Ripe male and female heteronereids kept in separate dishes in the laboratory released their sperms or eggs at night and then died.

The heteronereids appeared to have a high oxygen requirement. Specimens kept in seawater without aeration soon stopped swimming and sank to the bottom of the dish, but they began swimming again when air was bubbled through the water.

DISCUSSION

Many, but not all, species which swarm have a preponderance of males (Clark, 1961: 213) and the six to one ratio found in *N. aestuariensis* is not unusual. Death after spawning is also normal (Clark, 1961: 200).

However the zig-zag swimming of the heteronereids and the lack of association between the sexes is unusual. Most nereids which swarm at the surface show the same behaviour, with several males swimming in tight circles round each female. This nuptial dance depends on special sense organs developed on the under surface of the dorsal cirri of the males (Clark, 1961: 214). Cirri carrying these sense organs have a distinctive appearance termed " crenulate ". The males of *N. aestuariensis* lack these structures. *Platynereis megalops,* which also lacks the cirral sense organs, undergoes a form of copulation instead of a nuptial dance. This, together with the fact that normal spawning was not seen, suggests that the complete behaviour pattern of *N. aestuariensis* was not observed, but it appears to be different from those described in other species.

LARVAL DEVELOPMENT

The embryology of all Nereid species studied is very similar, but there are differences in the stage at which hatching occurs and in the ecology of the larvae. Attempts were made to rear the larvae of *Nicon aestuariensis* in the laboratory and to find them in the field, so that the complete life cycle could be followed and especially so that the ecology of the larvae in the estuarine habitat could be studied.

REARING EXPERIMENTS

Since the worms could not be induced to spawn naturally the technique recommended by Costello *et al* (1957: 84) for *Nereis limbata* was used to obtain and fertilise gametes. Standard culture techniques were used and all cultures were kept at room temperatures. The development was followed by observation of live larvae and study of a series of stained whole mounts.

GAMETES

The eggs when spawned were nearly spherical with a diameter of 150 microns, a distinct cortical zone and numerous oil droplets. They were sometimes flattened through packing in the heteronereid but quickly rounded up. The eggs were demersal, sinking in still water.

The spermatozoa were of the usual Nereid type (Fauvel, 1959: 133) with a conical head, short intermediate piece and long tail.

FERTILISATION

Once activated by a sperm a layer of jelly with a thickness equal to the diameter of the egg appeared round the egg. This was produced by the cortical zone, which disappeared at the same time, leaving a space inside the now distinct fertilisation membrane. The maturation diversions and polar body formation followed. An