

CRUISE REPORTF.R.S. "CLUPEA"15th February-5th March, 1965

Operations at Ballantrae were completed according to programme, one day's work being lost owing to a severe blizzard on the 3rd of March.

A spawn patch was located of about  $\frac{1}{4}$  square mile in extent and containing about  $10^{12}$  eggs (corresponding to about 60 million herring of both sexes). Samples of eggs were taken by divers and by grab.

A sample of fish was taken by trammell net, to provide gonad material for Mr. Blaxter and blood samples for Mr. Wilkins.

Three larval surveys (one with hydrography) and three supplementary larval hauls were taken. These showed that there had been some other spawning previous to the deposition of the main patch studied. Temperatures were around  $6.8^{\circ}\text{C}$  which are comparable to the warmest experienced. Cameras were operated on the bank for thirteen days continuously. Pictures were obtained which should clarify the diurnal pattern of herring behaviour. Unfortunately, one camera was apparently fouled by commercial fishing operations and the buoy lost. Diving operations failed to find this camera, and a boat has been hired to make a further search.

Diving operations were somewhat hampered by turbidity near the sea-bed, apparently caused by milt. However, this later cleared up, and useful observations were obtained, along with photographs.

Using the rubber boat, diving operations were possible in winds up to force 5, which is most encouraging.

R. E. CRAIG  
15th March, 1965