http://www.geology.19thcenturyscience.org/books/1859-Lyell-Elements/README.h

and rain-spots, with the signs of the trickling of water on a wet, sandy beach; all confirming the conclusion derived from the footprints, that the quadrupeds belonged to air-breathers, and not to aquatic races.

In 1852 the first osseous remains of a reptile were obtained from the coal-measures of America by Mr. Dawson and myself. We detected them in the interior of one of the erect Sigillariæ before alluded to as of such frequent occurrence in Nova Scotia. The tree was about two feet in diameter, and consisted, as usual, of an external cylinder of bark, converted into coal, and an internal stony axis of black sandstone, or rather mud and sand stained black by carbonaceous matter, and cemented together with fragments of wood into a rock. These fragments were in the state of charcoal, and seem to have fallen to the bottom of the hollow tree while it was rotting away. The skull, jaws, and vertebræ of a reptile, probably about 2½ feet in length (*Dendrerpeton Acadianum*, Owen), were scattered through this stony matrix. The shell also of a *Pupa*, the first pulmoniferous mollusk ever met with in the coal, was observed in the same stony mass. Dr. Wyman, of Boston, pronounced the reptile to be allied in structure to *Menobranchus* and *Menopoma*, species of batrachians, now inhabiting the North American rivers. The same view was afterwards confirmed by Prof. Owen, who also pointed out the resemblance of the cranial plates to those seen in the skull of *Archegosaurus* and *Labyrinthodon*.* Whether the creature had crept into the hollow tree while its top was still open to the air, or whether it was washed in with mud during a flood, or in whatever other manner it entered, must be matter of conjecture.

Footprints of two reptiles of different sizes had previously been observed by Dr. Harding and Dr. Gesner on ripple-marked flags of the lower coal-measures in Nova Scotia, evidently made by quadrupeds walking on the ancient beach, or out of the water, just as the recent Menopoma is sometimes observed to do.

In 1853 Prof. Owen announced the first discovery of fossil reptilian remains in the British Coal-Measures; and, in 1854, the same osteologist described a "sauroid batrachian," of the *Labyrinthodon* family, obtained by Mr. Dawson, from the coal of Pictou, in Nova Scotia.

Thus in ten years (between 1844 and 1854) the skeletons or bones of no less than seven carboniferous reptiles, referred to five genera, were brought to light; to say nothing of numerous reptilian footprints, some of them too large to belong to the same species as the bones.

Rarity of vertebrate and invertebrate Air-breathers in Coal.

Before the earliest date above mentioned (1844), it was common to hear geologists insisting on the non-existence of vertebrate animals of a higher grade than fishes in the Coal, or in any rocks older than the Permian. Even now, it may be said, that we have scarcely made any pro-

* Geol. Quart. Journ. vol. ix. p. 58.