.: Government Printing Office, 1946. Pp. xii + 484. (Illustrated.) \$1.25.

The present volume, Part X of a monumental catalog of birds of North and Middle America, is concerned with the order *Galliformes*, including the families *Cracidae*, *Tetraonidae*, *Phasianidae*, *Numididae*, and *Meleagrididae*. The scope of Ridgway's and Friedmann's work is indicated by its subtitle: *A descriptive catalog of the higher groups, genera, species and subspecies of birds known to occur in North America, from the Arctic lands to the Isthmus of Panama, the West Indies and other islands of the Caribbean Sea, and the Galápagos Archipelago*.

Volumes in this series deal with description, range, and synonymy, but not with life history. The series, therefore, serves to complement A. C. Bent's *Life histories of North American birds*, also published by the U. S. National Museum. Bent, however, deals only with the birds of the United States and Canada, whereas the present series is concerned with the birds of the entire North American continent and adjacent islands. This more comprehensive treatment is invaluable to the systematic ornithologist who is concerned with continent-wide distribution of races, species, and genera.

As with many other bird orders, the problem of races in the *Galliformes* is a difficult one, and the author must exercise his own choice and judgment in the treatment which he accords them. For example, the present volume, quite naturally, follows the revision of Aldrich and Friedmann in treating the ruffed grouse (*Bonasa umbellus*). There are other systematists who do not agree with this revision. Further, although the racial treatment of the Bob-white (*Colinus virginianus*) has recently been extensively revised by Aldrich, the present volume does not follow his revisions.

In order of appearance, this series of bulletins has virtually reversed the presently-accepted A.O.U. Check-list arrangement. Part I catalogs the *Fringillidae*, and later parts treat other groups in reverse order. Two additional parts now in preparation, or awaiting publication, and dealing with the orders from *Falconiformes* to *Gaviiformes* will complete the catalog.

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ASSOCIATION OF VITAMIN CHEMISTS, INC. (Eds.) *Methods of vitamin assay*. New York-London: Interscience, 1947. Pp. xviii + 189. \$3.50.

BRAND, LOUIS. *Vector and tensor analysis*. New York: John Wiley; London: Chapman & Hall, 1947. Pp. xvi + 439. \$5.50.

CHERONIS, NICHOLAS D., and ENTRIKIN, JOHN B. *Semimicro qualitative organic analysis*. New York: Thomas Y. Crowell, 1947. Pp. xiv + 498. (Illustrated.)

DANN, W. J., and SATTERFIELD, G. HOWARD. *Estimation of the vitamins*. (Biological Symposia, Vol. XII.) Lancaster, Pa.: Jaques Cattell, 1947. Pp. 531. (Illustrated.) \$6.50.

EDDY, SAMUEL, OLIVER, CLARENCE P., and TURNER, JOHN P. *Guide to the study of the anatomy of the shark, necturus, and the cat, and Atlas of outline drawings for vertebrate anatomy*. (2nd ed.) New York: John Wiley; London: Chapman & Hall, 1947. Pp. vii + 115. (Illustrated.) \$2.00 ea.

FISHBEIN, MORRIS. *A history of the American Medical Association, 1847 to 1947*. Philadelphia-London: W. B. Saunders, 1947. Pp. xvi + 1226. (Illustrated.) \$10.00.

JOHNSON, MARTIN. *Time, knowledge, and the nebulae: an introduction to the meanings of time in physics, astronomy, and philosophy, and the relativities of Einstein and of Milne*. New York: Dover, 1947. Pp. 189. \$2.75.

PRATT, LYDE S. *The chemistry and physics of organic pigments*. New York: John Wiley; London: Chapman & Hall, 1947. Pp. vii + 359. (Illustrated.) \$6.00.

SZENT-GYÖRGYI, A. *Chemistry of muscular contraction*. New York: Academic Press, 1947. Pp. vi + 150. (Illustrated.) \$4.50.

VESTINE, E. H., et al. *Description of the earth's main magnetic field and its secular change, 1905-1945*. (Publ. 578.) Washington, D. C.: Carnegie Institution of Washington, 1947. Pp. v + 532. \$2.50, paper; \$3.00, cloth.

WAKSMAN, SELMAN A. *Microbial antagonisms and antibiotic substances*. New York: Commonwealth Fund, 1947. Pp. ix + 415. (Illustrated.) \$4.00.

WELCHER, FRANK J. *Organic analytical reagents*. (Vol. II.) New York: D. Van Nostrand, 1947. Pp. xi + 530. \$8.00.