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.