

desmas of *Macandrewia*. In both, further, the chamber-system is aphodal, and the choanosomal mesoderm sarcenchymatous.

No dichotriænes, however, are present in *Pachastrella*, as there are in *Pleroma* among the Pleromidæ, in most of the Corallistidæ, and in some Tetracladidæ; and though these spicules do not occur in *Macandrewia*, they are represented by the closely similar phyllotriænes, which have been evolved from them. This difference however is not of sufficient importance to shift the connection from the Pachastrellidæ to the Theneidæ (a connection however which by another line of reasoning I admit to be possible), it merely suggests that the Pachastrellid ancestor of the Tetracladidæ possessed dichotriænes which the genus *Pachastrella* has lost.

So far as can be judged from resemblances between existing Sponges, the Tetracladidæ have descended from the Pachastrellidæ, and are the oldest family of the demus. In some respects however the Pleromidæ and Corallistidæ are least removed from what we should conclude was the ancestral type, and it is possible that these families should be regarded not as derived from the Tetracladidæ, but from an ancestor common to them both. Thus in *Pachastrella* some of the calthrops are replaced by triods and oxeads; and in *Macandrewia* some of the tetracrepid desmas by triacrepid and rhabdocrepid ones; if now the ancestral Lithistid possessed a similar mixture of forms, the Tetracladidæ might be regarded as having originated by the selection of the tetracrepid desmas exclusively (the selection being incomplete in the case of *Macandrewia*), and the Corallistidæ and Pleromidæ by a selection of the rhabdocrepid forms. This view is in accordance with the fact that the flagellated chambers in *Pleroma* are larger, and one would therefore presume more primitive, than in any other Lithistid, and indeed than in *Pachastrella* itself. It would also accord with the fact that dichotriænes are more common in the Corallistidæ and Pleromidæ, and phyllotriænes and discotriænes in the Tetracladidæ. The modification thus introduced into our earlier results will be carried still further when we reflect that a Lithistid ancestor with dichotriænes and large flagellated chambers, involves a Pachastrellid ancestor with dichotriænes and large flagellated chambers, and such a Pachastrellid would approach more nearly the Theneidæ than any existing Pachastrellid of which the soft parts have been examined. This is a further indication of the probability that the Pachastrellidæ have been derived from the Theneidæ. On the whole then it would appear that the Lithistida have descended from an extinct pro-Lithistid ancestor, which in turn had descended from an extinct pro-Pachastrellid ancestor, possessing closer affinities with the Theneidæ than do any of the existing forms of the Pachastrellidæ.

From the Triænosida to the Anomocladidæ we are presented with an almost continuous series of gradually simpler forms, simpler, that is, as regards the characters of the skeleton. Thus in the Rhabdosa triænes have disappeared, and while in one family (Cladopeltida) microscleres are absent, in another they are sigmaspires (*Scleritoderma*).¹

¹ In this case at all events the sigmaspire is to be regarded as a degenerate and not as a primitive spicule; of course, one is left with a last appeal to "reversion."