The various chapters are written as far as possible in language which is not too technical, but there is of necessity a wide range in the degree of difficulty involved for the reader. This range extends, however, from an upper limit, which is representative of no more complexity than should be capable of being handled by the average laboratory physicist, to a lower limit of simplicity, in which there is much which should be understandable to the educated layman.

It is naturally not practical to give anything like a detailed review of the individual sections. There is of necessity a fair amount of overlapping, but such a situation presents advantages as well as disadvantages, and the former probably well outweigh the latter.

The last chapter, entitled "Bibliological Notes and References," contains a valuable summary of the different organizations and journals concerned with publications in the fields covered by the book. It also embodies in conveniently classified form an extensive series of references to the literature, based upon the citations in the main text.

The authors are to be congratulated upon bringing together into so convenient and readable a form so many diverse topics bearing directly and indirectly upon the science of terrestrial magnetism and electricity.

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MODERN SCIENCE

Modern Science. By HYMAN LEVY. x + 736 pages. New York: Alfred A. Knopf. 1939. $5.00.

THE author, who is professor of mathematics at the Imperial College of Science and Technology, South Kensington, endeavors to present in this volume a "landscape picture of modern science for the ordinary intelligent person." Rather than present a picture which startles and mystifies the reader, as do many books on science for the layman, he emphasizes the simplification of the problems of nature which has been achieved and which constitutes in reality the true aim of science. He includes, however, enough of the curiosities to arouse and hold the interest of the reader.

The volume is a good illustration of the tendency which appears to be greatly increasing to-day, particularly in England, to view science as a whole not as a body of doctrine or a catalogue of empirical results, but as essentially a social phenomenon. The scientific workers themselves and their reasons for undertaking problems are regarded as an important part of the phenomenon, as well as the social implications of the discoveries made. Thus the author attempts to show that during a period of general social unrest there is a corresponding unrest, not only among the scientific workers, but also in the hypotheses which they are contemplating at that time. The scientific results achieved are more dependent on the period than on the men who achieved them. For example, Professor Levy believes that if Newton, by some accident, had not been born, others would have made all Newton's discoveries at practically the same time as they were made. There is intended no disparagement of Newton's genius here, the author's thesis is concerned only with the problems with which Newton was occupied.

Professor Levy treats in some detail the modern practice and the theory behind our present methods of illumination, and attempts in this manner to demonstrate the important consequences, from the point of view of society as a whole, of such abstract and, at first sight, purely theoretical subjects as relativity and the quantum theory.

The style of the book makes for smooth and easy reading, although its length may discourage some. The diagrams are numerous and extremely well done. They sometimes accomplish more than pages of text could do. The volume is well worth the study of many, and in particular of scientific workers who are generally too prone to disregard entirely the implications to society as a whole of the things they are doing and the things they are leaving undone.

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PREHISTORIC LIFE

Prehistoric Life. By PERCY E. RAYMOND. ix + 324 pp. Illustrated. Cambridge, Mass.: Harvard University Press. 1939. $5.00.

IN this charmingly written, thought-provoking book, Dr. Raymond traces the history of life from the time of its first appearance on the earth to the present.

After clarifying our small stock of knowledge of pre-Cambrian life, he discusses the evolution and the manner of life of graptolites, trilobites, aquatic arachnids, corals and echinoderms of the early Paleozoic. Next he considers the origin of the vertebrate stem, outlining clearly the Amphioxus, annelid, arthropod and anaspid theories; he considers the last the most probable. Starting with the lobe-finned ganoids, he discusses the geologic conditions giving rise to the first tetrapods, the amphibians, and through these to the earliest reptiles. To the reptiles he gives five very interestingly suggestive chapters, discussing their rise, expansion and decline, noting the geographic and other environmental influences at work to produce

these changes. A chapter each is given to birds, cephalopods, insects and plants, and seven to the mammals. The final chapter on "Retrospect and Prospect" deals with the life of the earth from a philosophical evolutionary point of view.

As viewed in geologic time, organic bodies are constantly changing. Since these bodies are made up of inorganic matter, strong external stimuli are essential in effecting these changes, and the most effective of these stimuli are geologic, since these alone are sufficiently prolonged to change the entire environment. The author, for example, speaks of the Tertiary earth as a new earth, furnishing vegetable food in greater abundance and variety than had ever previously existed. The menace of the reptiles to other animals had largely disappeared, due primarily to the geologic changes which closed the Mesozoic. Under such conditions, it is not surprising that mammals began to thrive greatly and to greatly differentiate.

Dr. Raymond considers the past living forms of the earth, not as resting on a pedestal in a bare room, but in their natural living environment, searching for food, escaping enemies, mating. He describes the beginnings of family life among the vertebrates, their adaptation to life on a terrain similar to that of the present but clad in a more primitive vegetative dress. The author gives background to these animals and makes them live.

The book is enlivened by numerous typical Raymondian expressions. It is probably true that only a man who has thoroughly mastered his subject may treat it at times in a lighter manner, so as to give added enjoyment to both amateur and specialist.

As would be expected in anything written by Dr. Raymond, the subjects are discussed with an open mind as to theories and clearly and concisely in expression. The book is replete with new ways of looking at old facts. It must be read by all teachers of the subject who wish to enliven their lectures and class work, and it should be read by all who are interested in the past life of the earth.

HERVEY W. SHIMER

SOCIETIES AND MEETINGS

THE TENNESSEE ACADEMY OF SCIENCE

THE spring meeting of the academy was held on May 5 and 6 at Murfreesboro. At this meeting a plan for placing the academy library in the custody of the Joint Vanderbilt-Peabody-Scarritt Library was approved and a resolution favoring the purchase and maintenance by the U. S. Forest Service of a Rhododendron Garden area on Roan Mountain was adopted. Dr. Dorr R. Bartoo, of the Tennessee Polytechnic Institute, was awarded the American Association for the Advancement of Science research grant of $75.00 for 1939. Dr. Aaron W. Dicus was appointed to represent the academy at the meeting of the American Association for the Advancement of Science, in December, 1939.

For the fall meeting on December 1 and 2 at George Peabody College the Industrial Arts Building, with three large lecture rooms on the second floor, provided ideal facilities for the general sessions which were held on Friday and Saturday mornings and the sessions of botany, geology and physics on Friday afternoon.

There were 46 papers on the program—20 for the general sessions, 12 for the geology, 7 for the botany and 7 for the physics section. Ten schools were represented—4 in East Tennessee, 4 in Middle Tennessee and 2 in West Tennessee. Members of the Tennessee Valley Authority and of the State Department of Conservation contributed eight papers. Geologists founded the academy and became its chief promoters. In recent years the botanists have led. The geologists now seem to be gaining. The hearty support of the schools, the T.V.A. and State Conservation Department is noteworthy.

The paper by Professor George R. Gage, of Vanderbilt University, on "Two New Tree Diseases of Epidemic Severity in Tennessee" was of both general and local interest. The persimmon wilt, discovered in Tennessee in 1937, is prevalent in at least six counties of Middle Tennessee. No measures of control have been instituted. A virus elm disease which has killed thousands of elms in the middle and lower Ohio Valley is believed to be the cause of the loss of five American elms on the Vanderbilt Campus in the last three years, and the disease may be epidemic in Tennessee.

In an informal report, Dr. Baker, director of the Reelfoot Lake Biological Station, outlined the character of the researches made last summer by the twelve persons who had been accepted by him for scholarships.

Dr. William M. Mebane, vice-president, presided at the dinner meeting on Friday evening at the Hermitage Hotel. After an address of welcome by Dr. D. S. Campbell, of George Peabody College, President Dicus gave the academy address, taking as the subject "Reveries of a Scientist." Following this a motion picture illustrating the effects of mineral element deficiencies in plant growth was shown.

At the business meeting on Saturday morning, the secretary-treasurer, speaking of the activities of the academy, said two annual meetings had been held, 700 copies of the Journal had been published quarterly,