Book Reviews

Information Theory in Biology. Henry Quastler, Ed. Univ. of Illinois Press, Urbana, 1953. 273 pp. Illus. Paper, $4.

One of the oldest dichotomies in biology is represented by the opposition of mechanists to teleologists. As Temkin has shown there is a deep philosophical difference between the classical German mechanistic physiology and the "vitalistic materialism" of the French school. It now seems possible that a mechanistic approach to the problems of adaptive behavior can come from information theory, and bridge the gap once and for all. The publication of *Information Theory in Biology* may very well represent a landmark for that reason alone.

The book is also welcome because it makes available in one place a number of attempts to apply information theory to, for example, protein structure, protein synthesis, genes, immunochemistry, the information content of zygotes and bacterial cells, and the control of the blood sugar level. In spite of a section on the definition and measurement of information, this work does not present an elementary introduction to information theory for the uninitiate, but is rather a series of short research papers. Outside of this lack of a systematic simplified introduction to information theory as such (if that is possible!) the book is extremely valuable. As a physiologist, I hope sometime to see a similar work largely devoted to an analysis of complex homeostatic mechanisms.

PAUL CRANEFIELD
Department of Physiology and Pharmacology, State University of New York, College of Medicine at New York City

Nobel Prize Winners in Medicine and Physiology: 1901–1950. Lloyd G. Stevenson. Schuman, New York, 1953. ix + 291 pp. Plates. $6.50.

This is one of three volumes covering the several fields of scientific work in which Nobel prizes are awarded. Over the half-century awards were made in 41 years, to 59 laureates. Brief biographical sketches are followed by descriptions of the prize-winning work, in the form of quotations, usually excerpts from the Nobel lectures delivered in Stockholm at the time of the presentation of the prizes. The author then comments upon the significance of the discoveries in theory and practice. The book offers an interesting and useful summary of outstanding work in medicine and physiology over these years.

It would be folly indeed to attempt to discuss or appraise the notable contributions made by the prize-winners. They have received the highest honor that our society can give for distinguished work and require no further commendation. It may, however, be of some interest to note certain trends in the making of the awards. In 12 years they were made in the fields of bacteriology and parasitology (Von Behring, Ross, Finsen, Koch, Laveran, Metchnicoff, Ehrlich, Bordet, Fibiger, Nicolle, Domagk, Fleming, Chain, Florey, Müller). Ten times they were made to investigators of the nervous system, central or peripheral (Pavlov, Golgi, Cajal, Gullstrand, Bárány, Wagner-Jauregg, Sherrington, Adrian, Dale, Loewi, Heymans, Erlanger, Gasser, Hess, Moniz). Fundamental discoveries in biophysics and biochemistry were honored in five years (Kossel, Hill, Meyerhof, Einthoven, Warburg, and Cori and Cori). The biochemical emphasis was extended by four awards to students of endocrinology (Kocher, Banting, Macleod, Houssay, Kendall, Hench, Reichstein) and by four others in the field of vitamins and dietary deficiencies (Eijkman, Hopkins, Whipple, Minot, Murphy, Szent-Györgyi, Dam, Doisy). In embryology and genetics appear three names (Spemann, Morgan, Muller). Four others worked on the blood or blood-vascular system (Richet, Carrel, Krogh, Landsteiner).

In the earlier years a strong clinical interest appeared to dominate the awards. In later years the basic sciences came very much into their own, with clinical applications shortly developing from nearly all the discoveries. It is somewhat notable that, in a half century during which cancer was being studied in many laboratories, only one worker in the field was honored, namely Fibiger, recognized for his discovery of the *Spiroptera* carcinoma. Surgical procedures have not often been honored, including only the thyroidectomy of Kocher, the transplantation of blood vessels and organs of Carrel, and the prefrontal leucotomy of Moniz, although the success of Pavlov rested very largely upon his expert surgery. Extensive fields in medicine and physiology have attracted no awards as yet. Manifold opportunities are still open to the present scientific generation to make new discoveries which will receive the high recognition of the Nobel prize.

WILLIAM R. AMBERSON
Department of Physiology, School of Medicine University of Maryland

Rutherford, by Those Who Knew Him. Being the collection of the first five Rutherford lectures of the Physical Society. Physical Society, London, 1954. 69 pp. Illus. + plates. Paper, 8s.6d.

The Rutherford lectures were initiated by the Physical Society in 1942 and are held every second year. The lectures in this book were given by H. R. Robinson, J. D. Cockcroft, M. L. Oliphant, E. Marsden, and A. S. Russell. All were close collaborators of Rutherford and thus are in an excellent position to contribute many personal impressions that shed light on Rutherford's life and on the way he worked and compelled others to work.

The life of the man who first proposed a mechanical