ART. XXIV.—*On the Palæotrochis of Emmons from North Carolina*; by Prof. O. C. MARSH, of Yale College.

IN 1856, Prof. E. Emmons announced the discovery, in the lower "Taconic" rocks of North Carolina, of some peculiar fossil corals, which he regarded as the oldest representatives of the animal kingdom on the globe. Believing them to indicate a new genus, he proposed for it the name of *Palæotrochis*, and gave a description and figures of two varieties which he con-

* Vide Hildreth's Japan as it was and is, p. 357.

sidered specifically distinct.* The forms described were found in Montgomery county, where they occur in great abundance in granular quartz and slaty quartzite, having a vertical range of about 1,000 feet. Prof. Emmons attached great importance to the fact that they occur in auriferous rock, and he hence inferred that the gold must have been deposited as a sediment. Shortly after the description of *Palæotrochis* was published, Prof. James Hall, in a letter to Prof. Dana, suggested that these forms were merely concretions, an opinion subsequently controverted by Prof. Emmons, who maintained their organic character.†

These supposed corals are usually lenticular in form, often resembling two short cones placed base to base. In size, they vary from one-fourth of an inch to two inches in diameter. The exterior is covered with irregular striæ or grooves, which extend from apex to apex. Many of the smaller specimens have at one extremity a rounded knob, and at the other a cavity.

The following figures, from Prof. Emmons' Report, represent the more common varieties, and are here repeated for convenience of reference.

While making some investigations during the past summer on the structure known as "cone in cone," the writer's attention was called to these peculiar forms, and their inorganic nature was at once suspected. An examination of the interior of several specimens clearly indicated that they were not corals, and, as soon as microscopical sections could be prepared, they were more carefully examined, but no trace of organic structure could be detected, the entire mass being evidently a finely grained quartz. The specimens examined were undoubtedly authentic examples of *Palæotrochis*, as some of them, presented to the Yale cabinet by Prof. Dana, were sent to him by Prof. Emmons, and the rest were given to the writer by Prof. W. C. Kerr, the present State Geologist of North Carolina. It follows, therefore, that this name should in future be dropped from the genera of fossils. It is not, indeed, impossible, or even improbable, that the gold-bearing rocks of North Carolina may yet be found to be fossiliferous, but up to the present time no satisfactory evidence of their being so appears to have been brought to light.

* Geological Report of the Midland Counties of N. C., p. 62. Also this Journal, vol. xxii, p. 389.

† This Journal, xxiii, p. 278, and xxiv, p. 151.

Admitting the inorganic nature of these remarkable forms, their origin becomes an interesting question, and it certainly is not easy to give a satisfactory explanation of it. They appear, however, to have some analogy with "cone in cone," which, as the writer has shown elsewhere,* is probably due to the action of pressure on concretionary structure when forming. In some respects the two are quite distinct, but evidence of pressure is clearly to be seen in both.

If inorganic, these forms may, of course, be looked for in other formations, wherever the same conditions have existed. Prof. Newberry, of Columbia College, recently informed the writer that he once observed a somewhat similar structure in altered Tertiary rocks in Oregon. Nothing of the kind, however, except the *Palæotrochis*, appears to have been hitherto described.

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