PLANTS OF A CALIFORNIA MOUNTAIN

The Flowering Plants and Ferns of Mount Diablo, California. By MARY L. BOWERMAN. xi + 290 pp. 6 × 9 in. Berkeley, California: The Gillick Press. 1944. $3.75.

THIS study of the vegetation of a 3,849 foot mountain lying 30 miles east-northeast of San Francisco is a model local flora. It begins with brief accounts of the geography, climate, soils, geology and paleobotany of the area. Then there is a full and well-illustrated discussion of the ecologic relations, the vegetation being classified into five major formations, subdivided into associations and in some cases lesser categories. Succession, especially in relation to overgrazing and fire, is also treated. Only slight correlation between substratum and vegetation can be traced.

The vascular plants thus far observed number 630 species, 91 of them introduced and 6 endemic. The geographic relations of these are discussed, and a list is given of species which in view of their occurrence in neighboring regions would be expected on Mt. Diablo, but have not as yet been found there. A history of botanical exploration in the area follows, with an account of the 25 entities named on the basis of specimens collected here.

In the annotated catalogue there are extensive keys; the plants are arranged in the Engler-Prantl sequence, with nomenclature according to the International Rules of 1930. For each entity are given the habitat, associated plants, localities and miscellaneous interesting data. Common names are supplied for many species, mostly locally used or descriptive ones; for instance, *Viola sheltoni,* which in "Standardized Plant Names" became automatically "Shelton Violet," is here assigned the more significant name of "Fan Violet."

In this connection a few minor criticisms occur to the reviewer. The keys are rather over-simplified, and not entirely "fool-proof." Thus, the *Polemoniaceae,* being a somewhat baffling group, is rarely covered in manuals and floras without some mistakes or misunderstandings; and the present work is no exception, for when one runs down the opposite-leaved members, constituting half the family here, in the key on page 86, they fall into *Gentianaceae.* Then, in certain instances the taxonomy is antiquated, as when the California Trillium is classed as *"T. sessile* var. *giganteum,"* a long-discredited case of Hookerian lumping. In general, more synonymy might well have been given to aid the outsider in interpreting the names adopted.

The book closes with a bibliography, a glossary and an index to technical and common names. Well printed on superior paper, it constitutes a most creditable piece of work.

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NEUROANATOMY

Human Neuroanatomy. By OLIVER S. STRONG and ADOLPH ELWYN. Pp. 417. Baltimore: Williams and Wilkins Co. 1943. $6.00.

THE arrangement of material in this text-book is well suited to the presentation of human neuroanatomy in the lecture room and particularly in the laboratory. No important topic is omitted, and each is kept in its proper proportion to the whole. Two of the good points of this book are the close integration of topics and brevity of presentation of fundamentals. The reading matter is accurate, thought-provoking and informative.

There is a well-considered introduction, followed by developmental anatomy and histological structure of the nervous system, including the spinal ganglia, terminations in receptors and effectors, meninges, nerve cells, etc. In the body of the book the spinal cord and the segments of the brain stem are considered in some detail. The book ends with consideration of the cerebral hemispheres and cerebral cortex. There is a selected bibliography and an index.

This is not a book that can be read wholly without reference to laboratory material. In fact, one of its virtues is that the text serves to motivate the earnest student to look more closely into the structure of the nervous system as revealed by sections of the spinal cord and brain stem. It can serve admirably as a laboratory text, and will relieve to a measurable extent the burden of individual instruction.

The illustrations are for the most part excellent and well chosen. There are topical guides to the central connections of the cranial nerves and to cross-sections of the brain stem. The labeling of structures is simplified, well-done, following conventional terminology. Besides human material little else is introduced. The illustrations are quite suitable, since many laboratories are stocked with similar preparations.

The doctrines of neural levels and systems have been carried out chapter by chapter in the body of the book to the extent that some of the more elementary conduction processes can be assigned to anatomic systems. There is the usual difficulty of carrying each afferent system from receptor organs through various central levels. One gets the impression that a number of additional diagrams of systems might enhance the value of the text. The dorsal thalamus and its cortical connections might well have been separated from the basal ganglia and motor apparatus. Clinical applications are too scanty to satisfy the practically minded student. They will in many instances have to be supplied from other sources.

There is only a modest attempt to treat the brain as an organ for turning out physiological products related to acquisitive functions and achievement. In this respect the dorsal thalamus and cerebral cortex

suffer most. The book, in common with other texts, does not supply an anatomical organization underlying the elaboration of the acquisitive and actional functions which play such a large part in the biologic activity and achievements of the individual.

There are a few minor errors in the book. On the whole the student as well as the teacher will find it a useful text.

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GENES AND THE MAN

Genes and the Man. By BENTLEY GLASS. 386 pp. The Science in Modern Living Series. Teachers College, Columbia University. 1943. $3.50.

ONE of the most encouraging phenomena of our time is that, as Professor Glass says, "throughout the realm of science the narrow, rigid boundaries of specialized fields of subject-matter are at last breaking down. The boundary between genetics and cytology has already disappeared, and it is now evident that embryology and physiology are beginning to enter the amalgam." This volume is not intended to be a new text-book of genetics. Rather, it "has been prepared to indicate a new outlook," namely, "that we should understand the epic sweep of an individual's growth and development up to maturity and the long years of slow decline thereafter, together with those tenuous bonds that link each generation with all before and after . . . by tracing them from their beginnings in protoplasm and the genes." This is a very ambitious undertaking, and considering its novelty and magnitude Professor Glass has mastered the task quite well.

The presentation begins with a discussion of the possibilities of spontaneous generation, of viruses, cell structures, cell division and of elements of cellular physiology. The concept of genes is introduced without reference to Mendelian heredity. In Chapter II we have a description of sex cells, fertilization, meiosis, mutation, Mendelism, linkage and crossing over. On page 118 a gene is defined as "a single member of the linear series of hereditary factors within each chromosome. Its unitary nature is defined by its separability from its neighbors through crossing over." The reviewer is afraid that such a definition may give comfort to those who doubt the existence of genes. A very good account of the genetic basis of sex is found in Chapter III; Chapter IV combines discussions of gene interactions, gene effects in development, embryonic induction, sex hormones, heterogenic growth and the nature-nurture problem. Chapter V is the longest, as it may well be, since it presents a condensed and yet very readable account of human embryology with excursions into comparative anatomy, physiology and endocrinology. The final chapter is concerned with biological aspects of vital statistics and physiology of ageing.

In a book which sets out "to describe the operation and interaction of those factors which make the physical man" one expects to find a discussion of man's evolution and of genetic evolutionary mechanisms, but these topics are almost completely ignored. However, this complaint may not be a fair one, for even as it stands a tremendous amount of diversified information is condensed between the covers of this medium-sized volume. At times one wishes either that some of the less essential information were removed to give a greater prominence of fundamentals, or else that the book were expanded much beyond its present size. In any case, Professor Glass must be congratulated with having produced a new and interesting type of book on general biology.

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SPECIAL ARTICLES

CONTROL OF GRAM-NEGATIVE BACTERIA IN EXPERIMENTAL ANIMALS BY STREPTOMYCIN[1,2]

STREPTOTHRICIN, an agent isolated from a soil Actinomyces, was found[3,4] to be effective against certain gram-positive bacteria, as well as against a variety of typical rod-shaped gram-negative bacteria, not only *in vitro* but also *in vivo*. These results were recently confirmed.[5] However, the action of streptothricin upon other gram-positive bacteria, such as *Bacillus mycoides,* and upon some gram-negative bacteria, such as *Pseudomonas fluorescens, Ps. aeruginosa, Proteus vulgaris* and *Serratia marcescens,* is rather limited. Recently, another antibiotic agent, streptomycin, was isolated[6] and found capable of acting upon these bacteria as well; otherwise, it resembles streptothricin in its chemical behavior and mode of action. This agent has been found to be active against various gram-negative bacteria also in the animal body.

[1] Journal Series paper of the New Jersey Agricultural Experiment Station, Rutgers University, Department of Microbiology.

[2] With partial support from a grant made by the Commonwealth Fund of New York.

[3] H. J. Metzger, S. A. Waksman and L. H. Pugh, *Proc. Soc. Exp. Biol. Med.,* 51: 251, 1942.

[4] H. J. Robinson, "Some Toxicological, Bacteriological and Pharmacological Properties of Antimicrobial Agents Produced by Soil Microorganisms." Thesis, Rutgers University, 1943.

[5] H. J. Robinson, O. E. Graessle and D. R. Smith, SCIENCE, 99: 540, 1944.

[6] A. Schatz, E. Bugie and S. A. Waksman, *Proc. Soc. Exp. Biol. Med.,* 55: 66, 1944.