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25R68

## CRUISE REPORT

F.R.S. "Scotia"

15th March - 10th April, 1968

- Objectives:
- (1) Current meter work at Fladen.
  - (2) Dispersion and current studies on Ballantrae Bank.
  - (3) Further current meter work at Fladen.

Narrative:

Persistent gale force winds prevented 'Scotia' leaving Aberdeen until the afternoon of March 19th and the ship reached Fladen early the following morning. Because of a very heavy swell the current meters were not moored until 1000 hr. at  $58^{\circ}30.2'N$   $00^{\circ}30.2'E$ . The ship then made passage for the West Coast with Grierson and Craig replacing Priestley and Payne at Kyle on March 22nd and arrived at Ballantrae Bank early the following morning. Gale force winds and a faulty reducing valve diaphragm in 'Scotia's' steering gear prevented work from starting immediately but a current meter was moored, parachute drogues released and a herring larval survey was carried out on the Bank later that day.

Dye was released early on March 24th and was surveyed in strong to gale-force winds until the 27th. Further drogue tracking and larval sampling was carried out and the current meter retrieved before 'Scotia' made for Campbeltown on the evening of March 29th for stores and water, leaving again at 0900 on March 31st. Another current meter was moored at the North end of the Bank immediately on return and parachute drogues and dye were released. Preparations were in hand to survey the dye patch early the following morning but meantime Captain Finlayson had taken ill and an Engineer had been called ashore. There was no alternative but to return to Campbeltown immediately where the Captain was transferred to hospital.

'Scotia' was delayed in Campbeltown until 0600 on the 4th April awaiting the arrival of replacement officers and the moderation of Northerly gales. By then there was just enough time to return to Ballantrae to retrieve the instrumentation left there before 'Scotia' had once again to return to Campbeltown where a current meter mooring was taken on board; Grierson and Craig left the ship whilst Payne came aboard. The ship then headed back to Fladen on the 5th and reached there early on the 8th in severe weather conditions. 'Scotia' dodged in the area of the buoy for 12 hours waiting for weather and swell to moderate but because of continuing bad weather forecasts 'Scotia' finally made for Aberdeen and arrived there at noon on the 9th.

Results:

- (1) The Fladen mooring was launched successfully with current meters at depths of 30m and 110m, the upper meter being equipped with a thermistor. The Valentine buoy was safely in position on returning to it at the end of the cruise but it could not be established if the meters were working properly owing to the unavailability of a suitable hydrophone receiver.

(2) Herring larvae in the whole of the Clyde <sup>area</sup> ~~were~~ extremely sparse and no useful direct comparison could be obtained between larval dispersion and advection and the observations on the parachute drogues and dye. The parachute drogues did, however, provide a picture of the movement of water on and off the Bank and of the various conflicting tidal streams in the area. Initial spreading of the 1st dye patch was extremely fast owing to the existence of a low density superficial layer at the time of release. The dye was surveyed at 7, 30, 54 and 80 hours after release and it maintained its general shape throughout much of this time. Its maximum concentration decreased at a rate approximately proportional to (time)<sup>-2.5</sup> in accordance with the various theories of dispersion. The patch eventually covered a large area in a narrow band parallel to the coast north of Girvan and was evenly distributed with depth immediately after the breakdown of the low density layer, due to the onset of strong winds. At the second release the water on the Bank was homogeneous and initial spreading was much slower. Unfortunately the dye had diluted beyond measurement before a survey could be made of it. Of the two current meters moored on the Bank, one developed a number of faults and no results were obtained but the other appears to have functioned satisfactorily.

H.D. DOOLEY

22nd April, 1968