enzymes by the compound in question, and apparent changes in the quality of smell with the concentration are the result of (nearly) total inhibition of some of the enzymes; (4) reversibility of most odors corresponds to the reversibility of many enzyme inhibitions, but there is the possibility of nonreversible inhibition by other compounds, which corresponds to the persistence of certain odors.

As I have no means for carrying out physiological experiments and, moreover, have not conceived of any tests which might be termed crucial for this hypothesis, it is being offered as a mere speculation.

G. B. KISTIAKOWSKY

Department of Chemistry,
Harvard University, Cambridge, Massachusetts

Errata

In the article "Hemophilia in the Female Dog," by Kenneth M. Brinkhous and John B. Graham (*Science*, 1950, **111**, 723), the caption for the fourth column in Table 2, on page 724, should read: "Prothrombin utilized during 1st hr."

In the article "The Availability of Various Manganese Oxides to Plants," by G. W. Leeper (*Science*, 1950, **111**, 463), two lines should be inserted after the word "failed" (col. 2, par. 2): "to distinguish between them. However, a solution of quinol in water with no added electrolyte gave quite a . . ."

Book Reviews

The Nature of Physical Reality: A Philosophy of Modern Physics. Henry Margenau. New York-London: McGraw-Hill, 1950. 479 pp. $6.50.

In this very interesting book Prof. Margenau, a theoretical physicist by profession and a philosopher par excellence, presents his views on the philosophical foundations of modern physics. Although as a rule there are as many opposing philosophical systems as there are people thinking about them, they can usually be divided into groups bearing well-established names. Thus we learn that "Planck and Einstein are critical realists, Eddington and Weyl moderate idealists, and Bohr and Heisenberg vaguely display the colors of positivism" (p. 12). In this sense the author of the book can probably be described as the proponent of the Neo-Kantian school of thought, inasmuch as he states (p. 58) that

> clear cognizance of the distinction between *synthesis and integration* on one side, and *imaginative supplementation* of the perceptually given on the other, has been apparent in *the Kantian and Neo-Kantian* school of thought, and much of the emphasis conferred upon this point by that school is now *indispensable as a condition for comprehending modern science.*

With this *modus operandi* the author enters into a detailed discussion of the fundamental notions of space and time, and their union in the form of Einstein-Minkowski's four-dimensional world. This is followed by an interesting presentation of the basic problems of statistical mechanics and their bearing on the philosophical interpretation of the laws of probability. The last third of the book is devoted to the problems of quantum theory, causality, and the exclusion principle. It is in this part that a philosopher will become particularly aware of the enormous impact made upon his traditional problems by the factual discoveries of science. Being an expert in the field of theoretical physics, the author presents his material with great clarity, entering into a discussion of such ultramodern problems of physical theory as the current difficulties of quantum electrodynamics and the problem of elementary particles.

On the whole, this book presents an invaluable source of information for a philosopher who would like to get the authoritative up-to-date picture of the advances of modern physics. On the other hand, the reviewer is not quite sure about the use that can be made of his book by the professional physicists, but it is probably because he belongs (p. 13) to

> the ranks of the exterminator brigade, which goes noisily about chasing metaphysical bats out of scientific belfries.

GEORGE GAMOW

Los Alamos, New Mexico

Lehrbuch der Theoretischen Physik: Physik der Vorgänge-Bewegung, Elektrizität, Licht, Wärme, Bd. I. Walter Weizel. Berlin W35, Germany: Springer-Verlag, 1949. 771 pp. DM 56.90 bound, 53 paper-bound.

This is an excellent text, written with the thoroughness that comes from a deep understanding of the unity and coherence of classical theoretical physics. This is not to say that the subject is considered as finished and complete. The limitations are carefully pointed out and, where appropriate, hints are given as to the successes of quantum theory to be treated in the second volume, which is to deal with the theory of matter.

The present volume includes classical mechanics, elasticity, hydrodynamics, electrodynamics, optics, relativity, and thermodynamics. Each of these fields is treated thoroughly. Although the material is presented in concise form the treatment is not sketchy; sufficient detail is always given to enable the reader to follow the line of argument without difficulty. The subject of mechanics, for example, is covered in 138 pages, starting with the motion of a particle, then discussing motion of a system of particles, introducing the Lagrange equations of the first and second kind for free and constrained

motion, the integral principles of dynamics, the Hamilton-Jacobi theory, periodic and conditionally periodic motion, and the use of the action function, thus leading toward a natural transition to wave mechanics.

Elasticity and hydrodynamics cover 175 pages. Besides the usual topics, some elementary applications to problems in applied mechanics are used to illustrate elasticity theory. Vibrations and the theory of wave propagation in elastic media, and the effect of boundary conditions, are treated with particular clarity. Hydrostatics, surface phenomena, the hydrodynamics of ideal and viscous fluids, and wave propagation in fluids, including a brief account of supersonic flow, complete the chapter.

Another 175 pages are devoted to electrodynamics, including a section on the application of 4-terminal networks, and a brief account of the matrix theory of networks. A chapter on optics, of 125 pages, covers geometrical optics, interference, diffraction, and crystal optics. These two chapters prepare the way for the necessity of introducing relativity theory, which is presented in a particularly lucid chapter of 60 pages, covering the electrodynamics of moving bodies and the formulation of the field equations in Lorentz-invariant form, ending with a brief section on ground relativity.

The volume concludes with a 98-page chapter on thermodynamics. This includes classical thermodynamics: the thermodynamic potentials, phase rule, Nernst's theorem, applications to chemistry, as well as theory of heat radiation, and a brief treatment of heat conduction. Statistical treatment is reserved for the second volume, as are all topics depending on the atomic nature of matter.

A useful feature of the book is a brief paragraph at the beginning of most sections, describing the topics treated in that section and setting forth the notation used therein. The English language is peculiarly lacking in comprehensive treatments of theoretical physics at the graduate level; the nearest approach to the present volume is perhaps the translation of Joos's *Theoretical Physics*. Weizel's book is a bit more advanced than Joos's. It is highly recommended as a text for a year's course in classical theoretical physics. The postwar shortage probably accounts for the quality of paper on which the book is printed. This is considerably below the former Springer standard, though the technical excellence of the printing and the freedom from errors are up to standard.

G. G. HARVEY

Massachusetts Institute of Technology

Scientific Book Register

Stellar Evolution: An Exploration from the Observatory. Otto Struve. Princeton, N. J.: Princeton Univ. Press, 1950. 266 pp. $4.00.

Gray's Manual of Botany: A Handbook of the Flowering Plants and Ferns of the Central and Northeastern United States and Adjacent Canada. 8th ed. Revised by Merritt Lyndon Fernald. New York: American Book Company, 1950. 1632 pp. $9.50.

Atomic Physics. Wolfgang Finkelnburg. Trans. from rev. German ed. by George E. Brown. New York: McGraw-Hill, 1950. 498 pp. $6.50.

Saints, Sinners and Psychiatry. Camilla M. Anderson. Philadelphia, Pa.: J. B. Lippincott, 1950. 206 pp. $2.95.

Therapeutische Chemie: Arznei- und Desinfektionsmittel zur Bekämpfung von Infektionskrankheiten. Theodor Wagner-Jauregg. Bern, Switzerland: Hans Huber; New York: Grune & Stratton, 1949. 272 pp. Sw. fr. 35.50.

Structure et Activité Pharmacodynamique des Médicaments du Système Nerveux Végétatif: Adrénaline, Acétylcholine, Histamine et Leurs Antagonistes. D. Bovet and F. Bovet-Nitti. Basel, Switzerland: S. Karger Ltd., 1948. 849 pp. Sw. fr. 85.–.

Physical Properties of Glass. J. E. Stanworth. New York: Oxford Univ. Press, 1950. 224 pp.

Weltschöpfung in Mythos und Religion, Philosophie und Naturwissenschaft. Bernhard Bavink. Basel, Switzerland: Ernst Reinhardt, 1950. 126 pp. Sw. fr. 5.50.

The Production of Antibodies. 2nd ed. F. M. Burnet and Frank Fenner. London-New York: Macmillan, 1949. 142 pp. $3.00.

The Pathogenesis and Pathology of Viral Diseases: Symposium Held at the New York Academy of Medicine, December 14 and 15, 1948. John G. Kidd, Ed. New York: Columbia Univ. Press, 1950. 235 pp. $5.00.

Physics in Industry: The Acceleration of Particles to High Energies. London S.W.1, England: Institute of Physics, 1950. 58 pp. $1.60 postpaid.

Process and Unreality: A Criticism of Method in Whitehead's Philosophy. Harry Kohlsaat Wells. New York: King's Crown Press, Columbia University, 1950. 211 pp. $3.00.

An Introduction to Probability Theory and Its Applications, Vol. I. William Feller. New York: John Wiley; London: Chapman & Hall, 1950. 419 pp. $6.00.

Exercises in General Chemistry. Harold G. Dietrich and Erwin B. Kelsey. New York: Macmillan, 1950. 285 pp. $3.00.

Die Welt der Vektoren: Einführung in Theorie und Anwendung der Vektoren, Tensoren und Operatoren. Franz Ollendorff. Vienna, Austria: Springer-Verlag, 1950. 470 pp. $9.00 paper, $9.60 bound.

A Course in General Chemistry: Semi-Micro Alternate Form. 3rd ed. William C. Bray, Wendell M. Latimer, and Richard E. Powell. New York: Macmillan, 1950. 217 pp. $3.00.