J. W. Dawson-Paleozoic Land Snails.

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received abundant drainage from neighboring land. It is only in such deposits that remains of true land-snails can be expected to occur; though, had fresh-water or brackish water Pulmonates abounded in the Carboniferous age, their remains should have occurred in those bituminous and calcareo-bituminous shales which contain such vast quantities of debris of Cyprids, Lamellibranchs and fishes of the period, mixed with

fossil plants.

With reference to their affinities, the Paleozoic land snails present no very remarkable peculiarity except their close resemblance to some modern forms. Of the known species, four belong to the genus *Papa* in its wider sense, and are very near to sub-generic types still represented on the American continent and its islands. One is a small helicoid shell not separable from the modern genus *Zonites*, and the remaining one, though it has been placed in a new genus, is very near to some small American snails of the present day (*Stenotrema*, etc.) All the species are of small size, though not smaller than some modern shells of the same types.

I shall now proceed to give the characters and descriptions of the several species, adding to the account of those previously known, such new facts as have occurred in my more recent explorations and examinations. I should state here that many of the new facts detailed have been obtained in the course of excavations for the extraction of erect trees holding land animals, undertaken with the aid of a grant from the Government fund for aiding original researches, at the disposal of the Royal Society of London, and carried on within the past three years.

1. Pupa vetusta Dawson. (Figs. 1 to 4, and 14, a, b.)

[Sir C. Lyell and Dr. Dawson on Remains of Reptiles and a Laud shell from the South Joggins in Nova Scotia, Journal of Geological Society of London, vol. ix, 1832 (figured but not named). Dawson's Acadian Geology, 1855, p. 160. Dawson's Air-breathers of the Coal Period, 1863. Acadian Geology, 2d and 3d editions, p. 384, 1868 and 1879.]

Description.—Shell cylindrical, somewhat abruptly conical at the apex, in some specimens tending to diminish in diameter in the later turns or whorls of the shell. Whorls nine in adult shells, slighly convex, in width equal to half the diameter of the shell. Suture impressed. Aperture evenly rounded, not continuous above, rather longer than broad, destitute of teeth; peristome slightly reflected and smooth. Surface shining, marked with longitudinal smooth ridges, separated by spaces a little wider than the ridges; spaces about $\frac{1}{500}$ th inch in width. Shell calcareous, thin, prismatic in structure. Young specimens abruptly conical and helicoid in form. Nucleus round, smooth, the first turn below the nucleus marked with