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-

cedures include (i) the use of beta and gamma radiation of earth and rock material both in the field and in specimens in the laboratory, primarily to determine density and water content of soils; (ii) the radiation of sand grains to serve as guides to sand movement; (iii) the addition of artificial radioactive glass grains to sands for use in tracing movement of the sand; and (iv) the coating of sand grains with phosphors that can be detected by ultraviolet light. One interesting procedure is the addition of salts of sodium 24 and 22 to water to trace its movement both on the surface and in the ground. Radioactive procedures are also used to determine changes in soil and water content of drilling muds in the course of drilling operations. Rapid means of measuring water content of soils by both mechanical and chemical methods are described. A vibrodrilling technique for rapidly procuring cores of soil to a depth of 20 to 30 feet is discussed at some length. The book closes with a description of safety measures to be used with radioactive procedures and with a series of tables describing the properties and cost in Russia of various radioactive isotopes. The volume contains relatively little material on rock mechanics or on geophysical tools, such as resistivity or seismic velocities. It has a bibliography of 43 titles, mostly Russian. The authors are highly objective in their approach to problems, listing both merits and disadvantages of the procedures described. Fitzsimmons' translation is idiomatic and is technically adequate. In my opinion the book contains much novel material, presented in an authentic manner.

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Glossary of Meteorology. Ralph E. Huschke, Ed. American Meteorological Society, Boston, Mass., 1959. viii + 638 pp. $10.

The glossary's purpose, stated in its preface, is "to define every important meteorological term likely to be found in the literature today."

It is an alphabetically arranged volume listing 7247 entries. Abbreviations and contractions which have been adopted as terms in themselves are included, but most common abbreviations are not.

The following are typical entries:

"ab-polar current—(Obsolete.) An air current moving away from either of the earth's poles."

"konimeter—(Also spelled conimeter) An instrument for determining the dust content of a sample of air. One form of the instrument consists of a tapered metal tube through which a sample of air is drawn and allowed to impinge upon a glass slide covered with a viscous substance. The particles caught are counted and measured with the aid of a microscope.

"*See* **dust counter**."

"Z-R relationship—*See* **radar reflectivity**."

New Books

Annual Review of Nuclear Science. vol. 9. Emilio Segrè and Leonard I. Schiff. Annual Reviews, Palo Alto, Calif., 1959. 633 pp. $7.

British Parasitic Fungi. W. C. Moore. Cambridge Univ. Press, New York, 1959. 446 pp. $8.50. This book provides a guide to the parasitic fungi reported on cultivated plants in Great Britain, the diseases they cause, and the British literature on the subject. The first part of the book is an alphabetical list of the scientific and common names of cultivated host plants, with the fungus parasites recorded on each host listed alphabetically under the scientific name of the host. The second part lists the parasites alphabetically and gives references to the place where each was first described.

Chemical and Molecular Basis of Nerve Activity. David Nachmansohn. Academic Press, New York, 1959. 246 pp. $7.50.

Encyclopedic Dictionary of Electronics and Nuclear Engineering. Robert I. Sarbacher. Prentice-Hall, Englewood Cliffs, N.J., 1959. 427 pp. The approximately 14,000 entries, alphabetically arranged, cover modern terms and definitions, equipments, elements, components, and systems in electronics and nuclear engineering. In the foreword to the volume, A. V. Astin says "*This* dictionary is especially valuable, for the fields of electronics and nuclear engineering have undergone so rapid an expansion in the past decade that a new jargon has sprung into being. Several of the professional societies have achieved considerable progress in standardizing many of the specialized terms in their areas. Dr. Sarbacher has made optimum use of these."

An Introduction to the Mechanics of Solids. Stephen H. Crandall and Norman C. Dahl, Eds. McGraw-Hill, New York, 1959. 454 pp. $8.50.

The Kinetics of Cellular Proliferation. Frederick Stohlman, Jr., Ed. Grune and Stratton, New York, 1959. 470 pp. $5.75.

Das Leben des Szelider Sees. Limnologische studien an einem natriumkarbonatchloridhaltigen see des ungarischen Alfold. Erno Donaszy. Akademiai Kiado, Budapest, Hungary, 1959. 425 pp.

Levels of Knowing and Existence. Studies in general semantics. Harry L. Weinberg. Harper, New York, 1959. 288 pp. $3.25.

The Lloyd William Taylor Manual of Advanced Undergraduate Experiments in Physics. Thomas Benjamin Brown, Ed. Addison-Wesley, Reading, Mass., 1959. 575 pp. $9.50.

Lymphocytes and Mast Cells. Margaret A. Kelsall and Edward D. Crabb. Williams and Wilkins, Baltimore, Md., 1959. 415 pp. $8.

Mechanisms of Hypersensitivity. Joseph H. Shaffer, Gerald A. LoGrippo, Merrill W. Chase, Eds. Little, Brown, Boston, Mass., 1959. 774 pp. $18.50. Papers from the symposium sponsored by the Henry Ford Hospital, 27–29 March 1958.

Metabolic Aspects of Renal Function. William D. Lotspeich. Thomas, Springfield, Ill., 1959. 228 pp. $7.50.

Minerals of New Mexico. Stuart A. Northrop. Univ. of New Mexico Press, Albuquerque, rev. ed., 1959. 681 pp. $10.

Open-Channel Hydraulics. Ven Te Chow. McGraw-Hill, New York, 1959. 698 pp. $17.

Physics of the Earth's Interior. Beno Gutenberg. Academic Press, New York, 1959. 252 pp. $8.50.

Physics and Geology. J. A. Jacobs, R. D. Russell, J. Tuzo Wilson. McGraw-Hill, New York, 1959. 436 pp. $9.75.

The Physiological Basis of Diuretic Therapy. Robert F. Pitts. Thomas, Springfield, Ill., 1959. 346 pp. $9.75.

Productive Thinking, Max Wertheimer. Enlarged edition edited by Michael Wertheimer. Harper, New York, 1959. 318 pp. $5.50.

Progress in Hematology. vol. 2. Leandro M. Tocantins, Ed. Grune and Stratton, New York, 1959. 296 pp. $9.75.

Report of the First Institute on Clinical Teaching. Helen Hofer Gee and Julius B. Richmond. Assoc. of American Medical Colleges, Evanston, Ill., 1959. 266 pp. Cloth, $3; paper, $2.

The School as Agent for Cultural Renewal. Fifth lecture in the "Burton Lecture" series. Lawrence K. Frank. Harvard Univ. Press, Cambridge, Mass., 1959. 55 pp.

Sons of the Shaking Earth. Eric R. Wolf. Univ. of Chicago Press, Chicago, Ill., 1959. 311 pp. $5.

Testing Statistical Hypotheses. E. L. Lehmann. Wiley, New York; Chapman and Hall, London, 1959. 382 pp. $11.

Turbulence. An introduction to its mechanism and theory. J. O. Hinze. McGraw-Hill, New York, 1959. 595 pp. $15.

Understanding Chemistry. Lawrence P. Lessing. Interscience, New York, 1959. 192 pp. $3.50.

The Wealth of India. Raw materials. vol. *5, H-K.* Council of Scientific and Industrial Research, New Delhi, 1959. 369 pp. R. 30.

Writing in Industry. vol. 1. Siegfried Mandel, Ed. Plenum Press, New York; Chapman and Hall, London, 1959. 121 pp. $2.75. Selected papers from the proceedings of the conference on writing and publishing in industry, sponsored by Polytechnic Institute of Brooklyn, 1959.