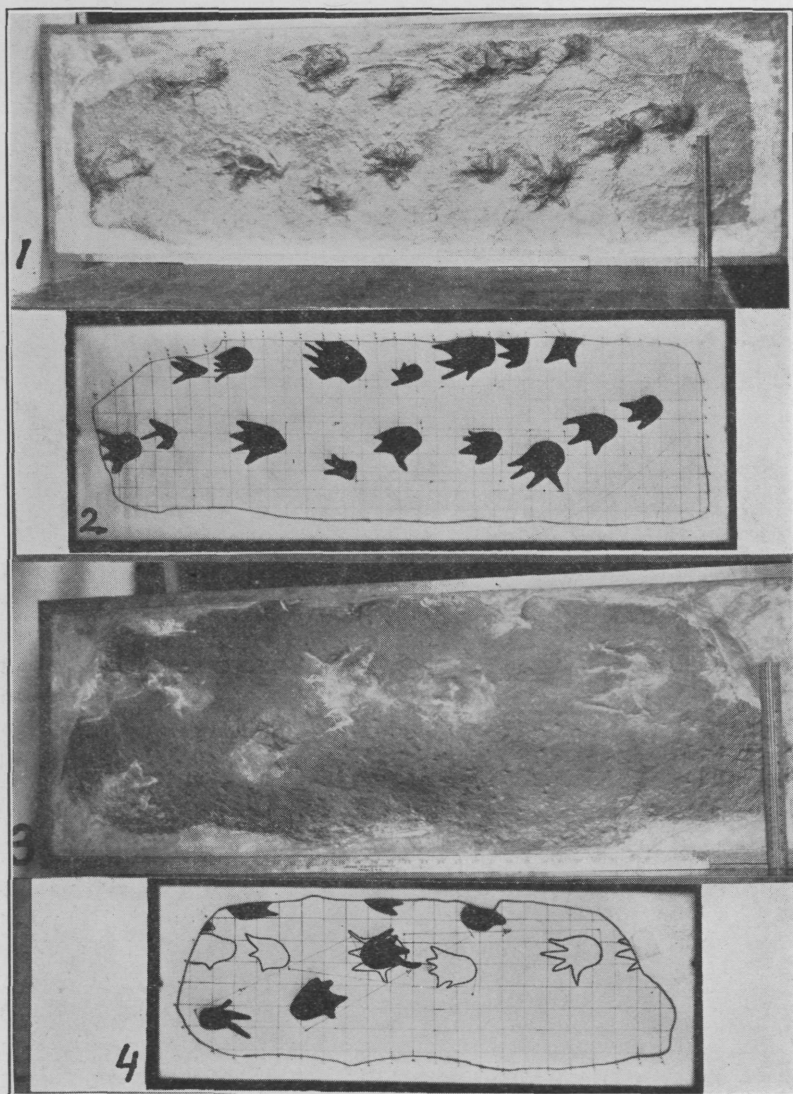


FOSSIL FOOTPRINTS FROM THE PENNSYLVANIAN OF OHIO.

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At Senecaville, Guernsey County, Ohio, in the Cleveland Mine of the Cambridge Collieries, there is a remarkable number of fossil footprints, all apparently made by the same type of animal, but unfortunately they are poorly preserved. The mud in which the animal walked must have been rather oozy, for it seems to have partly filled the tracks so that the impression of the foot is not clear. These prints are in the shale above the Upper Freeport or number 7 Coal, of the Conemaugh Formation of the Pennsylvanian System. At a number of places in the roof of the mine the footprints are abundant and being fillings of the impressions stand out in relief, the original impressions having fallen from the roof were removed from the mine.

In a small area of 15 feet by 10 feet 30 prints were counted. At another place 100 prints were counted in a space 15 feet square. In still another place two sets of tracks were found, each set showing 80 prints. In one entry 3 sets of tracks were found which seem to have been made by 3 animals coming from different directions and meeting, then proceeding side by side. Each set contains 24 prints of a hind foot and 24 prints of a front foot making a total of 48 prints made by the left feet of the animal and a like number made by the right feet. As there are 3 sets of such tracks the total number of tracks counted in a space 25 feet by 15 feet was 288. At various places in the mine other groups of prints were found, 100 prints were counted at one place in an area of 15 feet by 10 feet, 160 prints were counted at another place in a space 25 feet by 15 feet, and at still another place in a space 15 feet square 108 prints were counted. Numerous other prints were observed which are not mentioned here. Other observers report large numbers of tracks counted at places in the mine where the shale containing them has since fallen. In most cases these tracks extend diagonally across the entry or almost parallel with it. In many cases not a track in the series is missing.



The tracks are found in two rows corresponding to the right and left feet of the animal. These rows are separated by a distance of about 11 inches. In each row two types of tracks are found which alternate and must represent the front and hind feet of an animal which possessed a plantigrade foot.

The writer knows of no other place in Ohio where tracks are so abundant. In the same shale in which the tracks are found, fossil plants, especially *Lepidodendra* and *Calamites* which are preserved as carbon films, are rather numerous in about the same areas as those in which the prints are found. It is quite possible that the amount of vegetable matter in the area has some bearing on the large number of tracks. Possibly the animals congregated here at a feeding ground to eat the apparently abundant vegetation.

Perhaps the best preserved prints from this mine are now in the collection of Muskingum College, New Concord, Ohio. These are two slabs of shale, one 5 feet 5 inches by one foot 8 inches and contains 16 prints or parts of prints. Since the tracks on this slab are fillings of impressions they stand out in relief; however they are not well preserved and are typical of those found in the roof of this mine. Figure 1 shows a photograph of this slab. It will be noted by reference to Figure 2, which is a scale drawing of this slab, that some of the larger prints show 4 toes, the outer one of which is turned outward and back, hook-like. The smaller prints are less well preserved but probably represent the other type of foot.

Figure 3 shows the second slab of the collection, which is one foot 2 inches by 3 feet 9 inches and contains 13 prints or parts of prints. The prints are impressions of the animal's foot and are better preserved than the fillings of the impressions. This slab was found on the mine dump and is the type of impression which falls from the roof of the mine leaving the fillings of the impressions standing out in relief. Note that one type of foot has 4 toes with the outer hook-like digit while the other type has 5 shorter more slender toes.

Figure 4 is a scale drawing of this slab and shows two sets of prints in opposite directions. Those drawn in solid black apparently made by an animal going in the opposite direction to that which made the tracks drawn in outline.

As has already been noted there are two types of tracks, one type has 4 rather long, broad toes, the outer one of which is pointed outward and back, hook-like, while the other type of

track has 5 toes which are shorter and more slender. In both types of track the inner edge of the track is deeper than the outer edge, having a depth of about $\frac{1}{2}$ inch. The length of the 4-toed type is about $5\frac{1}{2}$ inches, the toe spread $4\frac{1}{2}$ inches, the width of the sole $2\frac{1}{2}$ inches, length of the sole 3 inches. The inner digit is about $1\frac{3}{4}$ inches long and points slightly outward. The next digit is $2\frac{1}{4}$ inches long and is also pointed outward. These digits are about $1\frac{1}{4}$ inches apart at their ends, and are directed almost straight ahead. The next is about $2\frac{1}{2}$ inches long and points outward, having its end about $2\frac{1}{4}$ inches from the end of its neighbor. The outer digit, which is about 2 inches long, curves outward and back, hook-like, and is the thickest of the digits. Its end is about $3\frac{1}{4}$ inches from that of the one just next to it.

The other type of track shows the 5-toed foot which is about 5 inches long. The toe spread is $4\frac{1}{4}$ inches, width of sole $2\frac{1}{2}$ inches and length of sole $3\frac{1}{4}$ inches. The digits are all short, about $1\frac{1}{4}$ inches long, and more slender than those of the previously described type. The outermost digit is one inch from the base of its neighbor and is deeper on the inner side.

The stride of the animal varies from 15 inches in some cases to $17\frac{3}{4}$ inches in others. The width of the trackway in all cases is about 11 inches. This gives us a ratio of the width of trackway to length of stride of 1 to 1.7.

The description of the tracks on the two slabs pictured here correspond quite well to *Ancylopus ortonii*, Carman (1), in all ways except size. The general shape of the prints are the same but the stride and the dimensions of the feet are somewhat smaller. It is quite evident, therefore, that they are those of *Ancylopus ortonii*, Carman. This is, then, a new location for this animal geologically as well as geographically for the type horizon is the shale above the Middle Kittanning Coal, of the Allegheny Formation of the Pennsylvanian System, which is about 100 feet lower than the shale in which the specimens here described were found. All the tracks in the roof of the mine appear to have been made by the same type of animal although they are usually so poorly preserved that one can not be certain. The striking thing about this locality is the great abundance of tracks all apparently made by the same type of animal.

BIBLIOGRAPHY.

1. Carman, J. Ernest. Bull. Geol. Soc. of Am., June 30, 1927, pp. 385-396.