

Genus *Cladorhiza*, M. Sars (Pls. XX., XXI.).

1872. *Cladorhiza*, M. Sars, Remarkable Forms of Animal Life from the great deeps off the Norwegian Coast, pt. i. p. 65.

Sponge of varying, but usually symmetrical external form. Skeleton usually consisting of a central, erect axis of spiculo-fibre, which may or may not be branched, and from which arise longer or shorter processes also composed of spiculo-fibre. Spicules.—(a) *Megasclera*; chiefly stylote and often attaining a great length. (b) *Microsclera*; anisochelæ, characteristically with three or more claw-like teeth at each end and with a curved shaft expanded laterally into wing-like processes, which are especially developed near the larger end of the spicule. Sigmata may be present.

The genus was first characterised as follows:—"Spongia silicea ramosa, fasciculis densis spiculorum acuformium axem solidam formantibus sustentata, radiculis numerosis arborescentibus ex spiculis ejusdem generis formatis in limo affixa. Parenchyma axem internam corticis instar circumdans spiculis superficialibus anchoratis et bihamatis ornatum. Oscula et pori nulla. Ova in apicibus dilatatis ramorum se evolventia" (Sars, *loc. cit.*). This diagnosis, drawn up for but a single species, may now be emended as above.

Schmidt¹ includes in the genus also those forms which have isochelate microsclera. It has, however, seemed preferable to us to retain the name *Chondrocladia*, originally proposed by Wyville Thomson for his *Chondrocladia virgata*, for the species with isochelæ, and to confine the name *Cladorhiza* to those with anisochelate microsclera. The two genera thus distinguished are undoubtedly very closely allied, as may be seen by the arrangement and form of the spicules.

Although the different species of *Cladorhiza* vary very much in external form, yet the different modifications of the main skeleton, upon which the external form of the sponge depends, are easily derivable from one common primary type, and afford interesting instances of adaptation.

In its simplest condition the main skeleton consists of a straight, slender axis of spiculo-fibre, from which short spicular processes (or pinnæ) proceed in all directions. *Cladorhiza abyssicola*, var. *rectangularis*, nobis (Pl. XX. fig. 10), still retains almost this primitive type of skeleton, which in other species and varieties becomes very variously modified. In *Cladorhiza pennatula*, Schmidt,² the pinnæ are borne only on two opposite sides. In the typical *Cladorhiza abyssicola*, Sars, the main axis becomes branched; this may take place both above and below, giving rise to branches in the one case and to anchoring rootlets in the other. The pinnæ may be confined to a certain part of the stem only, where they attain a great development. A good example of

¹ *Jahresb. Comm. Wiss. Untersuch. d. deutsch. Meere, &c.*

² *Jahresb. Comm. Wiss. Untersuch. d. deutsch. Meere, Jahrg. i., ii. p. 119, pl. i. figs. 14-16.*