

cold periods in the whole history of the globe. He sketches the supposed evidences of pre-Pleistocene glaciation, and concludes that only in the late Carboniferous or early Permian period does the testimony for the prevalence of a low temperature over a large part of the globe seem at present satisfactory. He concludes that a glacial epoch is a rare episode in the history of the earth. In the discussion of general principles of interpretation the treatment is rather academic, as must needs be when undertaken by a specialist in petrology. The interpretation of glacial phenomena equals, if it does not transcend, in difficulty, that of most other classes of geological phenomena, and the true principles of interpretation are not likely to be determined except by long and critical trial in the field.

The work is very well written but very poorly illustrated.

T. C. CHAMBERLIN.

UNIVERSITY OF CHICAGO.

*Iowa Geological Survey, Volume V., Annual Report for 1895.* SAMUEL CALVIN, State Geologist; H. F. BAIN, Assistant State Geologist. pp. 452, 7 maps, pls. 14, 72 figs. Des Moines. 1896.

The fifth volume of the publications of the Iowa Geological Survey presents the same excellent typographical appearance which characterizes the former volumes. These publications, which have appeared in rapid succession, indicate continued great activity on part of those engaged in the work. The title annual report is rather misleading, for the subject-matter contains nothing that is of temporary character except the administrative part which consists of a few pages only. As in the previous volumes of this survey there is carried out the highly commendable policy established at the beginning, of eliminating all matter from the reports that is of a preliminary nature, and of publishing only material that has been carefully digested and classified. In this way the total amount of matter published is not nearly so great as it otherwise would be. With great advantage all work of preliminary character which so often goes to make up the large bulk of geological publications is omitted. Thus,

only the work in its ultimate form is made public. The set of volumes becomes the 'final' series, and only a single class of publications is issued.

The volume is devoted to areal geology, and six counties are carefully and fully described. One of these, Jones county, is by Prof. S. Calvin, State Geologist. Three, by Prof. H. F. Bain, Assistant State Geologist, are on Washington, Woodbury and Appanoose counties. One, by Dr. S. W. Beyer, is on Boone county; and another on Warren county is by Prof. J. L. Tilton.

In all the reports the economic aspects of the mineral resources are placed prominently in the foreground. Yet the purely geological phases of the various questions are given full consideration, and in a thoroughly scientific manner.

CHARLES R. KEYES.

#### NEW BOOKS.

*What is Electricity?* JOHN TROWBRIDGE. New York, D. Appleton & Co. 1896. Pp. vi+315.

*Physics for University Students.* Part I., Mechanics, Sound and Light. Part II., Heat, Electricity and Magnetism. HENRY S. CARHART. Boston, Allyn & Bacon. 1895, 1896. Pp. iv+344 and 446.

*Electrical Measurements.* HENRY S. CARHART and GEORGE W. PATTERSON, JR. Boston, Allyn & Bacon. 1895. Pp. v+344.

*The History of Mankind.* FRIEDRICH RATZEL. Translated from the second German Edition by A. J. Butler, with introduction by E. B. Tylor. Vol. I. London and New York, Macmillan & Co., Limited. 1896. Pp. xxiv+486. \$4.00.

*Navigation and Nautical Astronomy.* F. C. STEBBING. London & New York, Macmillan & Co., Ltd. 1896. Pp. vii+328. \$2.75.

*Astronomical, Magnetic and Meteorological Observations made during the year 1890 at the U. S. Naval Observatory.* CAPT. FREDERICK V. MCNAIR. Washington, Government Printing Office. 1895. Pp. lxiii+420.

*Società degli Alpinisti Tridentini XIX. Annuario 1895.* Rovereto, Tipografia Roveretana. 1896. Pp. 568.