

The subdivision of the Demospongiæ may be made primarily into two tribes, the Ttractinellida and the Monaxonida, the latter including as orders the Monaxona, *i.e.*, Monaxonida in which a spicular skeleton is present, with or without spongin in addition; and the Ceratosa, which do not possess spicules, but only a spongin skeleton; since, however, the Ceratosa are evidently and admittedly directly descended<sup>1</sup> from the Monaxona, they are naturally included in the same tribe; though objections may be readily found to giving to this the name Monaxonida, its justification lies in the fact that it indicates the descent of the tribe, and further, that it stands in convenient opposition to the term Ttractinellida, by which the second tribe is designated.

The classification of the Ttractinellida will form the subject of a separate heading.

#### CLASSIFICATION OF THE TTRACTINELLIDA.

The Ttractinellida are Demospongiæ in which some or all of the scleres are tetraxons triænes, or desmas.

The name was first proposed in substantially the same sense as it is employed here by Marshall,<sup>2</sup> who expressly stated that he intended by it to include both Choristid and Lithistid Sponges, though he does not use these names.

It was subsequently adopted by Zittel,<sup>3</sup> but with an altered and restricted meaning, since it was made to apply to the Choristid Sponges only, the Lithistids being excluded, on the erroneous supposition that no very close connection could be shown to exist between the two groups.

The term was next accepted by myself,<sup>4</sup> its original sense being retained; this rendered necessary the subdivision of the group it denotes into two, which were named Choristida and Lithistida. Later<sup>5</sup> a more elaborate classification was proposed, which, though supported in its main outlines by the results of subsequent investigations, is here abandoned in favour of another.

Schmidt<sup>6</sup> also adopted the term, but in the restricted sense proposed by Zittel.

Vosmaer<sup>7</sup> also, but with a change of form to Ttractina; since the Ttractinellida of

<sup>1</sup> Sollas, Cassell's Natural History, Spongiæ, p. 328, 1881. I here give the exact words in which this view was first expressed:—"This family (*Chalinidæ*) indeed links together the Silicispongiæ and the Cerospongiæ, and since its spicules must apparently be formed before the spongin which envelopes them, it would appear rather that the Cerospongiæ were derived from the Silicispongiæ by loss of spicules, than the latter from the former by their acquisition." See also Vosmaer, *Mitth. u. d. Zool. Stat. Neapel*, p. 490, 1884; Schulze, *Abhandl. d. k. preuss. Akad. d. Wiss. Berlin*, p. 33, 1886; Lendenfeld, *Proc. Zool. Soc. Lond.*, p. 571, 1886 [1887].

<sup>2</sup> ". . . . . der vereinten Lithistiden-Corticaten-gruppe, die den Namen der Ttractinelliden führen mag, . . . ." Marshall, *Zeitschr. f. wiss. Zool.*, Bd. xxvii. p. 134, 1876.

<sup>3</sup> Zittel, *Zur Stammgeschichte der Spongien*, Munich, 1879.

<sup>4</sup> Sollas, *Ann. and Mag. Nat. Hist.*, ser. 5, vol. vi. p. 386, 1880.

<sup>5</sup> Sollas, *op. cit.*, vol. ix. p. 164, 1882.

<sup>6</sup> O. Schmidt, *Spong. Meerb. Mexico*, p. 68, 1880.

<sup>7</sup> Bronn's *Klass. u. Ord. d. Thierreichs, Porifera*, p. 315, 1885.