MR BARE

MINISTRY OF AGRICULTURE FISHERIES AND FOOD
FISHERIES LABORATORY LOWESTOFT SUFFOLK ENGLAND

1973 RESEARCH VESSEL PROGRAMME

REPORT: RV CIROLANA: CRUISE 8/1973
(Provisional: Not to be quoted without prior reference to the author)

PART (a)

STAFF

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DURATION

Left Grimsby 1745 h G M T 27 September
Arrived Greenock 0730 h 6 October

LOCALITY

North East Atlantic

AIMS

1. To test techniques for sampling trace metals in oceanic water.
2. To give the Technicon Auto Analyser a sea-going trial..
3. To supplement hydrographic observations made during the ICES Overflow 73 Survey in the region of the Wyville - Thomson Ridge.

NARRATIVE

After leaving Grimsby the vessel proceeded northwards towards the survey area. Force 8-9 winds necessitated dodging between 2030 h 28 September to 0400 h 29 September, 1730 h to 1830 h and 2200 h 29 September to 0630 h 30 September. The first station was commenced at 0900 h 30 September in the Faroe Bank Channel north of the Wyville-Thomson Ridge. Work then continued uninterupted with progressively improving weather conditions until 1415 h on the 5 October at a position 56° 29'N 08° 08'W when CIROLANA set course for Greenock. Most of the trace metal sampling stations occupied were worked on the grid relating to Part (b) of this cruise. In connection with the Overflow 73 Survey, an investigation was made of the bottom water in the trough between the Wyville-Thomson Ridge and the Ymir Ridge from 2230 h 30 September to 2130 h the following day. In addition, an echo sounding survey was made in the Ymir Deep between 1800 h 2 October and 0230 h the next day.

A deep water temperature and salinity reference station was worked at 60°N 10°W during 4 October.

RESULTS

1. Water samples for metal analysis were collected by a variety of devices both at the surface and in deep water. Surface samples were collected by plastic bucket, 30 litre Niskin bottles and an all plastic pump system. Subsurface samples were taken by Niskin bottles and 6 litre NIO bottles. Samples were filtered and deep frozen for analysis at the Laboratory. Some unfiltered samples were also collected. It is hoped that the exercise will give an indication of the reliability of the different sampling techniques and will provide an intercalibration of analytical methods between FRL and Hydrographic Section.

2. The Auto analyser was tested using the phosphate, silicate and nitrite channels. The results were encouraging and towards the end of the cruise all three channels were giving acceptable results. Preliminary difficulties appeared to be related to air bubbles entering the flow cell of the colorimeters due to the ship's motions.

3. Work was carried out in the vicinity of the Wyville-Thomson Ridge to supplement observations made by RRS CHALLENGER during the ICES Overflow '73 survey of August-September and others made by CIROLANA during Cruise 6b. A survey of the bottom water in the trough between the Wyville-Thomson Ridge and its western spur, the Ymir Ridge, indicated that water of negative temperature observed at the crest of the former was not directly reaching the floor of the trough at this time. Winds were moderate, south-westerly to west, and strong eastward sets due to surface currents were observed at several stations. The temperature pattern was generally similar to that observed by CHALLENGER on 11-13 September, but values were about 1 deg C higher. Water of about 4°C may have been overflowing at the junction of the Wyville-Thomson Ridge with Faroe Bank.

For the echo-survey of the isolated Ymir Deep, satelite navigation fixes were used and a maximum depth of the order of 1730 m was recorded, some 50 m deeper than previous soundings from the area. Poor sound reflection and paraboloid, bottom features in some parts of the deep suggested sedimentary formations. A series station worked in the vicinity of the deepest sounding showed water of temperatures somewhat less than 6°C below the sill depth, contrasting with those of 4.5-4.7°C found on four occasions during the previous month by RRS CHALLENGER. Analysis of the echo-survey may show whether the Ymir Deep has more than one basin, a possible explanation of the temperature difference.

P G W Jones
30 October 1973

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Basic List

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