

The earliest known Carboniferous Millipede was *Xylobius Sigillariae*, discovered by the author in Nova Scotia in 1858, and described in the Journal of the Geological Society in 1859. Since that time numerous species of these animals have been found in the Carboniferous and Devonian of Europe and America, and, in so far as Canadian species are concerned, have been described by Seudder and Matthew.

The first known Palæozoic land snail was that found by Lyell and myself at the South Joggins, in Nova Scotia, in 1851.<sup>1</sup> This form of land life has since been recognized in other coal regions in America, and in the Devonian plant beds of St. John, but not as yet in Europe.<sup>2</sup>

In the group of Arachnidans, both spiders and scorpions were found in Palæozoic beds in Europe before they were recognized in America.

The circumstance that Canada has been so fortunate in these discoveries, along with the dispersed condition of the descriptions of our Palæozoic air-breathers, renders it appropriate that a list of them should appear in our Transactions, with references to the publications in which they have been described, and to their localities, discoverers, and dates of discovery and description.

The known land animals of the Palæozoic in Canada may be summed up as follows:—

*Vertebrata*, 26 species; all *Amphibia*.

*Arthropoda*, 33 species; viz., Insects, Scorpions, Myriapods.

*Mollusca*, 5 species, Pulmonate Snails.

Four of the vertebrate species are named for the first time in this paper—two from osseous remains and two from footprints.

The bibliography given on the following pages refers only to original descriptions and figures, and to later papers supplementary thereto. More full lists of references for the Arthropod species will be found in Seudder's Index to Fossil Insects, Bulletin Geol. Survey United States, No. 71, 1891. The type specimens of most of the vertebrates, and several of the other species, have been placed in the Peter Redpath Museum, of McGill University.

## I. VERTEBRATA.

Up to the present time no evidence of the existence of air-breathing vertebrates has been recognized older than the base of the Carboniferous system, though it is not impossible that some of the fishes of the Devonian may have been endowed with a swimming-bladder capable of being used as an imperfect lung, in the manner observed in modern Dipnoi and Ganoids. Independently of the inference from general structure, the conditions of life in inland waters abounding in vegetable debris would render this probable. The pectoral fins of some Erian and Carboniferous fishes also show points of advance in their bony structure which may have been connected with the habit of creeping in shallow water. No animals, however, endowed with limbs capable of locomotion on land and with the correlated structures of trunk and skull have as yet been recognized in beds older than the Carboniferous. We may, however, hope yet to find land vertebrates in the Devonian, as the conditions seem to have been suitable to them.

All the air-breathing vertebrates known in the Carboniferous proper are referred to the

<sup>1</sup> Journal of Geological Society of London, Vol. IX., p. 58, 1853.

<sup>2</sup> Dawson, Revision of Palæozoic Land Snails, American Journal of Science, Vol. XX., 1880, p. 405.