Book Reviews

Receptors and Sensory Perception. A discussion of aims, means, and results of electrophysiological research into the process of reception. Ragnar Granit. Yale Univ. Press, New Haven, Conn., 1955. xi + 369 pp. Illus. $5.

Ragnar Granit, director of the Nobel Institute for Neurophysiology, has written a valuable book that should be read by all who are interested in the nervous system. From reading this book one realizes how much progress has been made during the past few years, and a presentation of the subject, even though confined to a segment of nervous system studies, by one of the most active and prominent workers in the field should be greatly welcomed. For instance, the subject of spontaneous activity in sense organs and its functional significance has not been surveyed before. Detailed research on the mechanisms of centrifugal control of sense organs is only about 10 years old, and the implications of these advances on such problems as control of posture are well stated. This is to be expected since many of the studies were initiated and carried out at the author's institute.

Receptors and Sensory Perception is by no means a neutral review; the author's views are forcefully presented, and there is always an effort made to state general principles rather than mere details. Granit is at his best when he is discussing the functional organization of the nervous system. This is clearly essential, since he aims at narrowing the gap that exists between psychophysics of perception and sense organ physiology. The historical background to problems is as valuable in this book as in the author's previous publication, *Sensory Mechanisms of the Retina,* which appeared in 1947. Topics on visual physiology have been brought up to date, especially in respect to Granit's dominator-modulator theory.

The book, which contains the substance of the 1954 Silliman lectures given at Yale University, concludes with some thoughts concerning the validity and usefulness of the approach and of the concepts that are presented. Granit writes: "everyone makes his own selection from available knowledge, just as in these discussions I have made mine. It then remains to be seen if they stand the test of time and experimentation. However, one can be quite satisfied if they prove useful for the time being." The usefulness of this book is beyond doubt, although it shows how quickly the field changes and how rapidly new results become superseded.

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Bau der Südamerikanischen Kordillere. Heinrich Gerth. Borntraeger, Berlin, 1955. 264 pp. + plates. DM. 52.50.

This book is the second volume of Gerth's *Geologie von Südamerika,* the first volume of which was published in 1941. Gerth has published numerous good geologic works on South America since 1913. This book represents the best and most thorough compilation of published material on the Andes ever attempted. The author's success in condensing so much factual material into so few pages is remarkable. Relatively few pages of this work deal with theoretical considerations, and it will be invaluable to geologists who desire a good general knowledge of the structure, stratigraphy, igneous geology, and stratigraphic section localities of the Andean belt.

The book is divided into six chapters: Antarctic Andes, south-central Andes, north-central Andes, Caribbean Andes, Andean volcanism, and a summary. Each chapter is divided into sections on the basis of natural geologic-geographic subdivisions. These subdivisions, except possibly in the south-central Andes, are fundamentally sound.

Of several criticisms, the most important is the inadequacy of the number and type of illustrations. The use of a series of small block diagrams to illustrate surface geology and structure of the entire Andes is unique, but the advantage gained is dubious. The result would have been more effective if more structure sections had been utilized in the text and a much larger single-piece geologic map drawn to illustrate the surface geology. The structure sections in the book are not located on index maps, nor are all of the thousands of geographic place names used in the text located for the reader's use. The result is often confusing. Among the structural sections, one small error was noted: cross sections *c* and *d* on plate 5 opposite page 160 are reversed.

Throughout, the geologic picture presented in the text is basically sound. But several minor remarks and criticisms must be made. The paleogeographic sketch (Fig. 62, p. 235) is cluttered and loses its effect. Each epoch or period would have been clearer if it had been shown on a separate map. The full extent of some of the seaways is not indicated.

Table 3 (after p. 264) is restricted to Cretaceous strata. Thus the discussion (p. 152) of the controversial Quinta-Giron series is nowhere summarized. Tables 2 and 3 do not show the Tertiary, although considerable Tertiary crops out in the areas covered by these tables. All the tables omit the Paleozoic deliberately, although in Bolivia and northern Argentina the Paleozoic is the most important stratigraphic cycle.

Referring to the Paleozoic of Argentina and Chile, the author apparently was unaware of the articles by Suero (1953), Miller and Garner (1953), and the 178-page summary of the Argentine Paleozoic by Keidel (1947). Gerth tentatively correlates the Isla Madre de Dios (Chilean Archipelago) marbles with the Cretaceous (p. 4), but during recent field studies fusilinids have been collected from these rocks.

Gerth also missed the excellent 541-page treatise by Gröber (1952) on the Argentine Mesozoic and Grossling's (1952) review of the Magallanes basin in Chile. Had he seen these articles he would have realized that Thomas' (1949) correlations (p. 13) across this basin are incorrect.

In northern Argentina, northern Chile, and Bolivia, the author (p. 55) dates the Horizonte Calcareo-Dolomitico as Triassic. The dating of this marker bed is important in regional correlations between the north-central and south-central Andes. All available evidence suggests that the Horizonte Calcareo-Dolomitico is no older than Jurassic and is probably Cretaceous.

The discussion of Peruvian geology is the most thorough in the book. The only question that comes to mind is the dating of the base of the Rimac series. Gerth (chap. III, pts. 2 and 3) dates the base as Upper Cretaceous, but regional considerations suggest that the oldest beds are Tertiary.

Although Gerth (p. 220) perpetuates the classic idea of a Caribbean landmass during the Mesozoic, concrete evidence for such a landmass is lacking. However,

the importance of the Turonian-Senonian orogenic phase which is important economically in both North and South America is well brought out.

Although much space has been devoted here to minor criticisms, this work easily excels the best previous efforts of its kind. It will be invaluable, not only to readers with an academic interest in South America, but also to those engaged actively in the task of finding petroleum and other mineral resources.

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Enfermedades Infecciosas y Parasitarias. vols. 1 and 2. Jose Ink. Lopez y Etchegoyen, Buenos Aires, 1953. xv + 1485 pp. Illus. + plates.

This work on infectious and parasitic diseases is intended as a textbook in Spanish for both medical students and practicing physicians. Its two volumes describe the diseases produced in human beings by bacterial, viral, fungal, and parasitic agents.

The author describes the etiology, pathologic anatomy, symptomatology, laboratory diagnosis, treatment, and epidemiology of each disease and gives a brief summary of the main facts that help in identification of morbid conditions. This book not only includes the classical descriptions of diseases but also presents the more modern developments in laboratory diagnosis and the new therapeutic measures that have changed the prognosis of infectious and parasitic ailments.

There are 32 pictures, many in color. The bibliography contains 114 references from both foreign and Argentine sources, and there is an analytic index at the end. The scope of the book is wide; there are references not only to diseases common in Argentina but to many others of world-wide prevalence.

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Causalités et Accidents de la Découverte Scientifique. Illustration de quelques étapes caractéristiques de l'évolution des sciences. R. Taton. Masson, Paris, 1955. 168 pp. Illus. F. 980.

The author of this interesting and unusual book has collected a large number of documents concerning scientific discoveries. The book has the positive merit of having a wide scope, ranging through mathematics, astronomy, physics, chemistry, instrumental techniques, biology, and medicine, and the negative merit of supporting no specific theory, historical, psychological, or other, but presenting each individual item in its variegated collection for the appreciation and judgment of the reader.

The author remarks in his preface that his objective presentation avoids forcing the complexities of actual scientific research into a systematic schematism. Unfortunately, this avoidance of rigidity has led him into the pitfall of disorder. We are made to jump from antiquity to modern times and to the Renaissance, from spectroscopy to hydrostatics and to typhus, from great names to obscure ones, from basic discoveries to chance observations and to dead ends, from original quotations to amusing anecdotes, so that the very richness of the collection leaves the mind in a whirl. In spite of this, the book will find its place on the shelves of the teacher, the historian, or the philosopher of science; each one will find recorded in it several cases that he has not met before as well as illustrations for his own pet theories. In this he will be aided by two excellent indexes, one of names and one, analytic, of subjects. The plates are also very good.

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Principles of Nuclear Reactor Engineering. Samuel Glasstone. Van Nostrand, New York, 1955. vii + 861 pp. $7.95.

Samuel Glasstone has attempted to cover the entire field of nuclear energy in one volume. He has been highly successful in presenting a large amount of detailed information, which includes the basic physics and engineering calculations for nuclear reactors. The large gap between the basic design theory and the applications to practical reactor design has been presented in sufficient detail for design of research reactors but not for the design of power reactors. The treatment of most subjects is extremely brief, and incomplete. A great many of the design problems that must be solved by the reactor designer and operator are not mentioned. Nevertheless, the book does contain a wealth of information of value to the beginner in the field of nuclear reactor design. The simple basic principles are presented in a readable manner. Lists of nomenclature are attached to each chapter as well as lists of problems. Some examples of typical calculations are included, but more specific examples would be desirable.

The contents of the book include a review of the calculations of critical mass, neutron flux distribution, and nuclear reactions; control of reactors; materials; shielding; thermal aspects of reactors; and descriptions of various reactors. The chapter on thermal aspects of reactors is perhaps the best presented.

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Scientific Method in Psychology. Clarence W. Brown and Edwin E. Ghiselli. McGraw-Hill, New York–London, 1955. ix + 368 pp. Illus. $6.

Scientific Method in Psychology is meant to be a textbook at the undergraduate level. Its purpose is to state the general principles of science and the interpretation that these principles have in psychology. The book is divided into three parts of about equal length. The first part is a simplified idealization of both the scientific method and the scientist. The scientist is characterized as a straight thinker who is individually flexible, tolerant, and free of intellectual biases. He also has a good memory.

In the second part of the book, the authors detail the steps of the scientific method. These are: (i) the definition and delimitation of a scientific problem; (ii) the use of hypotheses in formulating a problem; (iii) collection of the facts; (iv) organization, analysis, and interpretation of the facts; and (v) generalization from scientific data. In part three, some specifically psychological procedures — psychological methods, structured and unstructured tests, interviews, and so forth—are described and compared.

The authors treat the experimental procedures quite competently and give a wide variety of examples. Their handling of more abstract problems of scientific method and particularly of theory, however, is not so sure. In a discussion of three types of facts, they distinguish one that is "remote from sensory experience." This type of fact is a fact that has been thought about by the scientist and thus has acquired meaning. This type of "fact" and "hypotheses," "theories," "interpretations," and "generalizations" become inextricably confused in later chapters. Because these terms are used frequently—and presumably systematically—throughout the text, the confusion is not helpful. Other topics are also perhaps more vague than they need be. For example, the following distinction is made: "Experience, knowledge, and understanding are closely related. They should be placed on a common continuum with experience at the beginning and understanding at the end. From experience we pass through knowledge on