CHUGWATER FOOTPRINTS FROM WYOMING.

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ABSTRACT. Three new species of footprints are described from the Chugwater formation of Wyoming. In two instances their affinities seem to lie with certain Permian tracks from the Grand Canyon and elsewhere; the third is unique and may be due to other causes rather than the actual footprint of an unknown animal.

DURING an expedition from the Peabody Museum of Natural History, Dr. G. E. Lewis had the good fortune to collect a number of slabs of red sandstone on which were impressed numerous footprints and other trails of small quadrupeds of probable Permian age.

The original discovery was made by Mr. Lynn Jensen of Lycite, Wyoming, who found a single slab in the drift which he took home to be used as a flag stone. Doctor Lewis, aided by members of the E. H. Knapp family, finally discovered the actual horizon high on the side of a cliff some distance away from the place of the first find. Three more good slabs, together with some dozens of others bearing poor impressions, were found. These three, together with the original one, constitute the basis for this paper.

The expedition is greatly indebted to Mr. Jensen who presented the first specimen to the Yale Peabody Museum and to the Knapp family for courtesies during the progress of the work.

The horizon is known as the Chugwater, a series of red beds of which the lower portion is Permian, the upper part Triassic, and the locality is 18 miles northwest of Lysite on the Thermopolis road, Fremont County, Wyoming. One can distinguish upward of four distinct sorts of impressions, all of small size, and rather obscure as to distinctive characters. They resemble, in a general way, the footprints of Permian age which have been found in the Grand Canyon and elsewhere, but seem to be specifically distinct from any thus far described.

The writer is indebted to Doctor Lewis for the privilege of studying these interesting phenomena.

Collettosaurus palmatus sp. nov.

(Plate 1, Fig. 1A. Text Fig. 1).

Specimen No. VP-14101, Y. P. M. Slab containing at least

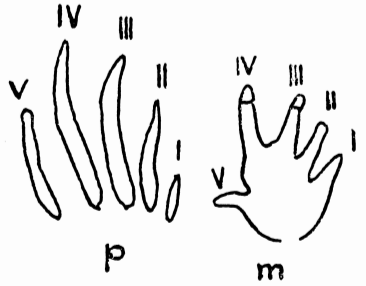
three impressions each of manus and pes, showing trackway and stride.

Horizon: Chugwater formation. Probably Permian.

Locality: 18 miles northwest of Lysite on the Thermopolis road, Wyoming.

Collector: G. Edward Lewis. Expedition of 1940.

Generic characters: Quadrupedal. Five digits on both manus and pes. Toes relatively slender, those of the manus radiating, with digit V widely offset, those of the pes more nearly parallel. Manus smaller than pes and placed within and abreast of the latter.



A

Fig. 1

Manus and pes tracks of *Collettosaurus palmatus* sp. nov. Natural size.

Specific characters: Manus pentadactyl, plantigrade, with broad, rounded palm. Digits slender with blunted tips. Length of the manus 21 mm.; breadth, 17 mm., digit IV the longest. Pes: entire length of digits impressing but not the sole, digits slender, acuminate, curved inward distally, all directed forward with little divarication. Digits I and V much shorter than the others, especially digit I, digit IV the longest. Length of digit I, about 6 mm.; of II, 16 mm.; of III, 21 mm.; of IV, 25 mm.; of V, about 13 mm., but not always impressing. Length of foot about 25 mm.; breadth about 20 mm. Length of stride, 150 mm.; width of trackway, 120 mm.

This creature had a sprawling gait with an apparently dragging tail.

Discussion: The genus *Collettosaurus* was first described by E. T. Cox (1874) based upon a specimen from the Carboniferous of Warren County, Pennsylvania. The genus was meagerly

described, and was redefined by Gilmore (1927, p. 58), who erected a new species, *C. pentadactylus*, from the Hermit shale, Permian, of the Grand Canyon. Our species agrees in general with Gilmore's generic description except for the relative position of manus and pes, which may vary with the gait. The offset digit V of the pes, and the more nearly equal fore and hind feet of Gilmore's species are also distinctions. The manus of *C. pentadactylus* differs from that of the present species in the acuteness of the digits and the more wedge-shaped palm.

The track might have been made by a small Cotylosaur.

Eurichnus[1] *jenseni* gen. et sp. nov.

(Plate 1, Fig. 2B. Text Fig. 2).

Type No. VP-14100 Y. P. M. A slab of red sandstone containing a sequence of two impressions each of the right manus and pes, a partial impression of the left manus, and the tail trace.

Horizon: Chugwater formation, probably Permian.

Locality: 18 miles northwest of Lysite on the Thermopolis road, Wyoming.

Collector: G. Edward Lewis, Expedition of 1940.

Generic characters: Quadrupedal, digitigrade, four digits in the manus, five in the pes, with the fifth not always impressing. Digits with acuminate claws, but not very slender, no phalangeal pads. Manus track within and nearly abreast of the pes. No sole or palm impressions.

Specific characters: Manus somewhat smaller than pes, with four digits, curved inward, especially the fourth. Divarication of digits I to IV about 100°; apparent weblike connection between the digits at about mid-length. Length of manus about 16 mm.; distance between lateral tips 26 mm., which is also the breadth of the manus.

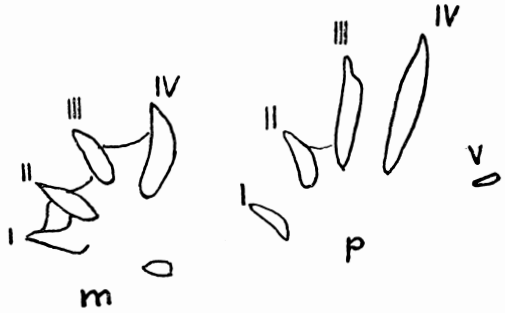
Pes with slenderer digits, slightly curved inward. Digit IV the longest; digit V occasionally represented by a dot-like impression. Length of digit I about 6 mm.; of II, 8 mm.; of III, 14 mm.; of IV, 18 mm.; distance between lateral tips I to IV, 32 mm.

Length of stride 200 mm.; width of trackway about 145 mm. Tail trace discontinuous, rather broad and undulatory.

Discussion: This form resembles the preceding one (*Colletto-*

[1] Εὐρύς wide spread, ἴχνος a track. The species is named in honor of Mr. Lynn Jensen, the finder.

saurus) in general but was made by a somewhat heavier animal. It has, however, the same sprawling gait, with a dragging tail, which is typical of Permian tetrapods. In spite of the greater depth of the impressions but four digits impress as a rule, compared with five in *Collettosaurus*.



B

Fig. 2

Manus and pes tracks of *Eurichnus jenseni*, gen. et sp. nov. Natural size.

A second series of impressions, doubtless of the same genus and species, are seen on slab No. VP-14102 Y. P. M. from the same horizon and locality. In this series the manus alone is recorded. It differs from that of the type in its slightly smaller size and in the general outline of the rear of the footprint, which is an even, rounded curve as though the palm partly impressed, especially in the two right-hand tracks. The length of stride is 190 mm., nearly as great as in the type specimen, but the breadth of the trackway, about 68 mm., seems proportionately less. Were the pes tracks present, however, the width would be increased.

Genus and species indeterminate.

(Plate 1, Fig. 1C. Text Fig. 3).

Specimen No. VP-14101 Y. P. M. bears a single impression which is of doubtful validity as an actual footprint, for it is totally unlike any other Paleozoic track, yet is superficially suggestive of some of the smaller tridactyl footprints of the Connecticut Valley Trias. There are several amorphous impressions on this slab made by unknown agency, and this may be merely another.

The impression under discussion seems to be that of a left

hind foot, tridactyl, plantigrade and with a curiously divided heel.

Generic characters: Bipedal, pes with three nearly parallel toes with acuminate tips. Digits broad, without phalangeal impression. Stride and trackway unknown.

Fig. 3 C

Possible footprint: genus and species indeterminate. Natural size.

Specific characters: Length of foot, 48 mm.; breadth, 30 mm.; length of digit II, 29 mm.; of III, 36 mm.; of IV, including the heel, 36 mm. Distance between lateral tips, 18 mm. Divarication of digits II and III, 20°; of III and IV, about 10°.

Discussion: Thus this impression may be described if viewed with the eye of faith; on the other hand, it may not be an ichnite at all. It is offered for what it is worth.

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