dispensable one. His conclusion is that the fraction of genes with but a single function is at least 71–73 per cent. This makes it "unlikely that selection can account for the observed high frequency of unifunctional genes." The discussion of the nature of gene action is well balanced and stimulating.

E. B. Lewis has written a very much needed review of "The Phenomenon of Position Effect." Perhaps it marks the end of an era in the study of this phenomenon, for the more recent studies of Barbara McClintock on the "activator" and "dissociation" loci in maize and their extraordinary capacity to produce position effects may well require a complete revision of current concepts. The question of the generality of the V- and S-types (variegated and stable) of position effects distinguished by Lewis remains: what proportion of genes is subject to position effect? And what is the ratio between V-type and S-type effects among susceptible genes?

A. R. G. Owen has contributed a theoretical study of genetical recombination. As a review of that field, the paper appears limited by a lack of cognizance of many previous efforts to develop mathematical theories for this phenomenon—e.g., those of Körösy and Ludwig. The author might have been more cautious by reason of the forgotten failures of others. More serious is the defect imposed by unsound or weak basic assumptions, in this case (1) complete reliance on Mather's theory of the serial formation of chiasmata from the centromere, and (2) the assumption that interference is a purely intrachromosomal effect. The Drosophila data suggest that the tip of the chromosome, as well as the centromere, has a primary effect upon interference; and the existence of *inter*-chromosomal interference, first established by Schultz and Redfield and independently by the reviewer, has been repeatedly confirmed by others. For these and other reasons, it seems doubtful that the theory advanced by Owen will be superior to the empirical relations established by Haldane and Kosambi.

A review of "Corn Breeding," by Frederick D. Richey, is highly informative but strongly marked by the author's individual views. A very different review would have been written, for example, by Brieger, whose recent analysis of the causes of heterosis has led to conclusions at variance with those presented here. The extent of the chasm may be seen in the failure of Richey to cite Brieger's work at all.

"Parthenogenesis in Animals" has been very extensively surveyed and summarized by Esko Suomalainen. This comprehensive review will long remain a chief reference work on the subject.

Volume 3 of *Advances in Genetics* is 105 pages shorter than Volume 2, which was 88 pages shorter than Volume 1. This represents a reduction of 41 per cent in subject matter. The price being $6.80, the cost to the purchaser of the series has increased from 1.63 cents per page to 2.54 cents per page, an increase that seems to be completely out of line with the cost of most comparable volumes, either of the same or of other publishers. Publishers, as well as purchasers, ought to be aware of the yardstick of cost per page. For a largely unillustrated book (only the Delaporte article has more than one illustration), the cost of this volume is exorbitant, and once again raises the question whether the less expensive form of a review journal for such articles is not better.

BENTLEY GLASS

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Encyclopédie Entomologique: La Biologie des Diptères, Vol. XXVI. E. Séguy. Paris, France: Paul Lechevalier, 1950. 609 pp. 4,000 fr.

This new volume on the Diptera is the result of years of study of this order and it follows a long series of well-known descriptive papers and monographs, including three earlier monographs in the *Encyclopédie Entomologique* series, by this author.

Because of the economic significance of the Diptera, they have been the subject of many investigations in the field and laboratory. Indeed, as Séguy points out in the introduction, more than 60,000 papers have been published on the order since the time of Redi. To attempt to include more than a fraction of them in any one work would be a herculean task. In this volume the author presents the characteristics of typical representatives of the 120 families of the order, stressing field observations more than laboratory experimentation. The literature covered is tremendous, and is presented in two ways: a special bibliography after each section, and a summary bibliography at the end of the book.

Following a very brief summary of the ordinal characteristics, the first section of the book deals with the morphology and physiology of the organ systems of typical imagoes. This is followed by several chapters on modes of reproduction, mating behavior, oviposition, and a description of the egg and eclosion. Similar treatment is given to the larval forms, followed by a discussion of metamorphosis, pupation, and emergence. A general consideration of habitats, diets, and reactions of imagoes to environmental factors introduces the discussion of the spread and zoogeography of the Diptera. The larger portion of the second half of the monograph presents a most thorough annotation of the dipterous fauna of every conceivable aquatic and terrestrial environment, from high arctic to tropic, from bamboo internode to man's domicile. The reviewer found the microcavernicolous category (plant galleries, arthropod burrows, etc.) a very convenient one for grouping a number of heterogeneous habitats. The fauna of the various environments are considered by developmental stage, reproductive and feeding behavior, and systematic position. A chapter on parasitic Diptera completes this section, although representatives of this group are mentioned throughout the earlier text. A brief descriptive classification of the Diptera completes the book.

The material is very well organized and simply

presented, and the amount of it squeezed into so few pages is tremendous. It is well illustrated (225 figures; 10 plates, 7 of which are in color) and well documented with both classical and recent works. This volume is a most welcome companion to the preceding monographs of the series and is a well-rounded and complete biology of the Diptera.

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Renal Function. Transactions of the First Conference, October 20–21, 1949. Stanley E. Bradley, Ed. New York: Josiah Macy, Jr. Foundation, 1950. 172 pp. $2.50.

Recognizing that "scientific communications at scientific meetings and in the journals have been forced into a narrow mold . . ." the Josiah Macy, Jr. Foundation wisely gathers a select group of scientists in annual two-day conference for the purpose of catalyzing communication and integrating ideas in chosen fields. It has published here the proceedings of its first conference on renal function, dealing primarily with the cellular kinetics of renal tubular activity in urine formation. The result is a spirited little volume which stands apart from the parade of generally feckless contributions to the literature on the kidney.

The topics discussed are the morphological aspects of renal tubular secretion and reabsorption (Oliver); role of glutaminase in tubular processes (Binkley); biochemical aspects of renal tubular transport (Taggart); tubular secretion of potassium and acid (Berliner); and water reabsorption by renal tubules (Wesson, Jr.). Although much of the content is provocative —i.e., the raw albeit savory hypotheses as to the role of intracellular enzymes in tubular transport—there is no need to examine the material in detail; most of it appears elsewhere. The chief virtue of the whole lies in its record of the differing, divergent, and hitherto unknown opinions of the distinguished members and guests of the conference on a host of points arising during the discussions. Pages 134–137 are delightful where one finds Oliver, Fremont-Smith, and, diametrically, Shannon finally constrained to set forth their philosophical proclivities.

Because of the involved biochemical and general physiological speculations in this book, it is doubtful if any but Oliver's section can be read easily by the clinician unless he is acclimated to the rarefied air of pure research. But all serious workers concerned with the kidney and, particularly, students who wish to learn of the progress in this field should find the volume exciting.

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Scientific Book Register

Physiological Mechanisms in Animal Behaviour. Symposia of the Society for Experimental Biology, No. IV. New York: Academic Press, 1950. 482 pp. $6.00.

Trends in Gerontology. Nathan W. Shock. Stanford, Calif.: Stanford Univ. Press, 1951. 153 pp. $2.50.

A Classified Bibliography of Gerontology and Geriatrics. Nathan W. Shock. Stanford, Calif.: Stanford Univ. Press, 1951. 599 pp. $15.00.

Cloud Physics. D. W. Perrie. Toronto, Canada: Univ. Toronto Press; New York: Wiley, 1950. 114 pp. $4.50.

Amino Acids and Proteins: Theory, Methods, Application. David M. Greenberg, Ed. Springfield, Ill.: Thomas, 1951. 950 pp. $15.00.

The Main Stream of Mathematics. Edna E. Kramer. New York: Oxford Univ. Press, 1951. 321 pp. $5.00.

Patterns of Sexual Behavior. Clellan S. Ford and Frank A. Beach. New York: Harper, 1951. 307 pp. $4.50.

The Wealth of India: A Dictionary of Indian Raw Materials and Industrial Products, Vol. II covering letter "C." S. S. Bhatnagar, Ed. New Delhi, India: Council of Scientific & Industrial Research, 1950. 427 pp. Rs. 25/– or 40 sh.

Laboratory Design. National Research Council Report on Design, Construction and Equipment of Laboratories. H. S. Coleman, Ed. New York: Reinhold, 1951. 393 pp. $12.00.

Anopheles and Malaria in the Near East. London School of Hygiene and Tropical Medicine, Memoir No. 7. H. S. Leeson *et al.* London, Eng.: H. K. Lewis, 1950. 223 pp. 35 sh.

Elasticity. Proceedings of the Third Symposium in Applied Mathematics of the American Mathematical Society. R. V. Churchill, Eric Reissner, and A. H. Taub, Eds. New York: McGraw-Hill, 1950. 233 pp. $6.00.

The Petrology of the Sedimentary Rocks. 3rd ed. F. H. Hatch and R. H. Rastall; rev. by Maurice Black. London: Thomas Murby; New York: Macmillan, 1950. 383 pp. $4.00.

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The Identification of Molecular Spectra. 2nd ed. R. W. B. Pearse and A. G. Gaydon. New York: Wiley, 1950. 276 pp. $8.50.

Handbook of North Dakota Plants. Orin Alva Stevens. Fargo, N. D.: North Dakota Institute for Regional Studies, North Dakota Agricultural College, 1950. 324 pp. $4.50.

The Cacti of Arizona. 2nd ed. Lyman Benson. Albuquerque, N. Mex.: Univ. New Mexico Press, 1950. Published for the University of Arizona Press. 135 pp. $4.00.

Copper Metabolism: A Symposium on Animal, Plant and Soil Relationships. William D. McElroy and Bentley Glass, Eds. Baltimore, Md.: Johns Hopkins Press, 1950. 443 pp. $6.00.

Progress in Nuclear Physics, Vol. 1. O. R. Frisch, Ed. New York: Academic Press; London: Butterworth-Springer, 1950. 224 pp. $6.80.

Physics in Chemical Industry. R. C. L. Bosworth. London-New York: Macmillan, 1950. 928 pp. $12.75.