

pass to the gill-slits by a very slight alteration of the direction of these currents, since the gill-slits open ventro-laterally from the first division of the alimentary canal. Solid particles conveyed by the current could presumably be readily retained in the alimentary canal, whilst the water itself would naturally pour out by the gill-slits, which would be protected from the afferent current due to the tentacles by means of the operculum. It thus seems possible to conceive of a method in which the gill-slits may be of the greatest importance in connection with the straining of the water from the food-particles. Bateson has been led to assume that gill-slits are structures which have been developed within the Chordata, and it is suggestive that in *Cephalodiscus*, owing to the rich development of the tentacles, we appear to have a cause capable of inducing the evolution of perfora-

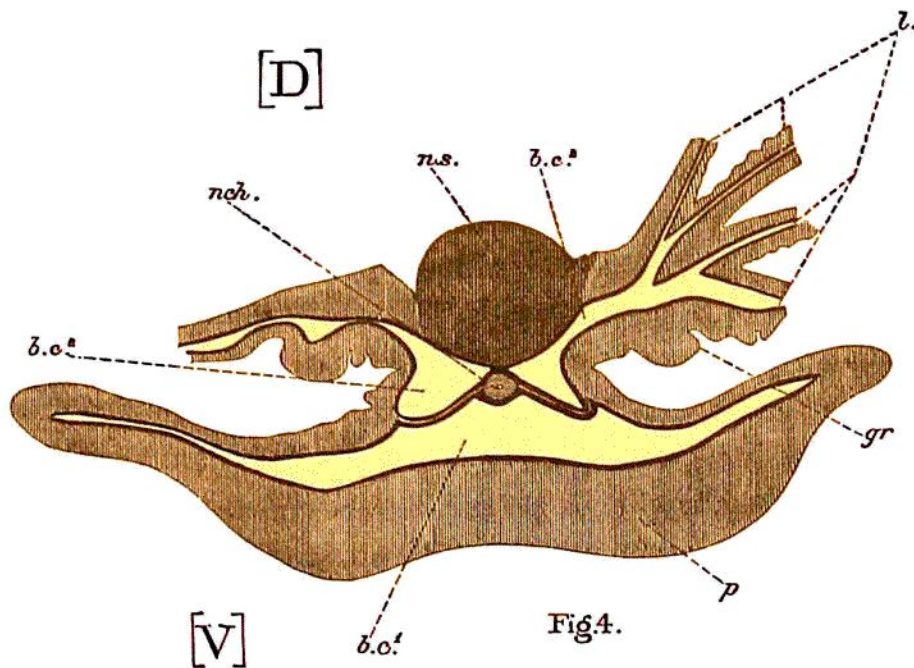


FIG. 4.—Transverse section through the collar and proboscis of an adult *Cephalodiscus*, passing in front of the mouth: *n.s.*, nervous system; *p.*, proboscis; *l.*, two of the lophophoral arms cut horizontally; *gr.*, grooves continuous with the grooves of the anterior lophophoral arms; *b.c.¹*, body-cavity of proboscis; *b.c.²*, body-cavity of collar; *nch.*, notochord; *D.*, dorsal, and *V.*, ventral surface.

tions leading from the alimentary canal to the exterior. It may be perhaps profitable to consider whether gill-slits may not possibly have originated in this manner, and whether the arrangement found in *Balanoglossus* and other types may not have been developed from a *Cephalodiscus*-like condition by the metameric repetition of the slits, accompanied by a change in their function.

The preceding remarks relating to the supposed affinity of *Cephalodiscus* to *Balanoglossus* may with advantage be summed up by a statement of the various features which are common to the two genera.

1. Division of the body into proboscis, collar and trunk, this division being specially obvious, in *Cephalodiscus*, in the young bud.