CRUISE REPORT.

F.R.V. "SCOTIA".

FAROE-SHETLAND CHANNEL.

10th-29th November, 1949.

OBJECTS:

(1) Hydrographical-plankton survey of the Faroe-Shetland Channel along standard sections of hydrographic stations (a) Butt of Lewis to Faroe Bank and (b) Faroe to Shetland.

(2) Trawling sampling off Butt of Lewis, Faroe Bank, Faroe, Shetland and Fair Isle fishing grounds.

HYDROGRAPHY:

Remarkably high sea temperatures were recorded throughout the cruise. In the path of the North Atlantic Drift Current, these were from 11½°C to 12°C in the upper layers over the Wyville Thomson Ridge, 10°C to 11°C north-west of Shetland and over 10°C in the northern North Sea where even bottom temperatures in 60 to 80 fathoms exceeded 9½°C.

Phosphate and oxygen concentration showed irregular variations within narrow limits, although the tendencies were for phosphate values to be higher in the deeper waters and oxygen values to be greatest in the upper waters.

PLANKTON:

Good catches were the general rule, by Hensen net and townets particularly. Pleurobrachia, Beroe, Sagitta and copepods were very prevalent and young fish appeared occasionally.

TRAWLING:

Catches were generally poor, but on the whole appeared to be representative, including fair numbers of haddock, cod, megrim, lemon sole and the smaller gadoid species. Dogfish were widespread over the area. Occasional specimens of John Dory, hake, turbot and halibut were caught.

JOHN B. TAIT.

9th December, 1949.

CIRCULATION:

Mr. London	Dr. Blegvad	Dr. Lucas	Dr. Tait
Capt. Champness	Dr. Devold	Dr. Wood	Dr. R. Johnston
Mr. Graham	Mr. Wimpenny	Dr. Fraser	Mr. R.B. Burns
Dr. Tåning	Dr. Jespersen	Mr. Rae (Leith)	Mr. J.A. Sinclair.
Dr. Carruthers	Mr. E. Ford	Capt. Bruce	

CRUISE REPORT.

F.R.V. "SCOTIA".

November, 1949.

NARRATIVE:

"SCOTIA" left Aberdeen at 4.00 p.m. on Thursday, 10th November, 1949, and made a fair passage to the Butt of Lewis fishing ground where the trawl was shot in two positions during the following afternoon and evening. Thereafter the hydrographic-plankton line of stations from the Butt of Lewis north westwards was overtaken without a hitch until just beyond the Faroe Bank on which a further trawl haul was made.

Stormy weather stopped work in the early hours of Sunday morning, 13th November and when it became clear from successive weather forecasts that conditions were not going to moderate, course was set for Faroe some 60 miles to the north-east.

"SCOTIA" remained at anchor at Vestmannhavn from Monday morning, 14th November until Midday Saturday, 19th November, in continuous gales. A number of trawlers also sheltered for the like period in the harbour. Conditions improving somewhat on the Saturday, "SCOTIA" put out to the west and north of Faroe where three trawling positions were occupied with accompanying hydrographic and plankton operations except at the last station due north of Faroe which had to be abandoned on account of sudden severe worsening of the weather.

"SCOTIA" was again stormbound, this time in Klaksvik from Sunday morning, 20th November until Tuesday evening, 22nd November. Conditions being none too good at that time it was decided that the line of six stations due north of Faroe to latitude 63°30'N had to be abandoned and course set along the line of stations from Faroe to Shetland. These and the north most line of four stations in the Northern North Sea were successfully accomplished before "SCOTIA" put into Lerwick for stores on Friday, 25th November.

Departure from Lerwick was at 8.30 a.m. on Sunday, 27th November. By reason of heavy weather a number of trawl hauls had to be foregone and only hydrography carried through. Trawling and plankton sampling, however, were resumed between Fair Isle and Aberdeen where "SCOTIA" docked at 9.30 a.m. on Tuesday, 29th November.

HYDROGRAPHY:

The prime feature of the cruise as a whole was the remarkably high temperatures recorded for the season in all depths except in the lowermost levels (below about 400 metres) in the Faroe-Shetland Channel north of the Wyville Thomson Ridge. In similar depths south of the Ridge, however, high temperatures also prevailed. From the Butt of Lewis north-westward, for at least 50 miles, readings of $11\frac{1}{2}^{\circ}$ to 12°C were made at all levels to over 100 metres' depth. The decline in temperature towards Faroe Bank was slow,/approximately $9\frac{1}{2}^{\circ}$C in the upper waters and just under 8°C at 1000 metres' depth on the south side of the Wyville Thomson Ridge. At corresponding levels on the north side of the Ridge, the usual bottom Norwegian Sea Water temperatures of zero and below were recorded.

/to

North-west and north of Faroe sea temperatures were appreciable lower than those recorded in the Wyville Thomson Ridge and Faroe Bank region, being appreciably under 9°C. Likewise from Faroe towards Shetland the average temperature of the upper water layers was around $8\frac{3}{4}^{\circ}$C for half the distance/

distance until values of over 10°C almost to 11°C indicated re-entry into the North Atlantic Drift Current. These higher values were met with again in the northern North Sea east of Shetland where even bottom water temperatures in 60 to 80 fathoms registered from 9½°C to over 10½°C. Further south in the north-western area there was a noticeable decline in temperatures to about 9¾°C in the upper water layers and to just under 8°C in the bottom waters eastward of the prime meridian.

There seems little doubt without awaiting the salinity values to confirm the deduction that the season is marked by extraordinarily strong oceanic influence in the Faroe-Shetland Channel and the northern North Sea.

The concentration of free phosphate was determined at surface and sub-surface levels at 19 stations. Surface phosphate varied little in the Faroe-Shetland region as a whole. A slight increase was, however, observed from the Butt of Lewis north-westward to Faroe Bank, and values between Faroe and Shetland were somewhat in excess of those found in the more southerly section. Phosphate distribution with depth was irregular but with distinctly higher concentrations in depths below 200 metres.

In the northern North Sea phosphate figures were similar to those recorded on the Faroe-Shetland section.

Oxygen concentrations were also determined in conjunction with free phosphate. The former were very irregular in distribution and varied only slightly from place to place. The general tendencies were for higher values to occur in the surface layers than below, and again in the north-western part of the region surveyed. The value of the data collected may be more apparent in comparison with determinations made on earlier cruises of the year when these comparisons can be carried out.

PLANKTON:

The Faroe-Shetland catches were good on the whole, especially townet hauls and a number of Hensen samples. On the eastern halves of the two Faroe-Shetland Channel sections especially copious catches of jelly plankton mixed with copepods and sagitta were made. The hauls in the Faroe neighbourhood were distinctly poorer than those in more open sea waters. The northern North Sea samples showed fair abundance of organisms. Young fish occurred occasionally. The deep townet hauls made in mid-Channel between Shetland and Faroe yielded good catches.

TRAWLING:

Trawl catches were poor throughout, due to some extent to rough weather and the consequent difficulties in manoeuvering "SCOTIA" under these conditions. Suspicion, however, early came to rest on the trawl itself, as to whether it was in fact fishing properly. Close examination of the trawl - a new one - revealed a serious fault in construction which had the effect of narrowing the net very near to its entrance, and thus probably aiding escapes. Amendment of the fault seemed to result in improved catches, although these were in every case so small that it is difficult to assess the actual improvement gained.

The Butt of Lewis grounds yielded a single specimen of John Dory among several haddock of 30 to 45 cms, and considerable numbers of dogfish. Megrim also appeared in one of these hauls, and two small mackerel.

A large haddock of 70 cms was one of two specimens caught on Faroe Bank where Gurnard formed the bulk of the catch.

West of Faroe 15 specimens of haddock from 27 to 59 cms were caught/

caught on the Myggenaes ground, with two specimens of halibut, one lemon sole and a few very young cod.

Fair numbers of haddock and cod were taken off Kadlur in north-west Faroe, and due north of Faroe.

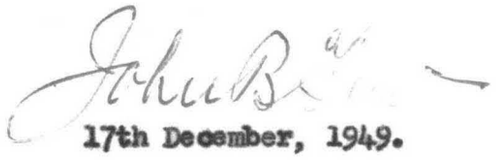
Mr. Craig put a new 20 foot trawl of his own construction into operation east of Faroe where one of the best catches of the cruise was taken, including 20 cod, over 40 haddock and 9 lemon soles in the large mesh, while the small mesh yielded over 100 haddock, some cod, whiting and long rough dabs.

In the region north-west of Flugga, Shetland, saithe, angler and the smaller gadoids were most numerous in varied catches including also megrim, hake and gurnards.

The east Shetland trawls were among the poorest of the cruise, giving only very few specimens in each case of haddock, ling, tusk, saithe, plaice, gurnard, dabs etc. Dogfish occurred in all the catches except at Fair Isle and in Buchan Deeps.

While "SCOTIA" lay in Lerwick on 25th and 26th November, information was received of an apparent disease affecting the saithe which were being caught in the Shetland neighbourhood, but no specimen was available from which to observe the nature of the affection. This was said to involve a discoloration of the gut with strong smelling viscous matter clogging same and inducing sores.

In concluding this report it is interesting to observe that a Faroe-Shetland Channel research cruise has not been made so late in the year, nor again so early as the similar cruise of February-March, 1949, since the very early years of the present century when the experiences then encountered led to the abandonment of such cruises in the rougher months of the year. In consideration of the heavy weather met with on both cruises of 1949, they can be adjudged as having been the more successful on that account. They have certainly provided hydrographical material of considerable value for a period of the year when formerly such material has been almost entirely lacking.



17th December, 1949.