BOOK NOTICES

Metropolitan Geology

It is always of much interest to find the geology of a metropolitan area taken up and discussed before the growth of the area and the destruction, accidental or otherwise, of old records makes it impossible. The author in dealing with the geology of the Minneapolis-St. Paul metropolitan area gives us first a chronological list of publications relating to the geology. The earliest is dated 1872, the last 1935. The geography of the area is discussed by Richard Hartshorne and the vegetation by F. K. Butters. The geology begins in Chapter three, where we find the section ranges from the Red Clastic Series of the Pre-Cambrian to the Galena of the Ordovician. The formations from the Galena to the Pleistocene are absent. Of the Pleistocene there are recognized six drift sheets, it being understood that these represent various lobe advances and not necessarily new advances following interglacial periods. The various drainage changes are discussed, followed by a series of short summaries by eras. The structure is taken up in Chapter four and is shown to be, in general, a main basin, the Twin City Basin. The economic products are listed as water, stone, sand, gravel, foundry sands, clays, shales, peat, and marls. None of these except water and sand are of considerable economic importance. The rest of the book is a tabulation of data on the area.

Dr. Schwartz has produced a very useful book, both for the geologist and the engineer. The area, situated as it is, is of considerable interest and well deserves the careful work represented by this publication. The 46 figures are well chosen. The 7 plates consist of two cross-sections and five maps, one a colored geologic map on a scale of 1 over 96000. We compliment both the author and the publisher of this useful and valuable book.—WILLARD BERRY.

The Geology of the Minneapolis-St. Paul Metropolitan Area, by George M. Schwartz. Minnesota Geological Survey Bulletin 27. xi+267 pp. Minneapolis, University of Minnesota Press, 1936. $3.50.

Physics for the Layman

The bibliographer of the Bell Telephone Laboratories has extended his Lowell Institute lectures of the fall of 1935 and published them as a popular non-mathematical treatise on physics. The language has been kept extremely simple, and technical terms are introduced only after a very careful analysis of their meanings in everyday language. The facile handling of the subject is characteristic of all the author's works.

The first third of the book deals with an historical development of physics up to the opening of the nineteenth century, showing the gradual rise of the subject from "natural philosophy" to a science based on experiment. This exposition, together with the extension of a few of the subjects discussed in the first section, serve as a fitting introduction to the main thesis of the book, the transmutation of the elements, which occupies the final third of the work.

The book is carefully written in general, but we are startled to note that the New Deal has been active in the physical world, for on page 75 the acceleration of gravity has been devalued to approximately 50% of its generally accepted value! The volume is printed in very legible type, and well bound. Numerous figures and photographs help the reader in understanding the text.—J. B. GREEN.

The Renaissance of Physics, by Karl K. Darrow. 306 pp. New York, The Macmillan Co., 1936. $3.00.

Ecology of Insects

The other editions of this well known text and reference book in entomology have had a definite place in entomological development in the United States and Canada. Because of their lacking the recent advances in our knowledge of entomology, the third edition has been completely revised by Professor Wardle. He has added many new and recent advances to our knowledge of insects without changing the basic structure of the book in its previous editions. The main

additions have been made to the chapters dealing with Insects and Man and Insects and Disease, although a great deal of information has been added to the other chapters. Many new references have been added and some of the old ones deleted.

The revision returns this book to the preferred list of entomological texts. It is not economic in nature but stresses many interesting facts about insects which do not appear in other textbooks of the subject. The author does not stress insect classification.—R. H. DAVIDSON.

Entomology With Special Reference to its Ecological Aspects, Fourth Edition, by Folsom, J. W. and Wardle, R. A. 605 pp., 308 figs., and 5 plates. Philadelphia, P. Blakiston's Son & Co., Inc., 1936.

Electricity Without Mathematics

It is very refreshing, in these days, when almost anyone sets himself up as an interpreter of recent scientific experiments and their philosophical import, to find a book about homely electricity written by a physicist of unquestioned standing and attainment, a Nobel Laureate.

The book is a treatment of electricity such as might be given to the ordinary high school student, and indeed, is written so that such a student may readily understand it. Only the principles of electricity and the laws governing its generation and flow and interactions are discussed, with no attempt to study quantitative relationships. The material in the volume is taken from a series of six lectures given by the author at the Royal Institution (where Faraday's Laboratory was located) primarily for a "juvenile auditory" (the type of audience is seen on the frontispiece) and is well illustrated by a large number of carefully constructed diagrams and photographs.

It is the author's aim to put the fundamentals of electricity on such a **simple** basis, that a "sense" for it is developed to enable the reader to grasp easily the workings of everyday household electrical equipment; in much the same way that our mechanical sense has been developed by contact with mechanical equipment. I think that this is a habit of thinking which will take a generation to develop, for all our teachers at present have been brought up to think "mechanically" rather than "electrically" and we must wait for a new generation of teachers brought up in "electrical" surroundings before the author's aim is realized.

—J. B. GREEN.

Electricity, by W. L. Bragg. xvi+272 pp. New York, The Macmillan Co., 1936. $4.00.

Star Families in Space

Man has in effect looked at his universe three times. At first he saw it as a solar system accompanied by stars. Second, he saw it as a universe of stars with his solar system an insignificant part. A third glance has revealed it as a universe of star families scattered rather uniformly throughout space. These families are known as extra-galactic nebulae because they are objects outside of our own family or galaxy. They appear as elliptical bodies, spiral systems and barred objects. The light of the brighter and closer ones is normal, but the farther away they are the redder they appear. This effect has been interpreted to mean that all the extra-galactic nebulae are receding from each other with velocities which are proportional to their distances from each other. On this interpretation is based the idea of the expanding universe. Whether or not the interpretation is the correct one is another matter for the problem is by no means settled. Author Hubble is one of the outstanding contributors to knowledge of the nebulae and it is unfortunate that his carefully written book has been done in so pedantic a style. It is a well compiled collection of facts and ideas but lacks the vital, compelling style that such a book should have when its author has a story of his own to tell. An effort is made to present the subject matter in a semi-popular way, but in the opinion of the reviewer this has been a failure. The past tense is used throughout, and the point of view is that of the historical summarizer. The subject matter is frequently repetitious. These characteristics unfortunately have the effect of detaching the reader so that he is unlikely to see the subject intimately with the writer. This book might have been one of the finest popular accounts of contemporary science.—C. E. HESTHAL.

The Realm of the Nebulae, by Edwin Hubble. xii+207 pp. New Haven, The Yale University Press, 1936. $3.00.