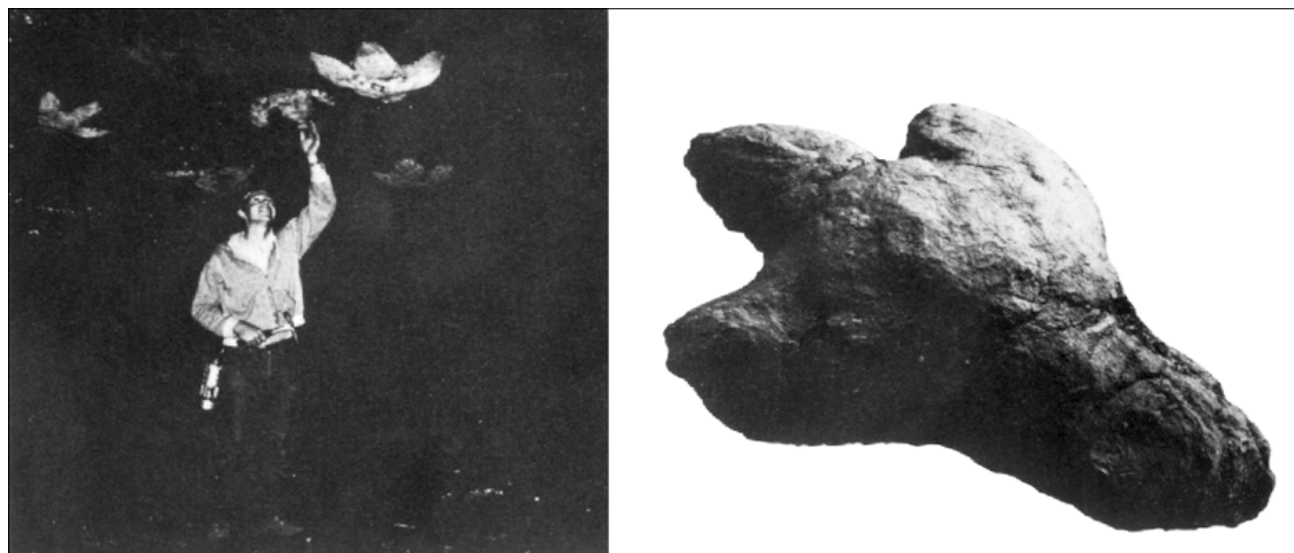


REPRINT FROM *ESSENTIALS OF EARTH HISTORY*

by W. LEE STOKES
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(A)

(B)

(A) Dinosaur tracks in Utah coal mines. What is seen here was produced: (a) by dinosaurs walking over spongy beds of decaying vegetation (peat); (b) by the footprints being filled with sand, (c) by the accumulation of thousands of feet of additional sediment, which compressed the peat to help form coal and solidified the sand to sandstone; (d) by removal of the coal in mining operations so as to leave the tracks protruding downward into the mine; and finally, (e) by the geologist brushing away the residue of coal to expose the white sandstone filling the original track. (B) One of the largest of the coal-mine tracks ever discovered. This was split away from the roof of the mine and taken out as a separate block. The length is 41/2 ft (1.36 m); the stride of the track-maker was over 12 ft (3.1m). [(A) courtesy John Balsley.]

DINOSAUR TRACKS IN UTAH COAL MINES

A footprint really has no substance and could not exist apart from the material in which it is found. Nevertheless, the track of a large extinct animal may be more impressive and informative than its bones or teeth. A single footprint is important in giving a visual image of the foot of the creature that made it—it tells if there were three, four, or five toes and if the foot ended in claws, hoofs, or pads. From the size of the print, one may estimate the length, width, and weight of the trackmaker. A series of tracks is much more informative. Now the length of the stride can be measured, and more positive estimates of the body proportions and weight are possible. We can tell if the creature was running, walking, or merely standing. A really long series of many tracks may even reveal the trackmaker going about his daily activities such as stalking prey, gathering food, or meeting others of his kind at a local waterhole. Occasionally, tracks of many species are mingled as in the case of a rapid mass exodus from a fire or volcanic eruption.

Among the most amazing footprints known are those uncovered in underground mining of coal in Utah, Wyoming, and Colorado. There are thousands of prints obviously made by many different dinosaur species at different stages of growth. The tracks, as found in the mines, are seen as downward protuberances of sandy material into the coal itself. When miners remove the coal, the footprints with unmistakable form and continuity are left protruding from the roof of the mine. They are so commonplace in some mines that they are either left in place or pried down as potential hazards to the workers.

What is to be learned from these fossils? Since there are many of them and all have the same relation to beds of coal, there seems to be nothing particularly unusual about their formation. What is now coal was not yet coal when the dinosaurs walked over it. Rather, it was peat, the forerunner of coal. Peat is defined as dead, water-soaked, spongy vegetation such as is found today in the Everglades of Florida and in smaller swamps and bogs elsewhere. That a 10-ton dinosaur could walk over a peat bed and not sink in over a few inches seems to prove that the material had already reached a high degree of firmness and solidity before it was buried. Certainly it was not a bog with deep water everywhere.

Those who study coal-mine tracks must, in effect, take a worm's-eye view of the situation. They look upward from below the level at which the tracks were made. The mental adjustments that are necessary to put everything in perspective are not difficult, and there are many things that can be learned from the underside that aren't apparent from the top side. Many tracks clearly represent animals striding purposefully in one direction as if they had a destination clearly in mind. Others meander about as if their makers were simply looking for food or company. That this may be more than speculation is shown by the relation of certain tracks to tree roots and stumps. These represent former large trees, and it is frequently observed that the dinosaur tracks seem to represent animals feeding on the branches much as modern elephants do.

Dinosaurs may have left the most spectacular tracks yet noticed, but they are not the only ones that imprinted traces on the sands of time. It seems safe to say that every creature that has ever walked, wriggled, or crept upon the earth has left somewhere a fossilized record of its passage. All such traces of locomotion are known as *ichnites*, and there is an organization of over 800 persons who study and report on them.