THE EGGS AND EARLY LARVAL STAGES OF THE AUSTRALIAN PILCHARD—*SARDINIA NEOPILCHARDUS* (STEIND.).

By

Professor WILLIAM J. DAKIN, D.Sc., F.Z.S.,

and

ALLEN N. COLEFAX, B.Sc.

(Zoology Department, The University of Sydney.)

(Plate xvi, and Figures 1–4.)

ONE of the most important of the scientific fishery problems to be undertaken in Australian waters is the recognition of the pelagic fish eggs and larvæ (more especially those of commercially important fish) and their seasonal and geographical distribution. It has taken many years to achieve a working knowledge of the fish eggs and larvæ of the North Sea, yet that is a well-defined and almost closed area, which is inhabited by large numbers of a reasonably small list of fish species. In comparison the work to be carried out in the coastal waters of New South Wales alone may prove much more difficult. With a fish hatchery in working order it would be possible to make certain of the characters of the eggs and early larvæ of at least some of our important fish species. Unfortunately, so far as this is concerned, fish hatcheries for marine fish species are not particularly favoured by experts to-day, but marine laboratories would make it worth while to attempt the hatching and rearing on a small scale. Eggs can also be pressed from ripe fish on board a trawler and sperm obtained in the same way. That fertilization can be achieved with the simplest apparatus in this manner in Australian waters has already been proved by the authors.

Another method of determining the species of fish eggs and one of wide application, although necessitating time and patience, is that of collecting both eggs and larvæ by the utilization of coarse meshed plankton nets at sea. These eggs and larvæ are sorted out and the different stages fitted together until examples are obtained possessing characters sufficiently marked to indicate the identity of the mother fish. The present paper is concerned with the discovery of the eggs of the pilchard by this means.

Plankton nets suitable for the capture of fish eggs have been used regularly during the past two years at a spot about four-six miles east of Sydney Heads. Many different kinds of eggs have been captured during this period. Amongst these the type of egg figured (Figures 1–3) was found to be particularly abundant in three successive years during the months of June, July and August. The egg averages 1·4 millimetres in diameter and is marked by a segmented yolk and a wide perivitelline space. The general appearance of the egg at once suggested that it was one belonging to some species of the herring group (family Clupeidæ). But although we were struck at the outset by a resemblance to the egg of the European pilchard, we hesitated to accept it as a pilchard egg in view of the presence of several clupeid species, to which it might have belonged, in our waters.