

Lovén has recently pointed out the singularly Crinoidal appearance of the calycinal system of a Triassic Urchin, *Tiarechinus princeps*, Laube.¹ "The relative magnitude of the entire system, the prominent share it takes among the constituents of the skeleton, the forms and proportions of its parts, are such as forcibly to recall the calyx of some Palæocrinoid, and to justify a desire to turn the Echinoid upside down and to see the calycinal system in its imaginary original position, when it formed a part of some remote ancestral type. In this respect the resemblance becomes still more striking."

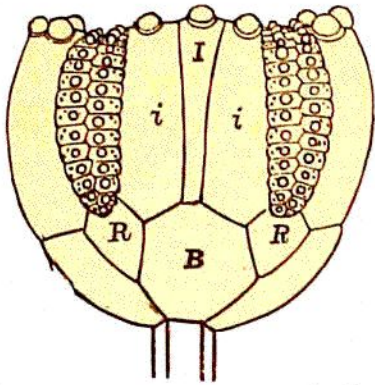


FIG. 21.—*Tiarechinus princeps*, Laube, inverted so as to show the resemblance of its apical system to the calyx of a Crinoid. (The figure, but not the letters, after Lovén.) *B*, basal; *I*, single, median interradial; *i*, lateral interradials; *R*, radial.

Let us compare Lovén's figure (fig. 21) with that of the Blastoid (fig. 20). Each has relatively large basals (*B*); but the radials of the Pentremite (*R*) are small in *Tiarechinus*, their limbs being replaced by the two lateral plates of the interradius (*i*) which enclose the ambulacrum. In *Tiarechinus*, just as in the Blastoid, however, the ambulacrum ends against the body of the corresponding radial; and its nerve, lying beneath the ambulacral plates as in recent Echini, would be in a position where it could be directly continuous with an axial cord situated within the radial or on its inner

face, if only *Tiarechinus* were a Crinoid instead of an Urchin. I would not, of course, be understood as saying that *Tiarechinus* had a central capsule and axial cords proceeding from it. My only object has been to point out that Lovén's happy comparison of this curious type with an inverted Crinoid affects other systems of organs besides that of the calycular plates. At the same time, considering the number of Asterids which have a calyx of relatively large plates, and the fact that there is a continuous nerve sheath on the dorsal surface, I think it not improbable that indications of a central capsule and axial cords may eventually be discovered in the Echinozoa.

It remains now to notice the observations of Dr. Jickeli, which, though only published recently, are nearly four years old.² Like Marshall he has made an elaborate series of experiments in extension and confirmation of those originally described by Dr. Carpenter, whose views respecting the nervous nature of the central capsule and axial cords he adopts unreservedly. He further believes that the fibrillar bundles uniting the cirrus-joints and those forming the dorsal and interarticular ligaments (as they are described above) in the arms (Pl. LXII., *ld*, *li*) are muscular in function, though differing in many points from the fibres which have hitherto been exclusively described as muscles (Pl. LXII., *m*); for when the axial cord of a detached cirrus is stimulated "so krümmt sich derselbe auf das Heftigste zusammen und geräth selbst in Tetanus."³

¹ On *Pourtalesia*, *loc. cit.*, p. 65.

² Vorläufige Mittheilungen über den Bau der Echinodermen, 1, Ueber das Nervensystem und die Sinnesorgane der *Comatula mediterranea*, *Zool. Anzeiger*, vii. Jahrg., pp. 346-349 and 366-370, 1884.

³ *Zool. Anzeiger*, vol. vii., 1884, p. 348.