

terminates below in a nodal joint owing to its separation at the syzygy, as is the case with so many fossil as well as recent *Pentacrinidæ*. Although therefore it seems tolerably certain that cirrus-verticils may occur in some species of *Encrinus*, the other characters of many of the stem-fragments from the Muschelkalk render it equally certain that *Pentacrinus* or an allied genus existed in the same seas as *Encrinus*. This has long been admitted in the case of the St. Cassian beds, which are considerably above the horizon of the Muschelkalk; and they have yielded to Laube¹ five varieties of *Pentacrinus*-stems, which he has temporarily referred to as many species. Associated with these he found one calyx which appears to belong to *Pentacrinus*; but it was too imperfectly preserved for a definite opinion to be formed upon this point.

All these earlier forms seem to belong to the section of the genus which was designated "Basaltiformes" by Quenstedt, after one of Millér's species with a pentagonal stem. Essentially similar stems are found all through the remaining secondary rocks from the Lias upwards, in the Nummulitic Limestones of Biarritz and Kreissenberg, in the London Clay, and in the Italian Tertiaries. The calyces associated with them have a monocyclic base, and bear simple or dichotomous arms, the two limbs of each fork being of equal value, just as in the recent forms. Quenstedt's other two groups, the Briariden and the Subangularen, are those to which the generic name *Extracrinus* was applied by the Messrs. Austin. The type is limited in Europe to the Lias and Lower Oolites. *Extracrinus briareus* appears to occur in the lowest "quick ledge" at Lyme Regis, which corresponds to Quenstedt's lowest bed α ; but the type does not reach into the Middle Lias, nor indeed into the upper beds of the Lower Lias. In the Jura, however, *Extracrinus briareus* has not been found below the Marlstone (Lias γ and δ); but it ranges up through the *Posidonia*-beds, and is said to occur in the Lower Oolites.

The range of the Subangularen is more limited. They do not occur in the Lower Lias of either England or Germany, nor do they reach the top of the *Posidonia*-beds. Many varieties have been made of both species, especially by Quenstedt; but it is noteworthy that neither species occurs in all the three divisions of the Lias, *Extracrinus briareus* being limited to one only, at any rate in this country.

Those who have recognised *Extracrinus* as a genus, as, for example, Mr. R. Etheridge,² F.R.S., have usually regarded it as limited to the Lias. The Messrs. Austin, however, speak of *Extracrinus briareus* as occurring in the Cornbrash at Kingscote Turnpike. They are certainly wrong about the species, but I am very strongly inclined to believe that they are correct as regards the genus, and also that the occurrence of the Briariden in the Brown Jura (Inferior Oolite), as mentioned by Quenstedt,³ is not unlikely.

¹ Die Fauna der Schichten von St. Cassian, *Denkschr. d. k. Akad. d. Wiss. Wien.*, Bd. xx., xxiv., pp. 267-278.

² See his Presidential Address to the Geological Society, *Quart. Journ. Geol. Soc.*, 1882, p. 147 (of separate copy).

³ *Encriniden*, p. 270.