versity of Virginia; "Medical Sciences," H. J. Warthen, Richmond; "Industry in the James River Area," L. S. Evans, assistant to vice-president, Chesapeake and Ohio Railway; and "Conservation of Natural Resources," Henry B. Ward, emeritus professor of zoology, University of Illinois. The chapter on "Organic Chemistry" has not yet been assigned.

The monograph, to be approximately 600 pages, is expected to be published by the Virginia Academy of Science by the fall of 1942. Obviously it will be an incomplete work, but it should call attention to needed fields of investigation in the region and thereby serve as a stimulus for a serious long-term statewide undertaking to which scientists and others of various interests can contribute. It might also prove to be an example of what might be done elsewhere.

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SCIENTIFIC BOOKS

BOOKS ON GEOLOGY

NEW EDITIONS OF STANDARD TEXTS

Outlines of Physical Geology. By CHESTER R. LONGWELL, ADOLPH KNOPF and RICHARD F. FLINT. Second edition. 381 + ix pages. 281 figs. + frontispiece. John Wiley and Sons. 1941. $2.75.

Outlines of Historical Geology. By CHARLES SCHUCHERT and CARL O. DUNBAR. Fourth edition. 291 + ix pages. 176 figs., 6 plates + frontispiece. John Wiley and Sons. 1941. $2.50.

Outlines of Geology. By LONGWELL, KNOPF, FLINT, SCHUCHERT and DUNBAR. Second edition. A combination of the two preceding books, bound into a single volume. John Wiley and Sons. 1941. $4.00.

Introduction to Geology. By E. B. BRANSON and W. A. TARR. Second edition. 482 + ix pages. 447 figs. McGraw-Hill Book Company. 1941. $3.75.

Introduction to Physical Geology. By WILLIAM J. MILLER. Fourth edition. 465 + xi pages. 397 figs. + frontispiece. D. Van Nostrand Company. 1941. $3.25.

Field Geology. By FREDERIC H. LAHEE. Fourth edition. 851 + xxxii pages. 589 figs., 1 plate. McGraw-Hill Book Company. 1941. $5.00.

HERE is abundant evidence of the vitality of geological science and the eagerness of textbook writers in this field to provide the student and field worker with the best possible tools for their work. Advances in method and doctrine, chiefly the result of emphasis upon quantitative as contrasted with qualitative analysis of geological problems, have been numerous in the last few years and many of the repercussions of this progress are reflected in these new editions of standard treatises. Improved pedagogical techniques are also apparent, as well as a considerable improvement in illustrative material, involving both the frequent use of aerial photographs and more skilful drafting of block diagrams and other line drawings.

The "Outlines" of physical and historical geology, by the Yale geologists and paleontologists, contain many significant changes from the preceding editions published respectively seven and four years ago. As they now stand they are even better suited than before to meet the needs of the interested layman who wants an introduction to earth science without formal instruction, and at the same time they will serve even more satisfactorily as textbooks for elementary courses on the college level. The number of technical terms has been reduced to what is now in all probability the irreducible minimum. Considerable attention is paid to the numerous practical aspects of geology, including its application in engineering projects such as dams, aqueducts and tunnels. In presenting the history of the earth and its inhabitants, eras rather than periods are used as the units for treatment, and the record of changes in the physical features of the earth is presented in its entirety before the pageant of life is considered.

The "Branson and Tarr" has similarly been streamlined by simplification of treatment and terms so that the new edition is even more suitable than the old for instruction of students who do not plan to become geologists, while at the same time it will serve admirably as the basis for the first steps in the training of professional workers in the field of earth science. Improvements in the illustrations are especially notable, both because of additions and substitutions and as a result of better paper and printing.

In comparison with the earlier third edition of Miller's textbook, the fourth edition, now in hand, embodies numerous minor changes, but the general style and method of treatment remain the same. Many improvements in the illustrations are apparent and the statistical material pertaining to economic geology has been brought up to date.

The new edition of Lahee's widely used manual, when compared with the earlier edition published in 1931, provides a very accurate measure of the progress of geology during the decade. New material on such subjects as mass movements, varves, lensing strata, permeability of sedimentary rocks, petrofabrics, electrical logging, subsurface correlation by radioactivity

and airplane mapping, reflects the results of intensive research in field and laboratory and the increased use of various geophysical methods for geologic exploration. The wealth of excellent diagrams and photographs, the systematic organization of the text, and the concise, lucid style make this book an unusually valuable tool for the professional geologist as well as a very effective text for the student.

Earth Sciences. By J. HARLEN BRETZ. 260 + x pages. 129 figures. John Wiley and Sons. 1940. $1.75.

THIS compact book is one of a series edited by Dr. Gerald Wendt comprising material for a survey course for college students covering the natural sciences. Its author is professor of geology in the University of Chicago, where he has had an unusual opportunity to experiment along the lines of presenting science as an integral part of a liberal education rather than merely as preparation for a professional career. Its subject-matter is that of the three closely related fields of meteorology, oceanography and geology, the sciences that deal with the various natural elements in our physical environment.

Dr. Bretz has selected his topics and discussed them with his readers with rare skill, successfully avoiding a superficial smattering of descriptive knowledge on the one hand and a merely verbal lightening of the burden of technicalities on the other. The chatty informality of his style makes "easy reading." The well-phrased and often sharply pointed questions, sifted throughout the pages as footnotes or in the body of the text, must stimulate even sluggish minds and are well designed to keep the reader intellectually alert. Most important of all, however, is the artistry with which he lays the groundwork for an appreciation of the method of scientific approach and of its trustworthiness.

Outlines of Structural Geology. By E. SHERBON HILLS. 172 + x pages. 105 figures, 4 plates. Nordeman Publishing Company. New York. 1940. $2.25.

THE concisely written text and expertly selected diagrams of this slender volume combine to make it a most valuable tool for both the student of structural geology and the well-trained worker in this field. The numerous definitions of terms and the rather full synonymy are especially helpful because of the various usages regarding nomenclature in the description of many types of geologic structure. Many a geologist will value it as a reference work to be kept close at hand while compiling reports and preparing papers for publication.

Dr. Hills is lecturer in geology in the University of Melbourne. He has read widely and draws his illustrations from North American geology as often as from that of Europe. He makes good use of many geophysical data available from research in high-pressure laboratories in the United States as late as 1939. The handicap resulting from the geographical remoteness of Australia has been completely overcome.

Beginning with a survey of primary structures of sedimentary rocks and non-diastrophic deformation, Dr. Hills proceeds with a consideration of the mechanical principles of rock deformation. The next chapter deals with the major structural features of the earth's crust and then come chapters on folds and faults. Finally, after a survey of the structures of igneous rocks in which the work of Cloos and his collaborators is stressed, there is a brief but inclusive chapter on petrofabric analysis.

Geology of Coal. By OTTO STUTZER. Translated and revised by Adolph C. Noé. 461 + xiii pages. 198 figures. University of Chicago Press. 1940. $5.00.

THIS is much more than a mere rendering into English of a classic monograph in German. Dr. Stutzer's "Kohle," published in 1914, served as the nucleus of the material translated by Professor Noé, but considerable portions of the book are translations of texts supplied subsequently by Dr. Stutzer or of material published more recently by him. To this is added a modicum of original matter based on Professor Noé's own studies under the auspices of the geological surveys of Illinois and Kentucky and as geologist of the Allen and Garcia Commission to Soviet Russia, as well as his research as professor of paleobotany at the University of Chicago. In the preparation of the book for publication after Professor Noé's death, Dr. Gilbert H. Cady, of the Illinois Geological Survey, rendered valuable service.

The book deals extensively with the nature of coal, its mode of formation, its peculiarities of variation, the thickness and extent of coal beds, the nature of the associated rocks, the character of irregularities of various sorts that affect the ease of recovery of coal in mining operations, the methods of study by means of thin sections and chemical analysis, and the floras associated with coal of various localities and ages. It includes little data pertaining to statistics of coal resources, production or reserves.

Students in university courses dealing with the geology of fuels will find this a most helpful text. Geologists, mining engineers and other persons concerned with the coal industry will gain much valuable information from it and will find its extensive bibliographies particularly useful.

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