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PRISMATIC SANDSTONE FROM MISSOURI.

BY ERASMUS HAWORTH.

(Published by consent of the State Geologist of the Geological Survey of Missouri.)

On the right bank of the St. Francois River, in S. 31; T. 33, N.; R. 6. E., about 200 yards southwest of the St. Louis Granite Company's quarry, near Knob Lick, Madison county, Mo., is a little sandstone ridge, trending northwest and southeast, nearly 200 yards long, 10 yards wide, and not more than 8 to 10 feet high above the nearly level ground on either side. The country rock here is the Cambrian sandstone, which overlies the granite, as is beautifully illustrated at the quarry near by. This little ridge is interesting on account of the peculiar form of the sandstone composing it. In places where the soil has been somewhat worn

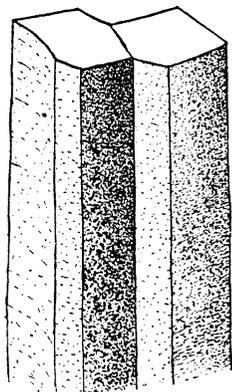


Fig. 1.

away, instead of revealing flat layers of sandstone, as can be found near by in any direction, the surface is covered with fragments of sandstone of a prismatic form, resembling in shape the basaltic columns so well known in different parts of the world. In size the prisms range from about three-fourths of an inch to one and a half inches in diameter, and from three to eight inches in length. They are not uniform in geometrical outline, some having four sides, some five, and a few six. Quite often two and occasionally three prisms adhere together, side by side, but generally so loosely that they can easily be broken apart. In such cases the boundary between them is usually a single plane, but sometimes two new planes are exposed by the breaking, forming a re-entrant angle on one prism. Fig. 1 fairly represents a combination of two of these prisms.

The nature of the rock was studied quite carefully, both macroscopically and microscopically, and it was found to be nothing but an ordinary, somewhat irregularly indurated, fine-grained sandstone. The grains of quartz are waterworn, as is usual. The induration is produced by the interstitial spaces being more or less filled with silica, but the thin sections examined showed no instance of secondary growth of the quartz crystals.

The existence of the ridge is probably due to the induration of the sandstone. Why this limited area should be thus indurated, and the surrounding country should not be, there seemed to be no obtainable evidence. However, this of itself

is of little importance. But the prismatic form of the sandstone is much more interesting. The specimens gathered were on or near the surface, and were not seen *in situ*; but from their great abundance it must be argued that they extend downwards for a considerable distance. It was first thought that possibly a dike rock had once existed here, which had assumed the prismatic character, and that in some way by surface decay it had left moulds into which the sand had been carried. But a careful examination revealed no indication whatever of there ever having been a dike here, although they are quite common in the surrounding country. The granite close by is older ¹ than the sandstone, and could not therefore have played any part in the matter by metamorphosing the sandstone in any way.

¹ See Bull. No. 5. Mo. Geol. Sur. p. 12. et seq.

THE TERTIARY SILICIFIED WOODS OF EASTERN ARKANSAS.

BY R. ELLSWORTH CALL.

Read September 1891.

(Published by permission of the State Geologist of Arkansas.)

The occurrence of silicified wood in the sands and gravels of the Tertiary of the Lower Mississippi Valley has long been known. Aside, however, from the numerous localities mentioned by Hilgard,* nearly all of which are in the State of Mississippi, little attention has been given it. Numerous geologists have spoken of it or incidentally studied it in connection with other investigations, but hitherto no attempt has been made to recognize the species and fix their taxonomic value, if, indeed, they possess any such value. Among those who have investigated the Orange Sands and other Tertiary deposits of the Mississippi Valley and who have added to our information as to the occurrence of these fossils are Hilgard,† Penrose,‡ and Knowlton.§

The last named has made the only microscopic study of these fossils which is on record. Since his investigations are based upon material which, for the most part, was collected by the writer, it is thought that it will be useful to place on record in this form, a more detailed statement of the conditions of the occurrence of the silicified woods, their peculiarities, their structural relations and their stratigraphical position, in the hope that it may eventually prove to be of use in correlating the deposits in which they are found.

These fossil woods occur throughout the area covered by Tertiary sands and gravels in the State of Arkansas. When in large masses they are apparently rarely far removed from beds of Tertiary lignite, if in small masses or in small

* Agriculture and Geology of Mississippi, 1860. pp. 20, 21, *et seq.*

† Agriculture and Geology of Mississippi, 1860. pp. 20, 21, *et seq.*

‡ First Annual Report of the Geological Survey of Texas, 1889; "A Preliminary Report on the Geology of the Gulf Tertiary of Texas from Red River to the Rio Grande." By R. A. F. Penrose, Jr., pp. 1-101.

§ See Annual Report of the Arkansas Geological Survey for 1889. Vol. II. pp. 249-267. Plates IX-XI.