

echinating spicules is, as we shall proceed to show, quite insufficient to justify such a wide distinction between the two groups as Vosmaer admits.

We divide the Desmacidonidæ into two subfamilies—(1) the Esperellinæ, in which the skeleton fibre is not echinated by projecting spicules, and (2) the Ectyoninæ, in which echinating spicules are present. These two subfamilies are, however, by no means sharply marked off from one another, for we actually have, in the genus *Myxilla* (placed by Vosmaer as well as by ourselves amongst the Desmacidonidæ), both species with and species without the echinating spicules, and these different species are so closely allied that we have found it impossible to separate them generically. This question is again referred to in the systematic portion of the work, under the genus *Myxilla*, to which we refer the reader for further details. Here then lies the justification, and we think it will prove to be a sufficient one, of the present arrangement.

It is probable, nay certain, that the first division of the family, the Esperellinæ, will require subdivision, and in our opinion it will fall into several very natural groups, but we cannot, in the present work, make such an arrangement, as we have not the necessary time at our disposal for a complete revision of the group.

The Ectyoninæ are a very difficult group to deal with; most of them are evidently sponges which are developing a strong horny skeleton at the expense of the spicular element, and the poor degree of development exhibited by the spicules makes their classification unusually difficult. Possibly, as held by Mr. Carter, they have some connection with the Axinellidæ, but we cannot believe that it is nearly so close a one as he seems to indicate in uniting the Ectyoninæ and Axinellidæ in one group by themselves, the "Echinonemata." To our minds their intimate connection with the Esperellinæ far outweighs in importance any relationship which may exist in the Axinellid direction, while the presence of a strongly developed horny skeleton is to be connected here, as in the Chalininæ, with the fact that they flourish almost exclusively in warm areas.

We consider the Axinellidæ as constituting a family by themselves, which we place at the end of the Halichondrina, and hence after the Ectyoninæ and near to the Suberitidæ, with which they seem to have striking affinities. These affinities have already been discussed in speaking of the relations of the Halichondrina to the Clavulina, so we shall not dwell upon them in this place. The family is a very difficult one to deal with, and our knowledge of it is in a most unsatisfactory condition. Its most striking positive character, and that in which it most nearly approaches the Ectyoninæ, is the arrangement of the spicules to form the skeleton-fibre; but though there is a strong superficial resemblance between the two groups in this respect, yet the arrangement is in reality very distinct in the two cases, for in the Axinellidæ *all* the spicules have their apices projecting very obliquely outwards and forwards from the centre of the fibre, while in the Ectyoninæ there is a central core of longitudinally placed spicules cemented together by horny