CRUISE REPORT

F. R. S. "SCOTIA" March 3rd - 20th, 1953.

The cruise started from Aberdeen at 1.30 p.m. on Tuesday, 3rd March, 1953, after a day's delay occasioned by shortage of deck crew. Mr. Finlayson was acting master in place of Captain Bruce who was on sick leave.

The first objective, a "Productivity" survey of four important North Sea areas was achieved with little difficulty during a spell of favourable weather. Useful experience of the necessary sampling and filtering techniques was gained. On completion of this part of the programme, Mr. J. H. Steele was landed at Invergordon, where also a member of the crew absent on special leave was picked up.

"Scotia" set off for the Faroes on Friday 6th March at 3 p.m. but was forced by weather to take shelter overnight in the Dornoch Firth. Next morning, in good weather, the passage to Faroe was resumed but not long after clearing the Orkney Islands the weather broke and the remainder of the crossing was made through a gale. It was too dangerous to seek anchorage at night in the strong northerly gale at the Faroes on Sunday 8th March, but shelter was gained at Fuglofjord at 7.30 a.m. on Monday 9th. A display of the Aurora borealis was witnessed during the early hours of Monday morning. During the entire stay at Faroe winds were rarely less than strong or gale and only 9 stations were completed before leaving on the 12th March, two days early, for the Fair Isle survey. This policy was considered more practicable as weather forecasts for the Fair Isle region were reasonable and in any case an extra day or two would perhaps be useful in the event of more unworkable weather being encountered and might enable this part of the programme to be completed. It turned out that the weather was never really bad thereafter and the Fair Isle-Sulisker survey was completed in its entirety. A short break was made at anchor at Pierowall avoiding a gale and a quick visit to Stornoway for mail and water.

A few hours were spent at anchor in Thurso Bay to investigate a defect in the main circulating pump to the ship's condensers.

"Scotia" returned to Aberdeen at 4.30 p.m. on Friday, 20th March, having successfully completed two of the three objects of the cruise.

Results 1. Productivity Survey.

The spring outburst had not yet commenced; in none of the areas was there found established a thermocline of appreciable magnitude and very little phytoplankton was taken by net hauls. Filtered water bottle samples from the offshore areas gave negligible residues which contained little chlorophyll. In the Cromarty zone much dark brown silt was isolated which yielded a yellowish brown extract with acetone. Hensen net hauls in the North Sea areas averaged approximately 2 cc. settled wet volume comprising chiefly *Calanus finmarchicus*, *Thysanoessa inermis* and *Sagitta elegans*. In the Cromarty zone zoo-plankton was almost absent, hauls being largely debris. North Sea temperatures were close to 6.6°C over all areas and depths. In the Cromarty zone temperatures were rather variable with depth, ranging from ca. 6.1° at the seaward end to 6.3° near Invergordon.

Other hydrographic observations have not yet been worked up.

Results 2. Faroe Survey

The nine stations worked chiefly on the south and east side of the islands gave the following results. Temperatures were fairly uniform with depth and ranged from ca. 6.2° to 7.2° at the surface. Duplicate Hensen hauls were taken

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at all the stations and showed extremely poor plankton with no evidence of fish eggs or larvae.

Two trawls were carried out; one was blank (only one angler caught) and the other contained a few haddock, none mature, and a specimen of male lumpsucker (34 cm.).

A report from some trawl fishermen sheltering beside us in Fuglofjord alleged that the haddock milt and roes were exceptionally small this year and that the livers were 'like bits of string'.

Results 3. Sulisker - Fair Isle Survey.

Notable features include an apparent transition approximately along the 8.0° isotherm and also roughly along the 75 m. contour between "oceanic" and "Minch" waters with an extension of "oceanic" water into the Minch at depths below approximately 60 m. There is a slight extension of water of temperature just less than 7.5° in the direction of the Fair Isle - North Ronaldsay passage which could be taken to represent a flow of somewhat mixed Minch and coastal waters into the North Sea. Free phosphate distribution is similar with values ca. 0.68 µg-at phosphate-phosphorus per litre associated with "Minch" and "coastal" waters and ca 0.80 with "oceanic" water.

The plankton in the area was generally much richer than either at Faroe or in the North Sea as represented by other sampling during this cruise. Young fish and eggs were widely distributed over the entire area; larval fish being present in all collections. The 1 m. Hensen mesh net was used for the oblique haul from bottom to surface and because of the loss of a complete net and ring at Station 7, was substituted for the deepest of the three tow nets. Galetta australis was taken in fair numbers at almost every station and Chelophyes appendiculata at YY18c, YY18b, YY18d and ZZ17d. Physophora was also common to many hauls. The collection at YY16d contained Hippopodius. Plankton species Sagitta and Euphausids were not particularly abundant at any station. The richest crustaceous collection being that in sub area A17a.

R. JOHNSTON

27th March, 1953.

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