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FAX NEWS RELEASE

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Editors: The following information is the subject of a news briefing to be held Thursday, Sept. 2, 1993, at 10:30 a.m. at the Tivoli Student Union "Tracking Dinosaurs" exhibit, 9th and Larimer streets, on the University of Colorado at Denver campus, Auraria Higher Education Center.

Colorado Scientists Discover First *Tyrannosaurus Rex* Track

Three Colorado scientists have identified what they believe to be the first definite example of a *Tyrannosaurus rex* (*T. rex*) track.

The track was first discovered in northern New Mexico in 1983 by Charles Pillmore, a research geologist with the U.S. Geological Survey in Denver and an expert on the end of the dinosaur era and the events that caused their extinction. Pillmore said the single track is almost three feet long. It occurs as a raised cast on a large block of sandstone. The position of the track on the block suggests a minimum step length of nine feet, indicating that the dinosaur was moving at least six to seven miles per hour when the track was made.

T. rex, which is depicted in popular literature as the most fearsome of all dinosaurs, reached a mature length of 60 feet, was nearly two stories tall and weighed an estimated 4-6 tons. It lived about 67-65 million years ago, at the very end of the Age of Dinosaurs.

Last month, Martin Lockley, a track expert with the University of Colorado at Denver, identified *T. rex* as the dinosaur responsible for the New Mexico track. Lockley, his colleague Adrian Hunt and Kirk Johnson, a fossil plant expert with the Denver Museum of Natural History, have discovered other tracks representing the very last days of the dinosaur era. Many dinosaur tracks and other fossil footprints have been found at several locations in northern New Mexico and southern Colorado.

Prior to 1990, fewer than a dozen fossils of the giant species were known, and tracks had never been reported. The book, *The Complete T. rex*, published earlier this year, correctly stated that no definite tracks of the species were known.

Lockley and Johnson said they are investigating the track record to determine if dinosaurs died out slowly or abruptly, and whether they were abundant or scarce toward the end of their reign.

(more)

"These track discoveries represent the last (youngest) evidence available for live dinosaurs, including tyrannosaurs, duck bills and horned dinosaurs," Lockley said. "Preliminary investigations suggest that the dinosaurs were doing well, right up to the end, and that their disappearance was very sudden."

Pillmore and Johnson agree that some tracks are only a short distance below an iridium-rich claystone bed, which resulted from an asteroid impact at the end of the Age of Dinosaurs. Many scientists believe this event caused the extinction of the dinosaurs and many other forms of life. The proximity of the tracks to this bed tends to support this popular theory of rapid extinction.

In 1992, a team from the Denver Museum of Natural History excavated the fossilized remains of a *T. rex* near Littleton, Colorado, under the direction of Ken Carpenter, a dinosaur expert. A life-sized replica of a *T. rex* is part of a dinosaur exhibit at the museum.

A full-scale cast of the New Mexico *T. rex* track is on display at the "Tracking Dinosaurs" exhibit at the Tivoli Student Union on the CU-Denver campus, at the Auraria Higher Education Center.

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(Editors: Lockley, Pillmore and Hunt will attend Thursday's news briefing. For telephone interviews, call Lockley at (303) 556-4884 (messages, 556-2276) and Pillmore at (303) 236-1240.)

9-1-93

THE FOOTPRINT OF A GIANT

This is a replica of a fossilized track of the hind foot of a large dinosaur. The track was discovered in northeastern New Mexico in 1983, by Charles Pillmore, a research geologist with the U.S. Geological Survey in Denver, Colo. Though discovered 10 years ago, the track only recently was identified as a footprint made by a *Tyrannosaurus rex*, and presently is recognized as **the only known fossilized track made by this creature**. Although several nearly complete fossil skeletons of the large dinosaur have been found, until 1993 no tracks attributable to this creature had been reported.

DISCOVERY: Pillmore discovered the track while mapping geology in northeastern New Mexico. He recalls chancing upon the track while he was mapping in North Ponil Canyon on the Philmont Scout Ranch north of Cimarron: "I noticed a strangely shaped feature on a large block of sandstone only a short distance above the creek level. It appeared to be a natural cast that resembled the footprint of a large, three-toed animal, probably a dinosaur. The block appeared to have fallen from a ledge higher up on the slope and rotated as it moved down the hill, so that the bottom of the block now faces upward. I noted the discovery in my field notes and took some samples of the sandstone, but didn't suspect it was anything particularly unusual."

IDENTIFICATION: In 1989 Pillmore showed pictures of the Philmont track to Dr. Martin Lockley, a dinosaur track specialist at the University of Colorado at Denver. Lockley agreed that it was the footprint of a dinosaur and proposed that the animal that made the track was probably a large hadrosaur. He agreed to accompany Pillmore to the Philmont site and confirm the identification. In late summer of 1993 the two men made a trip to New Mexico to examine and make a mold of the track. As they began to clear away the dirt, Lockley speculated that the track was too big for a hadrosaur and that its heel was much larger than any hadrosaur heel he could recall. He then noticed a distinctive shape on the side of the track and proposed that it might have been made by a fourth digit called a hallux. Lockley commented that the size and shape of the track and the presence of the fourth digit were convincing evidence that they were looking at possibly the first *Tyrannosaurus rex* track ever seen. After sketching an outline of the track on clear plastic the scientists made a latex mold of the track. The replica displayed here was made from a latex mold at true scale of the footprint.

POSITION IN THE ROCKS: Dr. Farley Fleming, a USGS fossil pollen specialist helped to establish the relative age and stratigraphic position of the track layer. He determined that the track was probably made 65-70 million years ago, the proper age for a *T. rex*. He also determined that the environment of the trackway was a vegetated wetland mudflat, dominated by palm trees and ferns.

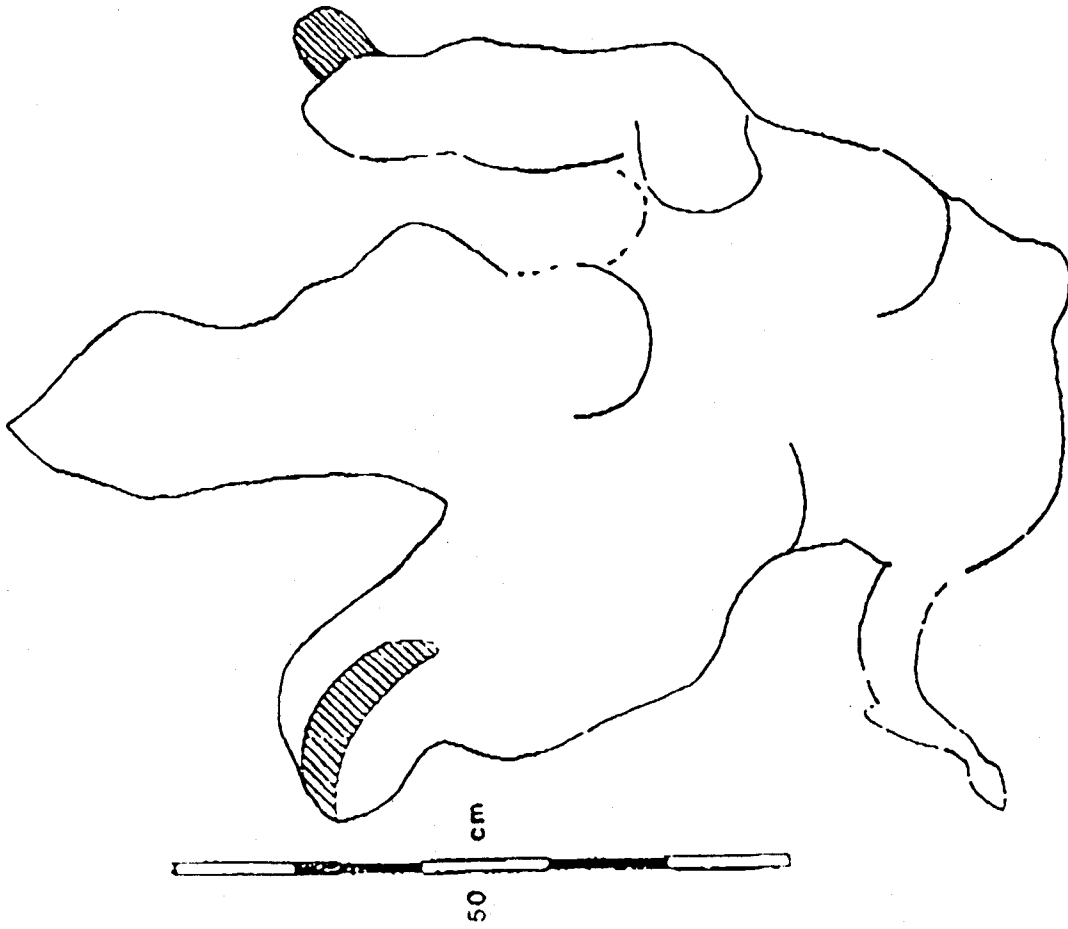
SIGNIFICANCE: The discovery of the natural cast of the *T. rex* track provides much important information: (1) the shape of the bottom of the dinosaur's foot contributes to knowledge of the soft tissue and the probable muscle structure of the foot and how it supported the animal's great weight; (2) the position of the hallux on the foot is apparent in the footprint. The track indicates that the hallux was fairly high on the foot and well back on the heel, which could assist in skeletal reconstruction; (3) the presence of claw marks suggests the foot had large claws, which may indicate a predatory way of life; (4) the range of the *T. rex* is extended south about 250 miles from the nearest known occurrence to the north; and (5) sixty-five million years ago, *T. rex* roamed across a broad river floodplain in a sub-tropical wetlands environment, as indicated by palm leaves and other plant fossils in rocks nearby and by fossil palm pollen and fern spores noted in samples of the muds he/she walked in.

PRESERVATION: A number of circumstances occurred that enable the *T. rex* track to be preserved. First, the mud that the dinosaur was walking across had to be of a particular consistency and character--firm enough to preserve the shape of the foot, but not so soft or fluid to allow mud to flow back in and destroy the footprint. Second, the footprint had to remain open until the river flooded, allowing sand-laden water to flow across the mudflat, filling the track and depositing a three- to five-foot layer of sand on the mud surface. The flood current had to be gentle enough not to wash away the mud containing the track, yet strong enough to carry the sand sediment that filled the footprint and covered the mudflat. This sand layer was later covered by thousands of feet of other sediment layers that solidified into rock. These layers of rock were eventually eroded to form valleys and ridges, exposing the sandstone bearing the footprint.

VITAL STATISTICS: The footprint on the rock is 33 inches long by 28 inches wide. The depth of the infilling was about nine inches. Lockley determined from its position on the block that the animal's stride was at least nine feet. He estimated from the size of the footprint and the stride of the animal that it probably was moving at least six to seven miles per hour. When mature, *T. rex* reached a length of about 60 feet, stood nearly two stories tall, and weighed approximately 8000-12000 pounds.

OFFICIAL NAME: Earlier this year a paper proposing the name, *Tyrannosauripus pillmorei*, for this track, was submitted by Lockley and associate Adrian Hunt, to honor Pillmore's discovery. The paper has been accepted for publication in *Ichnos*, an international paleontological journal, assuring that the name will soon be an official part of the scientific record.

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TYRANNOSAURUS TRACK

with

HUMAN FOOTPRINT (1 foot long)

for comparison

The first *T. rex* track ever discovered, from 67-65 million-year-old deposits in New Mexico, is almost 3 feet (85 cm) long and dwarfs all other known tracks of carnivorous dinosaurs. An adult human footprint is miniscule by comparison.