

B. R. V. "SCOTIA"

REPORT ON CRUISE from 16th to 23rd DECEMBER, 1948

The cruise was planned essentially to test scientific gear and equipment in deep water. At the same time, useful/current hydrographical conditions in the Faroe-Shetland Channel were obtained.

"Scotia" left Aberdeen on Thursday 16th December, 1948, at 2.00 p.m. Passage was made to Gule Skerry, whence course was set early on Friday, 17th December for the furthestmost position ( $60^{\circ}15'N$ ,  $6^{\circ}00'W$ ) it was intended to occupy. Weather deteriorated so rapidly, however, that at 12 noon it was decided to occupy the position then reached ( $60^{\circ}02'N$ ,  $5^{\circ}18'W$ ) in about 400 fathoms. Conditions - even now - were too rough for the use of any nets, but both Peterson-Hansen and reversing water-bottles were tested.

Because of the increasingly stormy conditions, the unreliability of the echometer sounding (the machine working only very erratically when at all) and the rapid leeway made by "Scotia" when hove-to, only three, instead of the normal six, reversing water bottles were lowered simultaneously, and the maximum depth to which they were lowered was not allowed to exceed 385 fathoms by the recorder. The actual maximum depth reached was certainly considerably less since the wire carrying the bottles stood out from the davit-head at an angle of more than  $45^{\circ}$  from the vertical. Unprotected reversing thermometers mounted in the lowest of each group of three bottles, will, however, when salinity data are available, enable a fairly close determination to be made of the actual levels at which the bottles operated. Upper water temperatures of  $10\frac{1}{2}^{\circ}C$  were thus indicative of strong oceanic influence.

Both hydrographic winches were operated, although not simultaneously as will be the normal routine in deep water when crew become experienced and conditions permit. The reversing water-bottles were worked from the amidships winch. In the rough sea conditions prevailing considerable difficulty was experienced in working this winch on account of the restricted deck space around the winch. One or two biggish seas were shipped here, fortunately without mishap, but the possibility of damage to personnel and gear under such conditions exists. Some sharp corners of the casing in the immediate vicinity might be modified to contribute towards greater safety. Control of the winch in its starting and stopping was none too good, probably yet on account of the inexperience of the men. A large hook of some sort on the rail for resting the wire while successive reversing water-bottles are being attached is necessary, the alternative being two or three men required to hold in the wire by boat hook. The wire spreader geared to the winch worked well. A light beneath the boat deck amidships is also required for night work.

The forward winch is unfortunately placed in that too little space remains either on the fore or aft sides for personnel to work at the water-bottle with convenience. For night work an additional light so placed to light up over the side, is required.

The greatest difficulty, however, in working conditions arose from the very strong leeway made by the ship. Besides rendering work with water-bottles - the only apparatus which can be worked at all from "Scotia" under such stress of weather as was experienced - extremely difficult, the fact of rapid leeway multiplies the strain on the hydrographic wire to a very high degree, endangering the safety of gear lowered on it. It is difficult, however, to suggest a remedy.

After  $3\frac{1}{2}$  hours on station, conditions became impossible for further work and were worsening. Course was therefore set for shelter in Pierowall Bay, Orkney.

Weather conditions remained severe throughout Saturday. The day was spent

going over the scientific accommodation on board and listing further requirements for full operational performance. A list of these has been submitted.

On Sunday morning, despite a bad weather forecast, "Scotia" put out from Pierowall Bay to the eastward to Muskerrie fishing ground to test the trawl and, if possible, plankton nets. With the exception of the silk plankton net, conditions for which were too rough, a full station was carried through on this ground, the townets being operated in a following sea with the speed of the ship adjusted accordingly. The manoeuvre was successful.

A one-hour trawl haul yielded a small representative catch of large haddock, mackerel, garnards, skate, dabs and a number of invertebrates. The townet catches here were very poor.

Weather did not improve throughout the day and "Scotia" returned to anchorage in Pierowall Bay at 7 p.m. In route, the echometer entirely failed to register while "Scotia", in pitch blackness, was passing among some of the lesser Orkney Islands. Engines had to be stopped until the echometer functioned again.

The following day, with an improved weather forecast, the line of five stations north-west of Orkney was once more begun. A full station was worked at the first station, including all plankton nets, but without trawl, the ground being too rough.

At the second station, the echometer, while showing an extremely irregular bottom, appeared to be functioning spasmodically. The water-bottle was lowered to 150 m. after two soundings by lead appeared to give concordant results at 170 metres. When the bottle was hauled in it was seen that it had suffered slight damage (sufficient to make it unworkable until repaired) through being on the bottom. Reversing bottles were then resorted to for all depths, temperatures of just above 10°C being registered down to nearly 100 metres. Despite continuing heavy swell, townets were successfully streamed, yielding in one case a large haul of Meganyctiphanes.

At the third station out, in 70 fathoms, a full station, excluding trawl, as the ground was entirely unsuitable, was carried through. Temperatures were again over 10°C to bottom.

A fourth station, with townets, was worked at 60°00'N. 4°49'W. By the time this was finished, after midnight on the 21st December, it was estimated that there was just sufficient time to make passage to Stromness in order to telephone to the Laboratory in Aberdeen to make prior arrangements for the repair, in course of the following day while "Scotia" was in Aberdeen, of the damaged water-bottle, as this, being the only instrument of the kind now available, was necessary for demonstration purposes during the Under Secretary of State's visit.

Stromness was reached at 9 a.m. on 21st December and communication established with the Laboratory. "Scotia" left Stromness again at 11 a.m. on course for Kinnaird Deep where a deep trawl haul in 120 fathoms was made. The results were comparatively good, considering the general paucity of fish in the area which has been reported for this period. Haddock, cod, ling, lythe, plaice, rays and angler were represented in the catch.

Sea temperatures here were substantially under 9°C, but nevertheless fully 1°C higher than is normal for the season.

"Scotia" put into Aberdeen at 8 a.m. on Wednesday 22nd December. The damaged water-bottle was repaired in course of the day as arranged.



Mr. J. J. Robertson, Joint Under-Secretary of State for Scotland, accompanied by Mr. Gray, came on board "Scotia" at about 5 p.m. "Scotia" left Aberdeen again for Leith at 6 p.m. On passage, a full station, including trawl, was carried out at Dog Hole, 11 miles east by south of Girdleness. Unfortunately the trawl produced nothing, although there was clear evidence that it had been on the bottom and fishing.

"Scotia" docked at Leith at 7 a.m. on December 23. Representatives of the press were shown over the vessel and given information on the nature of its work throughout the forenoon.

JRS