into the dorsal vessel in segment X. and, by way of the parietals, in segments XII. and XIII. This system is to be considered as representing the parietal vessels of the region in front of the last pair of hearts.

A Contribution to the Arterial System in Cryptobranchus: H. H. KEENER.

Presented by J. B. Johnston. (Read by title only.)

The Larva of Naushonia crangonoides: MILLETT T. THOMPSON.

It was my good fortune, while at Woods Holl last summer, to identify and rear the larvæ of *Naushonia crangonoides* (Kingsley), a small Thalassinid Crustacean taken near Wood's Holl in 1893.

Three zoëa and two mysis stages are recognizable, during which stages the metamorphosis is inconsiderable, the 'habitus' being similar in all. The mysis phase, however, closes with a sharp change, the adolescent phase resembling the adult more closely than is usual among the Crustacea. The zoëa and mysis phases of this species are distinguished from all other known Crustacean larvæ—with two exceptions—by their peculiar form. The carapax is elongated behind the eyes into a 'neck'; the rostrum is short and arcuate; the body is without spines, though the anterior abdominal segments bear hook-shaped processes at their posterior angles; the sixth segment of the abdomen is very elongate. The mandibles are remarkably asymmetrical, although symmetrical in the adolescent stages and hence probably in the adult.

Two other larvæ resemble these in form; a larva of unknown parentage from the English coast, in regard to whose mandibles data are lacking; and the well-known larva of *Calliaxis adriatica* (Heller). The mandibles of the latter are like those of the *Naushonia* larva in shape, and similarly the one on the left is hook-shaped and the one on the right conical. Leaving out of the question the too little known English form, we find that the likeness between the larvæ of *Naushonia* and those of *Calliaxis* is not due to convergence, but to a close relationship existing between the species. This is easily demonstrable by comparing the adults of the two species.

Calliaxis and *Naushonia* do not seem to be very closely related to the other species grouped in the Thalassinidea, excepting possibly *Laomedia* (DeHaan). They perhaps represent a group which has approached the Thalassinidea in some respects, but whose descent must be sought along a different line from that of the other genera of this group.

On the Spinal Homologues of the Cranial Nerve Components: J. PLAYFAIR MCMURRICH.

The researches of Strong and C. J. Herrick have demonstrated the existence in the cranial nerves of five distinct components which may be termed the lateral line, somatic sensory, viscero-sensory, median motor and lateral motor components. The first of these are undoubtedly confined to the cranial region, but of the other four it seems probable that homologues exist in the spinal nerves. The somatic sensory components, being supplied to the skin, are naturally to be homologized with the components of the dorsal spinal roots which have a similar distribution, and the equivalents of the viscero-sensory fibers, distributed to the endodermal sense-organs and epithelium, are to be looked for in those sensory fibers from the posterior root ganglia which accompany the efferent fibers of the sympathetic system to the viscera.

As regards the two motor components, the homologues are not so apparent. The observations of van Wijhe have shown that the cranial muscles belong to two categories, the musculature of the branchial