

arches being derived from the ventral mesoderm and the remaining cranial musculature from the dorsal mesoderm. It is noteworthy that the branchial musculature is supplied by lateral motor nerves and by these alone, while the dorsal musculature is supplied by median motor roots. Consequently the nerves supplied to the myotomic muscles of the trunk are to be regarded as the homologues of the cranial median motor nerves, while the white rami fibers, which control through sympathetic neurons the visceral musculature of the trunk derived from the ventral mesoderm, are the equivalents of the cranial lateral motor components.

The other ideas referred to in the paper may, for lack of space, be stated summarily. (1) The distinction between voluntary and involuntary muscles is a physiological and histological one, and not morphological, and the branchial musculature is morphologically equivalent to the visceral musculature of the trunk. (2) The branchiomerid segmentation is not identical with the myotomic, but in the cranial region there exist together two distinct segmentations. (3) Of these the branchiomerid segmentation is probably the older phylogenetically.

*Geographical Distribution of Fresh Water Fishes of Mexico:* S. E. MEEK. (Read by title only.)

*Feeding Habits of a Spatangoid, Mæratropus; a Brittle-Star Fish, Ophiophragma Wurdmannii, and a Holothurian, Thyone briareus:* CASWELL GRAVE.

The observations here given were made on animals kept in the Beaufort U. S. F. C. Laboratory in aquaria in which a balance had been established between animal and plant life by means of diatoms. The spatangoids were reared from plutei.

The function of the so-called ambulacral brushes of spatangoids, which are so con-

spicuously waved about in the water above the animals when dug up and placed in aquaria, has been thought to be principally a respiratory one, but I have found that the animals use these brushes as hands for grasping bunches of sand and diatoms and carrying them to the mouth, the bristles of the brush being used as fingers.

*Ophiophragma* lives below the surface of the sand, with the oral surface of its disc and arms applied to some large object and with the tips of its arms extending into the water above. The foot-tentacles, distributed in pairs along each arm, are seen to be in constant waving motion, and by close observation it may be seen that they are busily engaged in passing little pellets of sand and diatoms toward and into the mouth. Down the oral surface of each arm is travelling a procession of pellets which have been gathered up by the more terminal tentacles and which are being successively handed on by the more proximal pairs.

*Thyone*, in feeding, fully extends the long branching tentacles which surround its mouth, and mops them about in the sand until they are well covered with sand grains and diatoms; then they are, one by one, turned back and poked down the throat; the mouth closes around the base of the tentacle and, when withdrawn, it is free from all débris.

*A Method of Rearing Marine Larvæ:* CASWELL GRAVE.

A method of rearing echinoderm larvæ which I have used for two seasons with much success consists in supplying the aquaria containing them with a generous amount of sand containing diatoms.

From twelve to twenty-four hours after fertilization, the eggs reach a stage in which they swarm at the surface of the water. At this time it is easy to get a pure culture of larvæ by skimming the