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## CRUISE REPORT

F.R.S. "SCOTIA"

4th - 22nd July, 1959.

Narrative

Commencement of the cruise was delayed by the non-appearance at Aberdeen of a relief engineer officer. "Scotia" left Aberdeen at 0000 hours on 4th July. By this time, on account of the delay, it had been agreed to forego the first objective of the cruise, namely, productivity work on Fladen, this to be undertaken by "Explorer" if possible in the following week.

Work was begun on the latitude 61°01'N line of stations at 0600 hours on 5th July and completed in its entirety at 1000 hours on 10th July.

"Scotia" put into Bergen at 1700 hours that same day and left again under doubtful weather conditions on 13th July, but was unable on account of rough seas to leave the fjord until 0600 hours on 15th July. The latitude 60°01'N line of stations was, until the final station, completed under ideal weather. Little progress was made against rough seas throughout Thursday 16th July and "Scotia" put into Lerwick for shelter at 1800 hours. Leaving again at 0500 hours on 17th July the latitude 59°00'N line of stations was begun. At 0800 hours, Saturday 18th July, approaching longitude 02°00'E, south-easterly seas increased rapidly under winds approaching gale force. "Scotia" continued to dodge eastward for some hours. Injury to his hand sustained by one of the sailors while operating the trawl the previous night now demanded hospital treatment and accordingly "Scotia" put back to Kirkwall at 0400 hours on 19th July. Two men were left in the Balfour Hospital for treatment, the second man suffering from corneal ulcer.

"Scotia" was further delayed by adverse weather until 0830 hours on 20th July. The latitude 58°00'N line of stations was completed at 1800 hours on 21st July and a course set for Aberdeen where "Scotia" berthed at 1410 hours on 22nd July.

Hydrography

Serial temperatures on the 61°01'N latitude showed a rise in surface temperature from 11.76°C in the west, north of Shetland to 13.66°C off the Norwegian coast. Bottom temperatures were from over 9½°C to just above 8°C on the shelf at 120 to 145 metres depth. In the deeper Norwegian trench bottom temperatures of about 6½°C in 360 metres were registered. Thermal layering in the upper waters was also evident in this region. Conditions were similar on the 60°01'N latitude, but sixty miles farther south significantly colder bottom waters of little more than 6½°C were encountered in the middle of the region. This feature was less marked on the 58°00'N latitude.

Surface and bottom oxygen and phosphate samples were taken almost throughout the entire cruise, and surface drift-bottles liberated as planned.

Except that after a number of successful trials, the modified Ekman current meter in tripod suspension at one metre off bottom gave out and could not thereafter be made workable due to excessive leakage in the bore-hole electric cable, the complete plan of bottom current measurements was successfully carried out with the Carruthers' "Pisa" indicator, yielding what appear to be most interesting results.

## Plankton

Standard net hauls and oblique 1 metre silk net hauls were made throughout the cruise as per the cruise programme.

Green phytoplankton was very scarce, and was only seen on the 61°01' line to the east of 0° where Rhizosolenia alata was fairly common. Elsewhere dinoflagellates predominated the most abundant being Ceratium tripos and C. macroceros, and these occurred in great numbers to the east of the Fair Isle passage as far as 2°E. Calanus was richest in the areas where dinoflagellates abounded and small copepods, chiefly Pseudocalanus were also abundant, chiefly east of the Moray Firth. Oceanic species, notably the medusa Cosmetira, were present locally to the north east of Shetland and widespread east of Orkney and the Moray Firth. Lamellibranch larvae were particularly abundant in F15C and F19C. Limacina, particularly the young stages, was abundant on the eastern side of the northern North Sea and also north east of the Fraserburgh area.

Multi-depth indicator hauls using S.M.B.A. warp paid out through forward gallows and snatch block aft were made on a number of runs between stations. A test series of tows to gauge the depth of the wire in relation to the ship's speed showed that normal cruising speed fits the existing calibration curve. Another series of hauls to test hauling and paying out at cruising speed showed the chain stop on the snatch block to be too long. This was satisfactorily adjusted on a third series of tows. The only difficulty experienced throughout the test was occasioned by the irregular hauling of the winch, making it difficult for the gear to be halted at the necessary short distance from the after block for engagement and detachment of the indicators. Co-ordination, however, was achieved on the final series of tows, resulting in smooth operation. Single depth sampling also was carried out.

## Trawling

Seven trawl hauls were made for roundfish tagging purposes. The catches were very small, averaging less than one basket of fish per haul, and the fish themselves were generally in poor condition. A total of 94 fish were liberated at various positions, this number being made up of 57 haddock, 27 whiting and 10 cod. The lengthened lowering net for returning the fish to the sea-bottom was used and proved satisfactory.

The biggest haul, of two baskets of fish, yielded enough un-taggable whiting for a population vertebral count sample, which was worked up on board.

## Echosounding

Numerous herring traces were observed in the area surveyed but these were confined mainly to the west of 00°00 and on the grounds normally fished for herring. In view of the sudden decrease in catch within the last few days, it is of note that, during this short period, in the southern part of the area herring traces were recorded in fair quantity to the east of 01°00'E.

## Circulation

Mr. R.G.R. Wall	Mr. G. Rollefson
Dr. H.W. Graham	Mr. T.C. Jones, W.F.A.
Dr. H.A. Cole	Mr. G.S. Gault, W.F.A.
Dr. J.N. Carruthers	Captain E.A. Bruce
Mr. J.R. Gordon	Captain A.M. Finlayson
Captain D.T. MacCallum	Mr. J.C. Taylor
Mr. R.S. Glover	Mr. J. Jappy
Dr. E. Leloup	Dr. Lucas
Dr. J. Ancellin	Dr. Tait
Dr. J. Furnestin	Dr. Fraser
Dr. P. Korringa	Dr. Rae
Dr. H. Höglund	Mr. Parrish
Dr. E. Bertelsen	Mr. Gordon (2)
Prof. A. Buckmann	Library (2)

J.B. TAIT  
24th July, 1959

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Spare (4)  
Mr. Steele  
Mr. McIntyre  
Mr. Black  
Mr. Gamble  
Mr. Lawrie,  
Mr. Spowart, S.M.B.A.