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CRUISE REPORT

D.R.S. "SCOTIA"

6-27 August 1969

Objectives

The main objectives of the cruise were:

1. To lay and maintain three current meter moorings at 2, 10 and 20 miles off the river Ythan and to recover them at the end of the cruise.
2. To carry out additional current measurements using radio dhans, a direct reading current meter and rhodamine B dye.
3. To continuously monitor the surface chemical distribution.
4. To measure the zooplankton distribution by means of Gulf III oblique hauls and phytoplankton at 3m depth by sedimentation samples.

Narrative

"Scotia" sailed from Aberdeen at 0930 hrs on 7 August and proceeded to lay the three current meter moorings. Later that day Mr Henderson was taken ill and had to be put ashore. After some preliminary difficulties with the electronic apparatus, "Scotia" was able to proceed unhindered until 20 August, apart from a 24-hour call to Aberdeen on 12 August because of radar trouble. During this break Mr Pirie left the ship and Mr Ballance replaced him until 16 August when Mr Adams came on board by Pilot Cutter. After putting into Aberdeen on 20 August her departure was delayed until 1930 on 22 August because an engineer and steward had taken ill. On the following day, 23 August, no work could be done because of a severe northerly gale and "Scotia" sheltered off Collieston. This was the only delay, however, and thereafter "Scotia" continued uninterrupted until she docked in Aberdeen early on 27 August.

ResultsCurrent Measurements

Three of the five current meters laid appear to have functioned satisfactorily. Of the remaining two, one leaked slightly whilst the clock on the other stopped after two or three days. Parachute drogues were used extensively to supplement the current meter measurements and also to mark the position of the dye patch. The movement of the dye and drogues did not agree as closely as might be expected. D.R.C.M. measurements were taken at an inshore position during spring tides and a vertical current gradient of 2 cm/sec/metre was observed.

Continuous Sampling

This part of the programme was disrupted because of the complete failure of the auto-analyser equipment. Fortunately the thermo-salinograph and the chlorophyll a fluorometer functioned well throughout the cruise. Apart from measuring the patchiness of the surface water properties in this area during the summer these instruments were also used to trace a very strong thermo-haline boundary which was aligned exactly parallel to the shoreline, seven miles off and extending to beyond Rattray Head. At the

boundary an instantaneous change of 3°C and .05‰ occurred in the upper 10 m, the colder and saltier water occurring inshore. As a result of stormier conditions after the 19 August the boundary gradually diffused offshore until after the storm on 23 August. Surface temperature showed only a gradual increase offshore. Marked variations in bottom temperature (2-3°C) were observed at this time as the mixed layer extended almost to the bottom.

Chlorophyll a distribution in general showed a decrease away from the shore and normally major changes in chlorophyll were accompanied by sharp changes in T and S. At the sharp boundary however marked changes in chlorophyll did not always occur. In the shallow coastal waters a large increase in chlorophyll always occurred.

Zooplankton

Zooplankton was sampled in order to assess its variability on small space and time scales. In general, samples did appear to be more variable during the calm spell early in the cruise than after the storm, on 23 August.

H DOOLEY
I E BAIRD
10 September 1969