importance to present-day China than to any country in the world. Even beyond her desperate and growing need for wood is the fact that her agricultural productivity depends on water conservation and, hence, on the afforestation of her denuded lands. Today the great part of China's natural forests has been destroyed, with the result that soil erosion is both acute and widespread and the shortage of forest products has to be experienced to be believed. So great is the demand for fuel wood alone that trees planted as part of her reforestation program are stolen almost as soon as they are put in the ground.

Richardson treats the many facets of China's forest land problem under such headings as "Economic background," "Natural vegetation," "Forestry administration and policy," "Water conservancy and protection forests," and "Education and research."

One of China's gigantic forestry projects is the "great green wall," the most ambitious protection-afforestation project ever undertaken by any nation. It consists of a series of massive shelterbelt systems which ultimately will form a more or less complete ring around the northern deserts. Richardson points out that China's forestry conservancy and protection-forests programs have been drawn up on a gargantuan scale and prosecuted with vigorous energy. Many mistakes have been made, many projects misdirected. Survival rate in plantations is probably poor, and widespread failure has been experienced. The Chinese recognize all this and are trying to avoid these blunders in the future.

The book is splendidly illustrated and contains a series of appendices and notes, together with a list of more than 100 arid-zone plant species, as well as a comprehensive bibliography.

This is not only a unique source of information hitherto unobtainable, but a vivid and convincing study of the greatest forestry effort known to history.

TOM GILL
International Society of Tropical Foresters, Washington, D.C.

Radiobiology and the Nervous System

Many books have been written about the effects of ionizing radiation on biological systems. Scant emphasis, however, is usually given to the role of the nervous system in radiobiological effects, since it is often thought that very large doses of radiation are necessary in order to affect the nervous system. During the past decade or two, however, it has gradually become known that behavioral responses can be elicited by millirad doses of ionizing radiation. Psychologists have found that radiation can be used as a stimulus; for example, moths may begin beating their wings shortly after being exposed to 0.1 r/sec of x-rays. Some effects of ionizing radiation are long-lasting; if a rat is presented with a single exposure to radiation at a time when saccharin is added to its drinking water, it will display an aversion toward saccharin solutions for several months thereafter. The physiological basis for such behavior is not known. Many animals have also been shown to respond to x-rays that impinge on the eye. Such reactions are probably due to fluorescence and depend on the state of visual dark adaptation.

Donald J. Kimeldorf and Edward L. Hunt, both of the U.S. Naval Radiological Defense Laboratory at San Francisco, have written **Ionizing Radiation: Neural Function and Behavior** (Academic Press, New York, 1965. 343 pp., illus. $10) in order to interest experimental physiologists and psychologists in the use of ionizing radiation as a research tool. The book is therefore organized according to the concepts of neurophysiology and behavioral science rather than those of radiation biophysics. The first chapter summarizes the properties of ionizing radiation and introduces radiobiological concepts, and the next is devoted to the function of the nervous system. The reader who is not familiar with this area of radiation research can become oriented rather quickly by reading these two chapters and then can pass on to any of the chapters dealing with particular effects of ionizing radiation on various portions of the nervous system and on gross behavior.

Because no overall theory has been formulated to account for the diverse effects of irradiation on animals, Kimeldorf and Hunt have presented a series of selected reports of investigations, together with their own speculations and hypotheses regarding the mechanisms that underlie the observed effects. They should be congratulated for their digest of the effect of ionizing radiation on neural function and behavior. It can be predicted that the level of activity in this interesting field of science will be materially enhanced as a result of this book.

L. M. BEIDLER
Department of Biological Sciences, Florida State University, Tallahassee 32306

Oxytocin Research

Advances in Oxytocin Research (Pergamon, New York, 1965. 162 pp., illus. $10), edited by J. H. M. Pinkerton, has a misleadingly broad title for a volume that contains the proceedings of a symposium about some limited aspects of oxytocin research. The symposium, which was held in London in May 1964, was sponsored by the Blair-Bell Research Society, a recently founded institution (1962). It brought together some well-known workers in the field of oxytocin research. The book is divided into two parts, Physiology and Pharmacology, and Clinical Applications. The first part includes a paper on circulatory effects of synthetic oxytocin, desamino-oxytocin, synthetic lysine-vasopressin and "Octapressin" (2-phenylalanine-vasopressin), as determined by the use of rubidium-36 to measure the regional blood flow. The rest of this part is dedicated to the problem of oxytocin concentrations in blood during lactation and parturition. The papers are by researchers from some of the laboratories in which the difficult problem of detecting and measuring circulating endogenous oxytocin is being systematically and thoroughly studied, and they are indeed worthwhile reading.

A paper in the second part of the book deals with endocrine control of labor, a controversial and unresolved problem that is further obscured by this presentation. Another paper is dedicated to the clinical use of oxytocin, administered by the transbuccal route, to induce labor. This contains much interesting information, but in several instances some study is needed to resolve apparent discrepancies in the numerical data. The number of cases of fetal distress (11 percent) appears to

be sufficiently high to justify a strong warning of this danger and to indicate that additional investigation of the mechanisms of this effect is needed. The established danger of water retention when high doses of oxytocin are administered is not mentioned. This could well have been added to further emphasize the conclusion about "the need for continuous supervision of the patient."

Two papers are concerned with the so-called oxytocin-sensitivity test. The first is a review of 10 years of work done with this controversial test. The data presented give convincing evidence that this test can be applied to predict whether labor can be successfully induced by amniotomy. Readers must be warned that most of the content of the summary of this paper is not elaborated in the text. The second paper on the test adds valuable data on results obtained using a simplified technique.

In his introduction to this second part of the symposium, the chairman, G. W. Theobald, begins with an acknowledgement of the "great pharmaceutical firms who plough back so large a part of their profits into research." In this introduction he makes the statement that some of this research has "provided elegant demonstrations of the relations existing between chemical structure and biological function." Although much progress towards this goal has been made in more than one laboratory, the present situation is well described by the passage quoted from Dickens by E. J. W. Barrington in *Hormones and Evolution*: "This is all very well, Mr. Nickleby, and very proper, so far as it goes—so far as it goes, but it doesn't go far enough."

LUIS A. BRANDA
Laboratory of Polypeptide and Protein Hormones, Faculty of Medicine, Montevideo, Uruguay

Geomorphic Problems

In the preface to **Essays in Geomorphology** (Elsevier, New York, 1966. 416 pp., illus. $14), the editor, G. H. Dury of the University of Sydney, states that the unifying theme is a systematic approach to geomorphic problems. However, a wide variety of topics is discussed.

The first essay, "Pleistocene shorelines" by N. Stephens and F. M. Synge, is essentially a summary of the literature dealing with the shorelines in the British Isles and some of continental Europe produced by changing Pleistocene sea levels. Although pertaining primarily to the British Isles, the problems discussed apply equally well to other parts of the world.

The second essay, "Slope failure and morphogenetic regions" by R. Common, admittedly deals with a very complex problem. It does not get too far with this problem largely because of the lack of quantitative data bearing upon it.

In the next essay, "Landforms of the western MacDonnell ranges," J. A. Mabbutt attempts to explain some unusual drainage patterns in Australia. The major thesis of the essay is that the topography and drainage are largely inherited from past geomorphic cycles when the climate was more humid. This essay represents an interesting analysis of the landforms of the area.

J. C. Pugh's essay, "The landforms of low latitudes," deals primarily with the origin of pediments and associated erosional remnants under tropical climates. Comparisons and contrasts are made between their development under wet tropical conditions and the less humid savanna climates.

W. W. Bishop's essay on "Stratigraphical geomorphology" is of interest, if for no other reason, because it deals with an aspect of geomorphology which has been badly neglected, the possibility of dating erosion surfaces by means of the sediments produced during their development. This represents a very commendable attempt to point up a phase of geomorphology which needs increased attention.

"The weathering of limestones," by M. M. Sweeting, deals with the scar and scree topography of northern England. It puts forth an interesting hypothesis that much of the present topography in this area can be explained in terms of glacial erosion or erosion by glacial meltwaters. The last half of the essay attempts to arrive at some quantitative estimates of the rate of denudation of limestone terrains.

G. H. Dury's essay deals with the topic "The concept of grade." There has been much discussion of this topic in recent years and much difference of opinion regarding its validity. The ideas of such geomorphologists as Davis, Kesseli, Mackin, Leopold, Wolman, Maddock, and Langbein are presented. Dury ends up by concluding that the concept of grade has little value in the analysis of landforms, a conclusion that is not likely to meet with general acceptance.

The last two essays, "Morphometry from maps" by J. I. Clarke, and "The application of statistical methods to geomorphology," by R. J. Chorley, will probably have the greatest appeal to the rising new generation of quantitative geomorphologists. Although they present little that is new, they do present excellent summaries of the applications of various mathematical approaches to the study of landforms, and it is useful to have a summary of the many papers that have been written in recent years dealing with statistical techniques in geomorphology.

On the whole the essays are well written, but there is marked variation in the quality of the illustrations. Practically all of the essays are accompanied by excellent bibliographies which will be particularly useful to those Americans who are not too familiar with the foreign literature. Although some of the essays deal with areas not too familiar to Americans they concern problems that pertain to many parts of the world. *Essays in Geomorphology* is not a book that you will read and digest overnight, but it should be a welcome addition to the library of every serious geomorphologist.

WILLIAM D. THORNBURY
Department of Geology, Indiana University, Bloomington

New Books

Biological and Medical Sciences

Advances in Metabolic Disorders. vol. 2. Rachmiel Levine and Rolf Luft, Eds. Academic Press, New York, 1965. 289 pp. Illus. $11. Five papers: "Gout" by James B. Wyngaarden; "Nitrogen-retaining steroids and their application in disease" by A. Querido and A. A. H. Kassenaar; "Macroglobulinemia" by Jan Waldenström; "Testing the functional capacity of the tryptophan-niacin pathway in man by analysis of urinary metabolites" by J. M. Price, R. R. Brown, and Norma Yess; and "The syndrome of testicular feminization" by A. Louis Southren.

Advances in Veterinary Science. vol. 10. C. A. Brandly and Charles Cornelius, Eds. Academic Press, New York, 1965. 319 pp. Illus. $13. Seven papers: "Intrauterine fetal surgery" by Keith L. Kraner; "Vesicular exanthema" by R. A. Bankowski; "Rift Valley fever" by Bernard C. Easterday; "Bovine enzootic leukosis" by Hans

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