

2nd Subfamily. TURBINOLINÆ.

Outer wall thin, imperforate; lamellæ meeting in the centre, or joining the axis, when present, without the intervention of pali.

I only know one Palæozoic genus probably referrible to this subfamily.

Genus. PETRAIA (*Münst.*) as elucidated by Lonsdale.
= *Streptolasma* (Hall, 1847).

Gen. Char.—Corallum simple, turbinate, radiating lamellæ of one or two sizes, the larger extending from the walls to the centre where they are more or less twisted, (often thus forming a spirally rolled conical centre, the base upwards), without connecting vesicular plates, or transverse diaphragms.

I find that the flattened appearance often seen truncating the apex of the commonly-seen casts of this genus, and which has been taken for the impression of a diaphragm, is really produced by a nearly solid calcareous filling up of the old apex of the cone, and which, with the rest of the coral, often disappears in sandy matrices. The lamellæ are often perforated by long tubes opening as papillæ on their edges, as in the supposed genus *Tryplasma* (Lonsd.) An irregularity at one side, as in *Caninia*, is very common, marked by one strong plate extending directly to the centre, and several on each side uniting branch-wise to it; a corresponding peculiarity is seen on the external striæ. The rounded ridges of the cast are moulded on the diverging halves of the split outer edges of the biplated lamellæ which occupied the sulci. The genus differs from *Strephodes* (McCoy) in wanting the vesicular structure between the lamellæ, and from *Calophyllum* (Dana) in the supposed want of transverse diaphragms.

PETRAIA ÆQUISULCATA (*McCoy*). Pl. 1. B. fig. 23, and 24.

Ref.—McCoy, Ann. Nat. Hist. 2nd Series, Vol. VI. p. 279.

Sp. Ch.—Conical, slightly curved, oblique, with a few broad, obtuse, undefined concentric swellings of growth, regularly increasing from the apex to a diameter of one and half inch, at two and half inches from the base; external wall very thin, it and the cast regularly marked with equal obtuse ribs, about eighty-five in the adult diameter of one and half inch (six in three lines), eighty at one inch (eight in three lines), seventy-five at nine lines and forty-six at four or five lines (ten in three lines) separated by thin equal equidistant slits representing lamellæ, each alternate one of which is merely marginal, the others occasionally and irregularly uniting before reaching the centre, round which they are twisted to form a spirally conical central area; no connecting vesicular plates.

The regularity and equality of size of the lamellar ribs, both on the exterior and on the cast, as well as their large number, gives a peculiar aspect to this species. In parts of some specimens the lamellar sulci are bent in a zigzag manner, but it is an unusual appearance, for which I cannot account. By carefully removing part of the outer wall each of the lamellæ is seen to be split near the exterior (not visible on casts), and each to be perforated by tubuli as in Mr Lonsdale's supposed genus *Tryplasma*; these punctures leave no trace on the equal, obtuse, smooth, ridges of the casts. I have usually seen this coral ticketed in collections as *Cyathophyllum turbinatum*, to which it bears some superficial resemblance, but has no real specific or even generic relation.

Position and Locality.—Very abundant in the Coniston limestone of Coniston, Lancashire; in the calcareous flags of Applethwaite Common, Westmoreland; fine Caradoc sandstone of Mulock Quarry, Dalquorhan near Girvan, Ayrshire; flags of High Haume, Dalton in Furness, Lancashire; slates of Llansantfraid, Glyn Ceiriog, Denbighshire.

Explanation of Figures.—Plate 1. B. fig. 23. Average sized specimen from Coniston, shewing the equal lamellar sulci, and portion of the epitheca towards the base.—Fig. 24. Do. Showing the form of terminal cup, with the lamellæ uniting in pairs without vesicular connecting plates; and vertical fracture, shewing the conical twisting of the lamellæ in the centre.