

XIV.—THE RESOURCES OF TENNESSEE. By A. H. PURDUE and W. A. NELSON. Vol. iii, No. 2, pp. 62–116, April, 1913.

IN this number A. H. Purdue contributes two short articles. One outlines the principles of water-supply for cities and towns, and is illustrated by a section showing the water-bearing strata at Etowah. The other points out the grave need for geological investigation of the foundations of large engineering structures.

C. H. Gordon has written an account of the principal types of iron-ore deposits and their origin, with special reference to Tennessee. The deposits of limonite of East Tennessee are shown to be due to the weathering, probably in Tertiary times, of ferruginous limestones of Ordovician age. The hæmatite deposits are of two types: residual deposits, due to the leaching out by surface waters of calcium carbonate in ferruginous limestones; deposits of the Clinton type, in which the hæmatite occurs as beds of original deposition which have since undergone secondary enrichment. This paper contains four figures and numerous analyses.

The discovery of Mastodon remains in a quarry near Nashville is recorded. The remains consisted of teeth and bones, and were found at a depth of 15 feet in a clay-filled solution channel in the Carters Creek Limestone.

XV.—BRIEF NOTICES.

1. INSTITUTION OF MINING AND METALLURGY.—We have received the Presidential Address delivered on March 13, by Mr. Bedford McNeill, F.G.S., before this Institution. He discusses the relations between mining and capital, the extension of mining, and makes especial reference to the relative and average annual production of gold and silver at various periods from 1493 to 1911. He also calls attention to the meeting of the International Congress of Mining, Metallurgy, Applied Mechanics, and Practical Geology to be held in London in 1915. The address is accompanied by an admirable portrait of the President.

2. SINAI: GEBEL HAMMÂN FARÛN.—Mr. G. W. Murray has an interesting note on the structure of this hill in the *Cairo Scientific Journal*, vol. vii, pp. 21–4, February, 1913. The sea-face of Gebel Hammân Farûn shows 45 metres of bedded basalt resting unconformably on variegated shales yielding many fossils, including *Hemiaster*. The basalt is overlain apparently conformably by 15 metres of Oyster limestones, among which *Ostrea vesicularis* is conspicuous. The evidence points to a contemporaneous flow in Santonian times. The hill is faulted down at its north-west end, and the basalts are not seen therefore at the point of previous interest, where the hot springs gush out amongst the beach shingles for some 400 metres.

3. CALIFORNIAN TERTIARY SHARKS.—Messrs. Jordan and Beal, having received a large collection of shark's teeth from the Kern River, near Oil City, have been enabled to add several species to the fossil sharks of California. When describing these in the *Bulletin of the University of California*, 1913, they have taken the opportunity

of giving a table of the geological range of Western American sharks from Triassic to Pleistocene.

4. CALIFORNIAN EOCENE MOLLUSCA.—A number of new forms of Eocene Mollusca have been described from the Marysville Buttes by R. E. Dickerson in the Bulletin of the University of California, 1913. The beds were deposited on a coarse-grained andesitic valley floor, overlain by gravels and sands (Ione Beds), which in their turn were capped with andesitic mud-flows, subsequently firmly cemented. The fauna is considered to have accumulated in 100 fathoms under tropical or sub-tropical conditions.

5. FORAMINIFERA OF SOUTHERN CALIFORNIA.—The Bulletin 513 of the Department of the Interior U.S. Geological Survey, 1912, is devoted to a description and illustration of the Pliocene and Pleistocene Foraminifera from Southern California by Rufus M. Bagg. Over a hundred forms are described in ninety-two pages of text, and illustrated in twenty-eight plates by a series of excellent figures. That the author knows his subject is evident from the paucity of 'n.spp.'

6. BIBLIOGRAPHY OF NORTH AMERICAN GEOLOGY (PETROLOGY AND MINERALOGY) FOR 1911.—This useful work, compiled for 1911 by John M. Nickles, was published last year as Bulletin 524 of the Department of the Interior U.S. Geological Survey. It contains 1,266 entries, and has a first-class analytical index.

7. PALÆOZOIC SEDIMENTS.—In the *Journal of Geology* (Chicago) for April–May, 1913, is a very suggestive paper by T. C. Brown on the origin of certain Palæozoic sediments. The author discusses the conglomerates, the oolites, and the interbedded sands of the Cambrian and Ordovician rocks of Center County, Pennsylvania. In the same *Journal* E. S. Bastin has a paper on "Chemical Composition as a criterion in identifying Metamorphosed Sediments", which may be read in conjunction with the preceding.

8. MIOCENE FAUNA OF EGGENBURG.—Dr. F. X. Schaffer deals with this interesting fauna in the *Abhandlung der k.k. geologischen Reichsanstalt*, vol. xxii, pt. ii (November, 1912). The paper includes the Gasteropoda, Cephalopoda, Crinoids, Echinoids, and Brachiopoda, and is fully illustrated. The fauna is singularly rich in *Cerithium*, *Turritella*, and *Patella*, and the occurrence of several species of *Antedon* is interesting.

REPORTS AND PROCEEDINGS.

I.—THE ROYAL SOCIETY.

June 5, 1913.—Sir Archibald Geikie, K.C.B., President, in the Chair.

The Croonian Lecture was delivered by Dr. Robert Broom, C.M.Z.S., on "The Origin of Mammals".¹

An endeavour is made to trace the evolution of mammals from Cotylosaurian ancestors through the carnivorous Therapsida. In

¹ The accompanying abstract has been furnished by the author.