

were it not for their unbranched condition, they would closely resemble the phylactocarpal appendages of *Cladocarpus pectiniferus* of the present Report. I have here taken for granted that the entire structure is, as interpreted by Mr. Fewkes, a modified branch rather than a hydrocladium, though the fact which he mentions of its carrying along its proximal portion, which forms a kind of peduncle for the phylactocarp, a series of hydrothecæ presents a difficulty in the acceptance of this view. Mr. Fewkes does not give a magnified figure, and it is possible that what look like hydrothecæ are really only large cauline nematophores.

Ramification.

The Plumularidæ present considerable differences in the details of their ramification. What may be regarded as the typical ramification in both the great sections of the Plumularidæ shows itself in a simple or branched stem, from two opposite sides of which the ultimate ramuli or hydrocladia are given off. These ramuli are thus disposed in a regularly pinnate manner, and give to the colony the elegantly plumose aspect by which the designation of the typical genus has been suggested. In most species the pinnæ are alternate, but in a few, as in *Plumularia catharina*, for example, they are opposite.

In some rare cases the hydrocladia are confined to one side of the stem (*Monostachas dichotoma* of the Gulf Stream exploration¹). In *Streptocaulus pulcherrimus* of the Challenger (Pl. XVI. fig. 1), they are disposed in a continuous spiral along a simple stem. Here, however, the hydrocladia really spring from one side only of the stem, and then, by a revolution of the stem round its axis, the lower end remaining fixed, the hydrocladia are thrown into the beautiful spiral characteristic of the genus. In *Antennularia antennina* of the European seas the hydrocladia are disposed in regular verticils round the stem, while in other species of *Antennularia* (Pl. IV. figs. 5, 6), the verticillate arrangement gives place to a scattered one. In *Sciurella indivisa* (Pl. V.) they are in four longitudinal alternating series. In *Hippurella*² they are pinnately disposed on the proximal portion of the branches, but distributed on all sides towards the distal extremities. In *Antennella* no proper stem is developed, and the hydrocladia are borne directly by the hydrorhiza.

The main stem may be quite simple, or it may be more or less branched. In the latter case the ramification is usually irregular, but it is sometimes regularly dichotomous (*Monostachas dichotoma*). In some cases, as in *Lytocarpus spectabilis* (Pl. XV.) and *Aglaophenia macgillivrayi* (Pl. X.), the stem gives off branches, which, though destitute of hydrothecæ, are disposed in perfectly regular pinnæ. These primary pinnæ give support to the true hydrotheca-bearing pinnæ, and the ramification thus becomes doubly

¹ Hydroids of the Gulf Stream, p. 37, pl. xxii. figs. 1-5.

² Hydroids of the Gulf Stream, p. 36, pl. xxi. figs. 7, 8.