

refers to fig. 14 as *Juncella vetusta*, doubtless he regarded the axis as belonging to a Gorgonellid, and hence Gray's inclusion of the same under *Primnoella* is apparently not justified.

In 1878 Studer placed three new species in the genus, all collected by the "Gazelle" from deep water in the southern hemisphere (*op. cit.*). At the same time the generic diagnosis was somewhat modified by him. He characterises the genus thus:—"Coral simple, unbranched. Axis horny, calcareous. Bark thin. The polyp cells around the stem in regular whorls of more than three cells. Cells covered with small overlapping scales, which are mostly unsymmetrical and toothed on the edges."

Three more species were collected by the Challenger, so that thereby the number of known species amounts to seven.

The colony consists of a simple, at times much elongated stem, which ascends from a root-like portion, which affixes itself to foreign bodies. On the stem are placed the calyces in whorls of from four to twenty, the distances between two whorls (the internodes) may be longer or shorter than the calyces. The root is always calcified, it either forms a disc-like calcareous lamella, or it consists (*Primnoella distans*) of branched, stolon-like processes, which are either embedded in the mud or hold on to foreign bodies. The axis is on an average thin, often quite thread-like, it is in individual species completely horny, flexible and elastic, in others calcareous and brittle towards the base, but further up the stem it is flexible.

The cœnenchyma is very thin on the internodes and contains only a single layer of flat, scale-like, calcareous spicules. The calyces are distinctly bilateral, their transverse section oval, the shorter axis is placed perpendicularly to the long axis of the stem. One can accordingly distinguish a dorsal portion, turned away from the stem, a ventral portion, turned towards the stem, and two lateral portions. The calyx scales form perpendicular rows, the elements of which, however, are not parallel to one another, but are inclined towards one another, mostly about half the height of a scale, and the upper edges of which project above the base of the succeeding one; in like manner the scales of one row usually overlap those of the next with their lateral edges. The scales of the ventral side are smaller and flatter than those of the dorsal side, which are often sculptured or provided with spines.

Around the mouth of the calyx the scales form an operculum-like crown of eight scales, which are mostly elongated and three-cornered and appear more or less strongly developed. These opercular scales always arise inside the last circle of the calyx scales and exhibit a distinctly bilateral arrangement. Two dorsal scales and two ventral ones are always placed opposite to one another, and there are always two lateral ones. These opercular pieces are always arranged so that the dorsal scales may overlap the next ventral ones with their edges, and so that the two ventral opercular scales come to be deepest, and close the calyx like a lower lip. The spicules of the operculum are either