MANGANESE FULGURITES

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During August, 1924, while doing reconnaisance work near the head of Chugwater Creek, Wyoming, on the ranch of Mr. J. L. Jordon, the writer's attention was called to some unusual and interesting specimens found in a limited area, perhaps an acre or so, on the slope of the small butte flanking the Chugwater Valley. The hills of the region are of Tertiary age, the particular spot under consideration being Oligocene, the Brule stage, or Oreodon beds.

Fossils at this spot are few and fragmentary, although a few characteristic teeth and foot bones were found. The manganese fulgurites in question were dead black with oxide of manganese, and simulated fulgurites so closely that we are calling them manganese fulgurites. The surface was strewn with their sec-

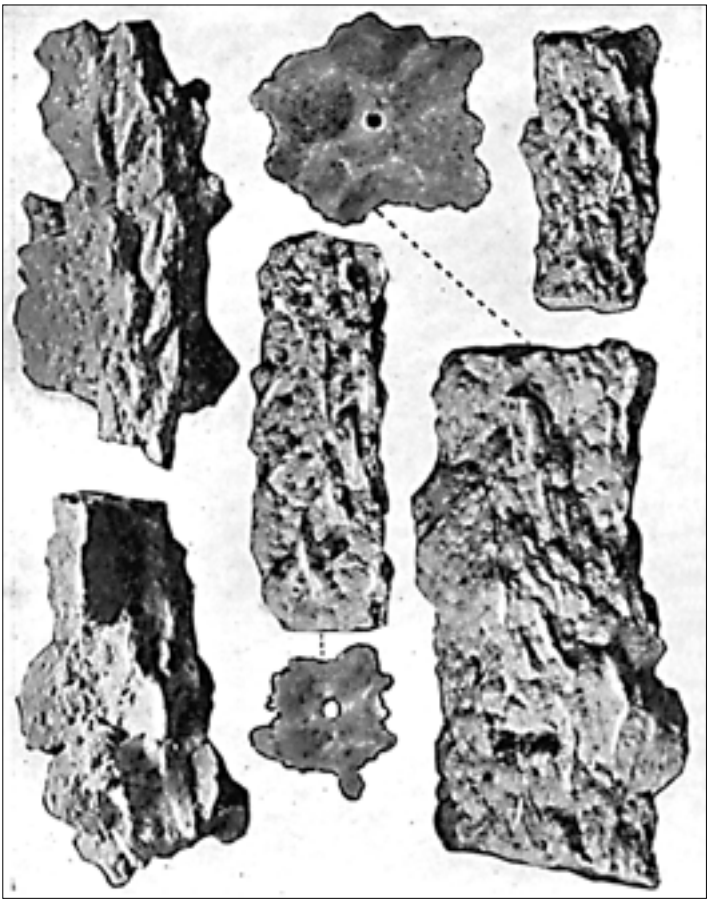

Figure 1: Sections of manganese fulgurites, side and end views. The smaller end view has a filling of calcite. The larger is hollow. Two-thirds natural size.

tions which had plainly weathered out of the matrix. Those in position were vertical and extended into the formation a number of feet. These appear to be fillings of fulgurite tubes, rather than concretionary forms. Some are solid, others show a small central tube, often filled with calcite.

Examinations and comparisons made their relation to fulgurites seem reasonably certain. In the field their dead-black color suggested manganese oxide, and the following analysis by Dr.

Figure 2: A Manganese fulgurite, partly exposed. Chugwater Creek, Wyoming.

C. J. Frankforter, Department of Chemistry, The University of Nebraska gives the amount:

ANALYSIS OF MANGANESE FULGURITE

Silica (SiO_2).....42.08 percent
Iron and aluminum (Fe_2O_3+Al_2O_3).....6.70 percent
Manganese dioxide (MnO_2).....48.30 percent

"The balance of this material is undoubtedly alkaline earth and alkali metal oxides, combined possibly as alumino-silicates or as other complex silicates."

On returning to this spot a few days later, the writer chose a specimen the top of which was exposed for a foot and a half. Armed with a small pick he followed this specimen downward in the hard, tough, fine-grained, argillaceous sand-rock, to a depth exceeding three feet. In a total length of five feet the taper was very slight, suggesting considerable length, as much or more than the great fulgurite in the State Museum of the University of Nebraska, which is about fifteen feet long. One must pause in contemplation of the energy expended in such a

thunder bolt. Short, side branches, diverging by narrow angles, were encountered. These, like the branches of true fulgurites, ended abruptly in broad, flattened, unsymmetrical expansions. In the restricted area of an acre there must have been thirty or forty of these manganese fulgurites.

If it is a correct assumption that these are casts, or fillings, or replacements in these old lightning tubes, the question arises, why should lightning have been attracted to this spot. Basic, igneous rocks, rich in magnetite, and certain iron deposits are known to attract lightning. Considerable deposits of iron may underlie this spot which is near Iron Mountain, where there are extensive masses of ilmenite.

No observations in the field disclosed reasons for the concentration of manganese as a filling for these tubes, rather than some other mineral, or silt and clay, for that matter.

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Editorial Note.—The Nebraska State Museum has just placed on exhibition, a suite of Manganese Fulgurites such as are herein described. There are some twenty examples in all, representing various sizes and shapes. They closely simulate fulgurites in all outward appearances. This collection was made and donated by Mr. Harold J. Cook, Agate, Nebraska, and is accessioned number 27-7-24.

THE EVENT

PETRIFIED LIGHTNING FROM CENTRAL FLORIDA

A PROJECT BY ALLAN MCCOLLUM

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