

The Heterorrhaphidæ constitute, perhaps, the least natural of our four families. In many respects they occupy an intermediate position between the Homorrhaphidæ and the Desmacidonidæ. As their name implies, they are possessed of different kinds of spicules, as opposed to the Homorrhaphidæ, in which we never find more than one kind. Microclera are present in the group, but these are never of the chelate type. The five subfamilies, viz., Phlæodictyinae, Gelliinae, Tedaniinae, Desmacellinae and Hamacanthinae, into which the Heterorrhaphidæ are divided, are not so intimately related *inter se* as are either the two subfamilies of the Homorrhaphidæ or of the Desmacidonidæ.

The Phlæodictyinae form a compact and very remarkable group. Both in external form and in anatomical characters they appear to be strongly contrasted with other subfamilies of the Heterorrhaphidæ. The first known specimen of the group was dredged by the Rev. A. M. Norman off the Shetland Islands in 1861. It was evidently only a fragment, and was named by Bowerbank *Isodictya robusta*.¹ In 1864 Mr. J. G. Jeffreys dredged another specimen, also off the Shetland Islands, which was much mutilated by the dredge, and was named by Bowerbank *Desmacidon jeffreysii*.² Later discoveries showed that these two fragments belonged to one and the same species, of which the Rev. A. M. Norman was the first to describe an entire specimen. He established the genus *Oceanapia* for this interesting form.³

In 1870 Schmidt founded his genus *Rhizochalina*,⁴ the type species being *Rhizochalina oleracea*. Although in the present Report we keep these two genera distinct, yet we have very strong reasons for believing that they ought to be united, and then the genus *Oceanapia* would be the sole representative of the subfamily. Finally, in 1882, Carter established⁵ his "Group" "*Phlæodictyina*," and included therein nine species, all partaking more or less of the characters of the original *Oceanapia robusta*. Unfortunately the material at our disposal is not in very good condition for anatomical investigation, but an examination of thin, stained sections has led us to believe that future researches, under more favourable circumstances, will lead to very interesting results.

Concerning the Gelliinae we have very little to say. The subfamily is characterised by the extreme simplicity of the spiculation, which in the case of the genus *Gellius* is identical with that of the genus *Oceanapia*. This identity might be thought to indicate a close relationship between the two subfamilies. Possibly it does indicate some connection, but we do not think that this can be a very intimate one, for, although the Gelliinae present us with great diversity in external form, yet we know no instances of anything like an approach to the highly characteristic form of the Phlæodictyinae; in other words the sponge is never divisible into body and fistulæ, and this is a very important

¹ Mon. Brit. Spong., vol. ii. p. 304.

³ Brit. Assoc. Report for 1868, p. 334.

⁶ *Ann. and. Mag. Nat. Hist.*, ser. 5, vol. x. p. 117.

² Mon. Brit. Spong., vol. ii. p. 347.

⁴ Spong. Atlant. Gebiet., p. 35.