

II.—DESCRIPTION OF TRACKS FROM THE FINE-GRAINED SILICEOUS MUDSTONES OF THE KNOYDART FORMATION (EO-DEVONIAN) OF ANTIGONISH COUNTY, NOVA SCOTIA.¹—BY H. M. AMI, M. A., D. SC., F. G. S., of the Geological Survey of Canada.

(Read May 13th, 1901)

ICHTHYOIDICHNITES ACADIENSIS, n. sp.

Plate no. 2.

1897, *Protichnites carbonarius*, Fletcher, (*partim*) *Annual Report, Geol. Survey of Canada*, new series Vol. 2, p. 68 P.

These tracks are arranged in pairs and indicate an animal possessing bilateral symmetry with powers of locomotion and suspension in water without leaving a trail or mark of the body proper. They were evidently made by some fin or spine-like appendage attached to the body of the organism, which may have been that of an acanthodian or other early form of fish existing in the early Devonian lake, sea or estuaries of Nova Scotia.

There are eight pairs of tracks preserved on one slab showing seven completed strides, steps or series of advances. They consist of two more or less parallel linear depressions, which spread slightly anteriorly in the direction of progress or advance forward, accompanied posteriorly by two somewhat raised ridges or monticules, the result of the accumulation of the once soft fine mud or sediment by the fine or spine-like pointed appendage in the forward motion of advance. As preserved, the eight pairs of tracks indicate that at the time they were made the animal took a turn to the left and changed the direction of its course by an angle of thirty-eight degrees.

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ICHTHYOIDICHNITES ACADIENSIS, N. SP.
(TO ILLUSTRATE PAPER BY DR. H. M. AMI.)

Face p. 330.

The impression or track made by the left fin or spine appears slightly in advance of that made by the right appendage in all the eight pairs preserved on the type specimen, which seems to indicate that the creature used its appendages in locomotion in a slightly alternating manner, striking the mud with the left appendage first. The average distance in advance of the left imprint or track from the right is between three and four *millimetres* measured in a direction at right angles to the course taken by the organism from the apices of the monticules.

The slabs on which these tracks are preserved consists of a thin-bedded, fine-grained, greenish and chocolate-red coloured, siliceous sandstone with numerous minute glistening scales and particles of mica along the divisional planes of stratification.

The following table is prepared with a view of giving the number of pairs of tracks preserved on the type-specimen, the exact measurements of the linear depressions or imprints made by the spine-like appendages as well as the distances between them, the relative size and distance between each and the different pairs of the monticules measured from their apices, together with the length of the stride :

MEASUREMENTS IN MILLIMETRES TAKEN FROM TYPE-SPECIMEN.

PAIRS OF TRACKS.	Length of left linear depressions	Length of right linear depressions	Greatest diameter of the left monticules.	Greatest diameter of the right monticules.	Distance between the monticules.
First pair	5.00 mm.	2.50 mm.	2.50 mm.	1.50 mm.	5.00 mm.
Second pair	5.50 mm.	1.50 mm.	2.50 mm.	1.50 mm.	4.00 mm.
Third pair	4.50 mm.	3.25 mm.	3.50 mm.	1.25 mm.	5.00 mm.
Fourth pair	4.25 mm.	1.50 mm.	2.00 mm.	1.00 mm.	8.00 mm.
Fifth pair	6.50 mm.	4.00 mm.	2.75 mm.	1.00 mm.	5.50 mm.
Sixth pair	4.50 mm.	3.50 mm.	2.00 mm.	2.00 mm.	7.00 mm.
Seventh pair	5.00 mm.	3.75 mm.	2.50 mm.	1.75 mm.	5.50 mm.
Eighth pair	5.00 mm.	2.25 mm.	2.25 mm.	1.75 mm.	5.50 mm.

TABLE SHOWING LENGTH OF STRIDE, STEP, OR SPACE BETWEEN IMPRESSIONS MEASURED FROM THE APICES OF THE MONTICULES.

PAIRS OF TRACKS.	Between 1st & 2nd	Between 2nd & 3rd.	Between 3rd & 4th	Between 4th & 5th.	Between 5th & 6th.	Between 6th & 7th.	Between 7th & 8th.
Left	18.00 mm.	16.00 mm.	15.50 mm.	14.50 mm.	17.00 mm	15.50 mm.	17.50 mm.
Right	17.50 mm.	15.50 mm.	15.25 mm	16.50 mm.	17.00 mm.	15.50 mm.	17.50 mm.

It will thus be seen that the length of steps or space between the impressions are at comparatively equal distances, and in the neighbourhood of seventeen millimetres. The sixth and seventh pairs of tracks are the most normal in the series.

These tracks are unlike any recorded from North America, and the name *Ichthyoidichnites Acadiensis* is suggested with a view of indicating the locality where the tracks were found, as well as the possible organism that made it.

Locality and Horizon :—A few yards below the earth and stone bridge over the McArras Brook along the shore or post-road near the schoolhouse at McArras Brook, P. O., Antigonish Co. Nova Scotia; in the dark red and drab, evenly-bedded, fine-grained siliceous and jointed mudstones of the *Knoydart* formation of early Devonian (Eo-Devonian) age, supposed to be the equivalents of the Lower Cornstone or old Red Sandstone of Herefordshire, England. [Between stations No. 5 and No 6 of Mr. Hugh Fletcher's section]¹ and a few feet below the bed of tuffaceous rock holding *Pteraspis*, *Cephalaspis* and *Psammosteus*.

Collector :—Mr. T. C. Weston, F. G. S. A. *Date* : August 6th, 1886. The specimen is now deposited in, and forms part of the collection of Knoydart fossils in the Museum of the Geological Survey of Canada.

Geological Survey of Canada,
Ottawa, April 19th, 1901.

¹ See Can. Rec. Science. Vol. viii, No. 5, p. 303, Montreal, January 15th, 1901.