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## CRUISE REPORT

F.R.S. "SCOTIA". - 1st - 21st Decr. 1951.

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### Aims.

The purpose of the cruise was to carry out a hydrographic, planktonic and trawling survey of the northern North Sea with special reference to the distribution of herring larvae. In addition, the Smith Bank programme, previously only worked on "EXPLORER", was to be carried out.

### Narrative.

South westerly to westerly gale conditions were experienced throughout almost the entire period of the cruise, firstly delaying the start of the trip by two days and later causing the ship to seek anchorages in the Orkneys and Shetlands for several days during the cruise.

Most of the bottom sampling programme on Smith Bank was carried out.

After leaving Smith Bank, severe gales were encountered and the ship sheltered in Inganess Bay in Orkney. Mr. McIntyre left the ship at Kirkwall and the ship proceeded to Shetland. Weather conditions continued to be severe and again it was necessary to shelter, this time in Mid Yell.

The 61°01'N line of stations were completed except for the three most westerly ones and the ship docked in Bergen on December 12th, 1951.

During the visit to Bergen, drift bottles were delivered to the Geo-physical Institute, rewards were despatched for drift bottle returns from Norway and visits made to the Geo-physical Institute and to the Directorate of Fisheries Institute. Several of the staffs of these Institutes visited the "SCOTIA". Visits were also paid to the weather-forecasting section of the Geo-physical Institute, to the weather ship "POLAR FRONT", to the Fisheries Museum and to an aquarium operated by the Directorate of Fisheries.

The "SCOTIA" sailed from Bergen on December 16th and completed the plankton and hydrographic work on the 60° 01'N line. Soon after completing this line, the wind increased to gale force and the ship sheltered in Pierowall Bay. It was possible to work some stations in the Moray Firth and the ship docked in Aberdeen on December 21st.

### Bottom Sampling.

Ten stations were worked with the Van Veen Sampler, Agassez trawls carried out at four stations and seven Otter trawl hauls made on Smith Bank. Large catches were taken in the Agassez and Otter trawl hauls. Although some good samples were obtained by the Van Veen, the winch which operates the sampler on "SCOTIA" is less satisfactory for this purpose than that on "EXPLORER".

### Hydrography.

A series of eleven stations, at intervals of approximately 15 miles along the 61°01'N line, from 00°30'W to 04°24½'E was worked and a section showing the temperature distribution was prepared.

From 00°30'W to 02°30'E the temperature gradient existed only in the horizontal direction W→E, the range of temperatures from surface to bottom being less than 0.2°C at each station. The temperature decreased from about 9.8°C at 00°30'W to about 8.9°C at 02°30'E. From 02°30'E to 04°24½'E the gradient existed mainly in the vertical direction, there being a body of warm water of temperature

Less  
greater

~~less~~ <sup>greater</sup> than 9°C. (with a small area of more than 9.5°C.) between a surface cold layer of less than 8°C of depth about 50 m. and a bottom layer of less than 8°C extending 100 m. upwards from the bottom.

The 60°01'N line gave a similar picture.

Plankton.

Plankton hauls were carried out as shown in the programme on the 61°01'N and 60°01'N lines and at a few stations to the east of the Orkneys and in the Moray Firth. The 2 m, silk vertical net was badly torn the second time it was used and in later hauls the 1 m. silk oblique net was used instead. During a preliminary scrutiny of the 1 m. silk haul samples a few larval Clupeoids were found to have been taken at G19a, B16d, B17d and A14d. Larval fish of any other species were scarce.

Calanus, Anomalocera and Sagitta were taken at many stations. Meganyctiphones were taken at E21c and d, G19d and J19c.

Trawling.

As described above, seven Otter trawl hauls were carried out on Smith Bank and the stomachs of all fish, taken in these, were preserved for further examination. Only three hauls were carried out during the remainder of the trip and nothing unusual was noted in these hauls.

Echo-sounding.

The echo-sounder in the laboratory was run during most of the trip and the traces dried and preserved for further examination. After leaving Kirkwall, a pin was found to have been sheared in the echo-sounder but this was repaired while the ship was lying in Mid Yell.

ROBERT W. ELLIS.

4th January, 1952.

CIRCULATION:

- |                      |                   |                    |
|----------------------|-------------------|--------------------|
| Mr. W. Russell       | M. P. Desbrosses  | Dr. J.B. Tait      |
| Capt. C.H. Champness | Dr. B. Havinga    | Dr. J.H. Fraser    |
| Mr. M. Graham        | Dr. A.R. Molander | Dr. A. Ritchie     |
| Dr. C. E. Lucas      | Dr. H. Thomsen    | Dr. B.B. Rae       |
| Dr. J.N. Carruthers  | Prof. Gilis       | Mr. B.B. Parrish   |
| Secy., I.C.E.S.      | Mr. K.M. Rae      | Capt. E.A. Bruce   |
| Dr. F. Devold        | Dr. G. Reay       | Capt. G.B. McLaren |
| Mr. R.S. Wimpenny    | Dr. H. Wood       | Mr. R.W. Ellis     |
|                      |                   | Mr. D.S. Tulloch   |
|                      |                   | Mr. Devlin         |
|                      |                   | Mr. N.T. Nicoll    |
|                      |                   | Mr. D. MacInnes.   |
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