

being the casts of worm-borings; and there is nothing in the specimen to indicate their vegetable origin. This form of cast is found in sandy argillaceous deposits all through the sedimentary rocks.

Type in the Museum of the Geological Survey of Canada.

***Planolites incipiens* BILLINGS.**

Palaeophycus incipiens Billings, 1861. Bull. Geol. Survey Canada, p. 3.

This character of worm-boring is common in the sandy shales near Swanton, and at Parker's Quarry, Georgia, Vermont. It is associated with *Olenellus asaphoides*. It is impossible to determine whether the trails on the slate were made by the same species of animal as that making the trails referred to *P. congregatus*. As the two forms have received specific names they are retained for the present.

Type in the Museum of the Geological Survey of Canada.

***Helminthoidichnites* FITCH.**

Helminthoidichnites Fitch, 1850. Trans. N. Y. State Agric. Soc. for 1849, p. 868.

Compare *Nemertites* Nicholson, 1873. Proc. Roy. Soc., London, p. 289.

***Helminthoidichnites marinus* EMMONS (sp.).**

Gordia marina Emmons, 1844. Taconic System, p. 67, pl. 1, fig. 2.—*Idem*, 1846. Agric. N. Y., vol. 1, p. 68, pl. 14, fig. 2.—*Idem*, Hall, 1847. Pal. N. Y., vol. 1, p. 264, pl. 71, figs. 1, 2.

Palaeophycus rectus Fitch, 1850. Trans. N. Y. State Agric. Soc. for 1849, p. 862.

Compare *Fucoides flexuosa* Emmons, 1844. Taconic System, pl. v, fig. 3.

Helminthoidichnites tenuis Fitch, 1850. Trans. N. Y. State Agric. Soc. for 1849, p. 866, figure in text.

Dr. Fitch proposed the genus *Helminthoidichnites* for tracks resembling those of worms; and figured this species as a very narrow trail on an arenaceous shale. I have seen fragments of a similar trail in the arenaceous slates of the *Olenellus* zone, and also in the Upper Cambrian shales of the Grand Cañon of the Colorado, Arizona. Those from the latter locality afford the best illustration, and a figure is given of a small portion of the surface of the arenaceous shale, showing the trail upon it.

This type of boring or trail is very abundant in the purple, green, and dark slates, and in the arenaceous shales of the *Olenellus* zone. Similar trails may have been made by many different species during all the geologic epochs down to the present day.

Nat. Mus. Cat. Invt. Foss., No. 18359.

***Cruziana* D'ORBIGNY.**

Bilobites DeKay, 1823. Am. Lyc. Nat. Hist., New York, vol. 1. pp. 45-49.

Not *Bilobites* Linn., 1775.

Cruziana d'Orbigny, 1842. Voyage d'Amérique Mérid., III.

Rusophycus Hall, 1852. Pal. N. Y., vol. 2, p. 23.

***Cruziana* sp. ?**

A careful examination of a large series of specimens of the trails and burrows referred to *Cruziana*, from a single layer of sandstone, leads