

man could speak." Finally, the gradient of the "lower dental arcade convergence angle" graph leads to the inference that "it may be anticipated that man's ability to speak may be appreciably increased in the near future." The author seriously considers Klaatsch's theory of polygenesis, which postulates that modern men were derived as three separate groups from three different anthropoid stocks, each of which also gave rise to one of the existing great apes. This theory, at best a historical curiosity, possibly is a foundation of the author's insinuation that the Australian aborigine is an inferior sort of *Homo*, and that the European white man is the undoubted pinnacle of all evolution.

The measurement of man's cultural development is assessed by three "quantitative" factors: (i) variation in the number of materials at man's disposal; (ii) variation in the number of his occupations; and (iii) variation in his speed of movement by mechanical means. The author's approach is based on a belief that it is possible to effect a "cultural 'grading' of man-made objects" by a point system. Even if one ignores the incompleteness of the archeological record, the validity of this *modus operandi* seems exceedingly doubtful, at best.

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Virus. Wolfhard Weidel. Translated from the German by Lotte Streisinger. University of Michigan Press, Ann Arbor, 1959. 159 pp. \$4.50.

Virology, in the popular literature, is usually portrayed as a science which deals with agents of disease and their control. It is refreshing to find a little book, such as this one, which depicts this science as one which investigates and can decipher some of the innermost secrets of life. This book is well written, fluent, and witty.

The reader will encounter, throughout the book, several gems of scientific wisdom. However, he may or may not agree with some of Weidel's own opinions. For example, I would find it difficult to defend the following statement: "The most important virus diseases have long been known, and the tedious search for new ones seems rather less appealing than collecting

butterflies. Basic research is usually concerned with delving more deeply into experimental material already at hand" (page 35). It is also surprising that the author has faith that it will be possible to produce viruses in a test tube, just as starch granules are synthesized today (pages 103-104), but, at the same time, has little confidence in the eventual discovery of effective chemotherapeutic agents to control virus diseases (pages 148 and 150).

The major portion of the book is devoted to a description of the cycle of infection and multiplication of the virulent phage and culminates in a discussion of the mechanism of transfer of genetic information from parent to daughter DNA helices. References to other problems, including lysogeny, are brief. Although this is to be expected because of the scope of the book, one finds a contrast between the careful and detailed development of the bacteriophage topics and the simplified version of other phenomena.

The translation of the German text is not literal. It is unfortunate that the subtitle "Die Geschichte vom geborgten Leben" (the story of borrowed life) has been omitted, because it tends to define the scope of the book. The general organization and most of the specific information has been retained, but throughout the book several paragraphs of an introductory or concluding nature have been omitted or abbreviated. By a liberal translation much of the flowing style and humor of the German text has been maintained, but some alterations of meaning have been introduced. There are also some mistakes. For example, on page 46 "Reindarstellung" was rendered as "isolation" instead of as "purification"; in microbiology "isolation" has a quite different meaning. On pages 28 and 80 a common mistake is found: "Typhus" was translated as "typhus," although the author quite obviously meant "typhoid," which is caused by an entirely different microorganism.

The book contains good illustrations and an index. The format is very attractive, but the price may lessen its popularity among the general public.

In conclusion, the author should be commended for having made an excellent effort to elevate virology from an applied to a basic science, in the public mind.

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Studies in Mathematical Learning Theory. Robert R. Bush and William K. Estes, Eds. Stanford University Press, Stanford, Calif., 1959. viii + 432 pp. \$11.50.

This collection of papers grew out of a summer institute on the applications of mathematics to social science research, which was held at Stanford University in the summer of 1957. It is fairly representative of current experimentation in the construction of mathematical theories of learning. The reader needs some knowledge and sophistication in psychology, and at least a speaking acquaintance with notions of matrices, difference equations, and probability. Even so, the psychologist may at times get lost in the mathematical manipulations, and the mathematician is equally likely to be puzzled by the psychological discussions; for there is an unfortunate tendency to use highly specialized psychological jargon without definition, to introduce new mathematical symbols without explanation, and to skip over long calculations as if they were obvious. The result of these stylistic faults is that to all but a small group of initiates (and one wonders whether this group is very much larger than the group of authors themselves) many of these papers will be somewhat mystifying. Nevertheless, for any one interested in applying mathematics to psychology or in finding out what mathematical psychologists are doing, this book is worthy of careful study.

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New Instruments and Methods of Engineering Geology. N. V. Glazov and A. N. Glazov. Translated from the Russian by J. Paul Fitzsimmons. Consultants Bureau, New York, 1959. 91 pp. \$3.25.

This interesting little book describes new techniques used in engineering geology, hydrogeology, soil mechanics, soil science, and drilling operations. It relates mostly to new procedures currently used in Russia, but it also describes several techniques recently developed elsewhere, which presumably are novel to the Russians. The main emphasis of the volume is on the use of radioactive procedures. These pro-