

The *central capsule* of the Challengerida is constantly placed in the aboral half of the shell-cavity, whilst its oral half is occupied by the phæodium; the intervals between them and the inner surface of the shell are filled up by the calymma. Frequently from the outer surface of the capsule arise numerous branched streams of sarcode, which pierce the calymma and are directed towards the inside of the shell-wall, where they are united by a thin continuous layer of protoplasm (Pl. 99, fig. 1). The phæodium is usually more voluminous than the capsule and envelops the latter on its anterior or oral face; more rarely the entire capsule is hidden in the phæodium. The phæodella, constituting the latter, are of very different sizes, of variable colour, olive and greenish-brown, red-brown, black-brown or nearly black. In some preparations, stained with carmine, numerous red coloured granula, similar to nuclei, were scattered in the phæodium (compare Murray, *loc. cit.*, Pl. A, figs. 1-14).

The diameter of the central capsule is usually about one-half or one-third as great as that of the enclosing shell (Pl. 99, figs. 1-20). Its form is either spherical or slightly compressed, spheroidal, or sometimes lenticular. The large nucleus has the same form, is about half as broad as the capsule and contains numerous nucleoli. Sometimes the capsule contained two nuclei of equal size, and in a few specimens the shell contained two central capsules, each with a nucleus, so that the Challengerida seem to propagate also by self-division (Pl. 99, fig. 6).

The astropyle, or the large opening of the central capsule, exhibits the usual radiate operculum of the PHÆODARIA, and the tubular proboscis arising from it. This is constantly placed on the oral or anterior pole of the capsule and directed towards the mouth of the shell. I was never able to discover any parapyle or secondary opening in the central capsule, though numerous and well-preserved specimens of the Challenger collection were accurately examined. It seems therefore that the Challengerida are not TRIPYLEA (as the majority of PHÆODARIA), but MONOPYLEA with a single opening (like the closely allied Medusettida and Castanellida).

Synopsis of the Genera of Challengerida.

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| I. Subfamily Lithogromida. | { Shell smooth, without adoral teeth and marginal spines, . 693. <i>Lithogromia</i> . Shell without pharynx or inner prominent tube of the mouth. { Shell with adoral teeth, but without marginal spines, . 694. <i>Challengeria</i> . { Shell with adoral teeth and with marginal spines, . 695. <i>Challengeron</i> . |
| II. Subfamily Pharyngellida. | |
| Shell with a pharynx, or an inner cylindrical tube, arising from the mouth and prominent inside. | |
| | { Shell smooth, without adoral teeth and marginal spines, . 696. <i>Entocannula</i> . { Shell with adoral teeth, but without marginal spines, . 697. <i>Pharyngella</i> . { Shell with adoral teeth and with marginal spines, . 698. <i>Porcupinia</i> . |