

## INTRODUCTION.

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The Tetractinellida offer for our study one of the most interesting of all the groups of sponges : commencing with such comparatively simple forms as *Placina* and *Tetilla* they culminate in *Geodia* and the Stellettidæ, which are the most highly organised representatives of the Parazoa ; at the same time they are connected in so nicely a graduated series as to form a highly natural group, within which the problem of tracing the evolution of structure from lower to higher stages may be attempted with much hope of success.

The singular and striking characters of the higher forms have rendered them objects of interest from very early times, so that of recent Choristids faithful descriptions will be found in the works of Donati, published so far back as 1758, and of the fossil Lithistids good accounts occur still earlier, Guettard in 1751 describing in great detail the petrified pears or fossil figs of earlier writers, now known as *Siphonia*. These he not unnaturally assigned to the Corals, a mistake that Gray was near repeating when the first described recent Lithistid (*Macandrewia*) came before him for classification.

From these early times to the present naturalists have constantly added to our knowledge of the group, but no one up to the date of the commencement of this Report has published an account of their fundamental structure, if we except the important work of F. E. Schulze on the Placinidæ and several descriptions of Astrophorous Sponges by myself ; while during its progress but one memoir on the anatomy of a single form has made its appearance. Nor, considering the general inaccessibility of most of the species, is this to be wondered at ; and the value of the fine collection brought home by the Challenger lies not so much in the addition of new and remarkable forms to the group, though these are not wanting, as in the presence of well-preserved examples of nearly every important genus ; so that for the first time it has become possible to publish a system of the Tetractinellida founded on a knowledge of their anatomy ; and only by such knowledge extending over a large series of species could a consistent system be founded with any chance of success.

Of the defects in the proposed Classification no one can be more conscious than myself ; most especially do I regret the uncertainty which attends the phylogeny based