Book Reviews

A Dictionary of Antibiosis. Compiled by Leonard Karel and Elizabeth Spencer Roach. New York: Columbia Univ. Press, 1951. 373 pp. $8.50.

The word antibiotic has, during the past decade, been employed with connotations ranging from its literal meaning through all shades of modification to the highly restricted meaning frequently used. The authors have chosen to use a liberal, rather than the literal, interpretation of the term and define an antibiotic as "a substance derivable from living organisms and capable of adversely modifying the vital functions of specific microorganisms."

A Dictionary of Antibiosis consists of an alphabetical list of members of both the plant and animal kingdoms, macroscopic and microscopic, that have been tested for antibiotic activity, the named antibiotic substances they produce, and the microorganisms used in the demonstration of the reported antibiotic activity. Under each entry is a short statement concerning, in the case of an antibiotic, its source, isolation, empirical or proposed structural formula where known, antibacterial activity, and toxicity; in the case of a plant, animal, or microorganism tested for antibiotic activity, the substance produced or a statement that no activity was demonstrated. Statements are keyed to bibliographic references at the end of each entry; these in turn are keyed by year (and letter where necessary) to the alphabetically arranged bibliography occupying the last 55 pages of the volume.

One gets the impression from using this dictionary that the authors have been lax in consulting and noting the earlier literature of antibiosis, and at times they are inconsistent in their listings. The antibiotic asiaticoside is listed with the unsatisfactory: "see *Centella asiatica.*" Under this entry one finds that *Centella asiatica* is a higher plant, derivatives of which are used in the treatment of leprosy, from which asiaticoside, centelloside, asiatic acid, centoic acid, and centellic acid have been isolated. The fact that asiaticoside is a glucoside consisting of two D-glucose and two L-rhamnose moieties bound to a triterpine acid, asiatic acid, is not mentioned, nor is the reported antitubercular activity, both *in vitro* and *in vivo,* of a water-soluble derivative, although this was published in a readily available journal. The entry opposite this, however, gives the empirical formula, fusing point of the crystals, method of extraction, and "spectrum" of a plant antibiotic of apparently no therapeutic value. Lupulon and humulon were reported as antibiotics 11 years prior to the earliest reference noted by the authors. Horseradish was shown prior to 1941 to contain a volatile antibiotic, allyl isothiocyanate, active against the colon bacillus and the human tubercle bacillus; the antifungal activity of the isothiocyanates had been shown three years previously. The reference under horseradish, however, is to a 1944 paper showing "extracts of which are ineffective *in vitro* against *Staphylococcus aureus, Escherichia coli, Phytomonas campestris* and *Ph. phascoli.*"

The task of the lexicographer is ever exacting, and the value of his labors is measured by the degree of exactness attained. Several dictionaries (or handbooks, if you will) of antibiotics have appeared, each succeeding one more ambitious than its predecessor and, in general, more valuable. The present dictionary is by far the most ambitious, and it is to be regretted that the success in dealing with the "words of antibiosis" is not commensurate with the scope of the work. It is, nevertheless, the best book on the subject yet to appear.

JOHN HAYS BAILEY
Sterling-Winthrop Research Institute
Rensselaer, New York

Genetics in the 20th Century. L. C. Dunn, Ed., for The Genetics Society of America. New York: Macmillan, 1951. 634 pp. $5.00.

Celebration of the first half century of genetic research, and the publication of this volume as evidence thereof, serve a triple purpose in addition to paying homage to Gregor Mendel. First, the entire volume reminds us that great and significant facts can remain long unrecognized, as Mendel's did for 35 years, before their sudden impact jolts us into new ways of thought and action; it contains a profound lesson in humility and tolerance at a time when these virtues are judged vestiges of a bygone era. Second, each paper in the volume, by pointing with unconscious pride at achievements already made, serves to justify and to reaffirm our faith in the principle of truth established by verification at a time when the principle, particularly as it applies to genetics, is under ideological attack. And, third, each paper is also evidence that, despite the great advances made, and the far-reaching influence genetics has had on biological and philosophical thought, our knowledge of heredity is still fragmentary.

In the 26 papers presented, the reader will gain the impression that genetics has already become a central core of thought, penetrating, illuminating, and enriching many other fields of human endeavor and interest. Nevertheless, as a discipline, genetics has no vested interests it seeks to preserve, no dogma it wishes to perpetuate. Its very dynamism precludes such attitudes. To the continued credit of Mendel, it might be pointed out that one of the few seemingly certain facts of genetics that has withstood repeated scrutiny is Mendelian segregation, and, as subsequently shown by other workers, its physical relationship to the chromosomes. The fundamental unit of heredity—singly as the gene and collectively as the chromosome—is still very much an unsolved problem in its physical and chemical structure and its mode of action in development. Its role in evolution has only recently been put

to experimental test. The present status of genetics can be summed up by saying that the gene has been clearly apprehended, but certainly not fully comprehended.

As befits the occasion, *Genetics in the 20th Century* is opened by Goldschmidt's essay on the relation of genetics to science in general. It is a panorama which he saw unfold and grow and to which he contributed in no small measure. This introduction is followed by three papers that survey the early days of Mendelism and the period that preceded it. Muller then brings himself and his fellow-scientists up to date in a closely argued paper on the development of the gene theory, a procedure that Ephrussi and Sonneborn follow with the theories of extranuclear inheritance, particularly as they relate to microorganisms. The short but solid paper by Sturtevant will bear rereading often—if only as a reminder that some of the widely accepted ideas on crossing over and other genetic processes are still unsettled questions in need of further exploration. This stands in sharp contrast to the stimulating but more free-wheeling hypothesizing of Darlington at the cytogenetical, Mather at the biometrical, and Mirsky at the cytochemical levels. Dobzhansky and White, in characteristic fashion, cover their respective fields of evolutionary study, and the role of genetics in applied breeding and in human studies occupies a series of eight papers. As representative of developments at the chemical frontiers of genetics—cytochemistry, immunogenetics, and biochemical genetics—Mirsky, Caspersson and Schultz, Irwin, and Beadle discuss the remarkable advances of the past 15 years. Lederberg ably presents the progress made in the new field of bacterial genetics, for the development of which he is in large measure personally responsible. Julian Huxley's essay on "Genetics, Evolution, and Human Destiny," erudite and thought-provoking in content and range, ends the book.

As a group, these papers make up a commendable volume, and the reader will be amply rewarded for the time spent in its perusal. It is, in addition, a fitting memorial to Mendel, and a credit to its editor and to the Genetics Society of America, which sponsored the symposium at which the papers were presented. The wide variety of subject matter and approach is in itself a testimony to the spreading influence, both theoretical and practical, of genetics in many other fields, and the diversity of ideas, freely expressed and as freely criticized, is further evidence of free inquiry intelligently pursued. Yet one wishes that other topics had been included in the volume. Nothing would have been more appropriate than to have had summarized the fundamental contributions of the maize geneticists. Mangelsdorf's essay on hybrid corn touches only a part of a much larger subject; those who heard Stadler speak at the symposium will regret that his talk has been omitted; McClintock's recent studies of gene variability, if discussed, would have indicated new vistas for future study. Conspicuous by their absence, also, are the studies of the entire group of Carnegie geneticists and cytogeneticists, as well as of the plant evolutionists from the West Coast. One must be reasonable, however, for it is obvious that a symposium has its limitations in time, and a volume in space, and the omissions in no way detract from the general excellence of the book as a survey of the current status of genetics here and abroad.

C. P. SWANSON

Department of Biology
The Johns Hopkins University

Scientific Book Register

Biological Antioxidants. Transactions of the Fifth Conference, November 30–December 1, 1950, New York. Cosmo G. Mackenzie, Ed. New York: Josiah Macy, Jr. Fdn., 1951. 187 pp.; cumulative index. $3.75.

Important Tree Pests of the Northeast. 2nd ed. Henry I. Baldwin *et al.*, Eds. Concord, N. H.: Evans Ptg., 1952. 191 pp. $2.00.

When Doctors Are Patients. Max Pinner and Benjamin F. Miller, Eds. New York: Norton, 1952. 364 pp. $3.95.

The Theory of Electromagnetic Waves. A symposium held at New York University, June 6–8, 1950. New York–London: Interscience, 1951. 393 pp. $6.50.

Die Relativitätstheorie: Die Spezielle Relativitätstheorie, Vol. I. 5th ed. M. v. Laue. Braunschweig, Germany: Friedr. Vieweg, 1952. 198 pp.

Isotopes in Biochemistry. Proceedings of the symposium held in London under the auspices of the Ciba Foundation. G. E. W. Wolstenholme, Ed. Philadelphia: Blakiston, 1951. 288 pp. $5.00.

Dialogues Concerning Two New Sciences. Repr. Galileo Galilei; trans. from Italian and Latin by Henry Crew and Alfonso de Salvio. New York: Dover, 1952. 300 pp. $1.50 paper.

Nomography and Empirical Equations. Lee H. Johnson. New York: Wiley; London: Chapman & Hall, 1952. 150 pp. $3.75.

Trauma, Growth, and Personality. Phyllis Greenacre. New York: Norton, 1952. 328 pp. $4.50.

Bacterial Physiology. C. H. Werkman and P. W. Wilson, Eds. New York: Academic Press, 1951. 707 pp. $8.50.

Motor Phonetics: A Study of Speech Movements in Action. 2nd ed. R. H. Stetson. (Published for Oberlin College by North-Holland Pub. Co., 1951.) Order from Psychology Dept., Oberlin College, Oberlin, Ohio. 212 pp. $3.50.

Manipulations de Chimie. 2nd ed. Clément Duval. Paris: Masson, 1951. 382 pp. 2500 fr.

Thomas Jefferson: Scientist. Edwin T. Martin. New York: Schuman, 1952. 289 pp. $4.00.

Cultural Sciences: Their Origin and Development. Florian Znaniecki. Urbana: Univ. Illinois Press, 1952. 438 pp. $6.00.

Collected Papers of the Macaulay Institute for Soil Research, 1948–1951, Vol. III. D. N. McArthur, Ed. Aberdeen, Scot.: Macaulay Institute, 1951. 52 papers.

Liver Injury. Transactions of the Tenth Conference, May 21–22, 1951, New York. F. W. Hoffbauer, Ed. New York: Josiah Macy, Jr. Fdn., 1951. 320 pp. $3.75.

Liver Disease. Ciba Foundation Symposium. Sheila Sherlock and G. E. W. Wolstenholme, Eds. Philadelphia: Blakiston, 1951. 249 pp. $5.00.

Introduction to Mycology. J. A. Macdonald. New York: Academic Press; London: Butterworths, 1951. 177 pp.