

part in the system of Mr. Hyatt.¹ Again, Mr. Carter makes an exclusive use of it as to the special subdivisions of his order of Psammonemata, following the principle of "beginning with horny fibre sparingly cored with foreign bodies, in order to go to that in which the core is more general, and finally to end with that in which the horny element is scarcely visible, and the core of foreign bodies only held together by a minimum of sarcod, like the spicules in the Holorhaphidota."² That, as a matter of fact, *all* the naturalists in question have been wrong in this proceeding is clear to every one who is at all acquainted with the recent progress of spongiology; but as to Mr. Hyatt, I must still add that logically he has had the best grounds for the division of the genus *Dysidea* (*Spongelia*) into two independent families. His dermal-membrane theory of the formation of skeletal fibres is false; the dermal membrane, as we know now, stands in no connection with this formation. Furthermore, it is improbable even theoretically, and indeed more difficult to understand than the phenomenon itself, but having once adopted the idea that in different sponges the secondary fibres are of quite different origin (those of his *Spongelia* owing their formation to his "mesoderm," those of his *Dysidea* to his "ectoderm"), he was certainly right in ascribing to this difference the significance of a family character. For this character would be an *absolute* character, while Carter and Marshall have been sure of the contrary. Of course, the proceeding of Mr. Carter is still comprehensible, since his system was devised before the important investigations of F. E. Schulze were published, but the proceeding of Dr. Marshall is to me quite inconceivable. He makes use of a quantitative distinction in order to characterise a family.³ I am very well aware that the systematic definitions we give to the species, genera, and accordingly to the families, particularly when young groups of animals are concerned, must be according to circumstances more or less conditional. But this is the privilege of natural arrangements. Is that of Dr. Marshall's Dysideidæ a natural one? Surely not. Among his Dysideidæ we find sponges with quite different internal organisation. We find⁴ there *Oligoceras collectrix*, F. E. Schulze, a sponge whose canal system follows the type of that of Spongidæ; we find⁵ there some representatives of the genus *Dysidea*, whose canal system presents, according to Marshall, quite different characters—those of a vesicular type; we find⁶ there also sponges with a canal system arranged according to the so-called dendroid type, which has no more real existence than the vesicular type; finally, we find⁷ there sponges whose canal system could not have been made out, the specimens having been very badly preserved. Dr. Marshall calls F. E. Schulze the most eminent spongiologist of the present time; he calls his spongiological papers brilliant; but the chief merit of F. E. Schulze consists precisely in having made

¹ Revision, &c., part ii. p. 482.

² *Ann. and Mag. Nat. Hist.*, ser 4, vol. xvi. p. 135, 1875.

³ "Die Dysideiden sind Hornschwämme bei denen die auch allen übrigen Hornschwämmen in höherem oder geringerem Masse innewohnende Fähigkeit das eigene Skelett durch aufgenommene Fremdkörper zu verstärken, den höchsten Grad erreicht hat."—*Loc. cit.*, p. 92.

⁴ *Loc. cit.*, p. 92.

⁵ *Loc. cit.*, p. 99.

⁶ *Loc. cit.*, p. 105.

⁷ *Loc. cit.*, p. 98.