

CRUISE REPORT.F.R.V. "SCOTIA"September, 1949.

"SCOTIA" sailed from Aberdeen on the 30th August after having been delayed for some days by repairs to the midships hydrographic winch. This winch was tried at the first station, to make sure it was in working order before we reached deep water. It was found to be far from satisfactory, and it still cannot be considered a very suitable machine for the purpose.

Otherwise the work went smoothly. The I.C.E.S. Hydrographic section 'A' was completed by the 4th September without incident. After giving the ship's company a night's rest in Faroe, section 'B' was started on the 7th September. Soon after beginning the section the weather deteriorated, and working conditions became difficult. By the time the fifth station was reached it was blowing a gale, and the stray on the hydrographic wire was so great it was found impossible to get a messenger on to it to release the reversing bottles. Accordingly this station, and the subsequent one, had to be abandoned.

When the weather moderated the trawl stations around the Faroes were carried out. The trawl came fast in WW22b, and was brought on board badly torn. The length of time needed to mend this split, and the deterioration in the weather, made it necessary to forego trawling at XX21a and XX22d. Otherwise all stations around the islands were satisfactorily completed.

I.C.E.S. section 'C' was started on the 12th September and completed within 36 hours. The only incident in the operation of this section was the implosion of the bottom reversing bottle in ZZ22d, in 750 metres of water. It can only be assumed that the bottle had been accidentally released as it broke the surface in its descent. The remainder of the cruise was completed without mishap; the "SCOTIA" docking in Aberdeen on the 16th September.

HYDROGRAPHY:

Temperature and salinity samples were taken at all stations at the recommended depths. In addition oxygen samples were taken at alternate stations on the I.C.E.S. sections, and fixed on board for subsequent estimation in the Laboratory.

In the North Sea, in general, temperatures showed little variation from surface to bottom, such discontinuity as existed being of the order of 1°C in the 30-50m. stratum. Surface temperatures in this area ranged from 11.75° to 14.3°.

On I.C.E.S. section 'A' surface temperatures were very constant around 13.7°C at all stations between Butt of Lewis and latitude 59° 31'N; north of this latitude the surface temperatures gradually decreased to a minimum of 11.3° over Faroe Bank. On the north edge of Faroe Bank, and beyond it to the north, surface temperatures were all around 12°C. Bottom temperatures were high in the southern part of this section being over 10° at the shallow water stations, and over 8° in the deeper water. At WW19a and beyond it,

bottom temperatures were much lower - values of about -0.5° being noted at all stations between here and Faroe Bank. Over the bank the bottom temperatures were from $8.5-10.5^{\circ}$, and north of it around 8° , except at UU22b where a value of -0.6° was reported. At the most southerly stations, where bottom temperatures were high, the temperature increase from bottom to surface was very regular. This was also true of the stations over Faroe Bank, and those with warmer bottom water to the north of it. At the stations with negative bottom temperatures the greatest temperature discontinuity occurred between 500m and 600m, the temperature change being of the order of 4° to 5° .

At the stations around the Faroe Islands temperatures were very regular, varying little from 10°C , either with depth, or from station to station. At those stations worked on the Enniberg line surface temperatures were in the region of 11°C ; while the bottom temperatures were around 9° in shallow water, and around 0.0° beyond the Continental Shelf.

On section 'C' surface temperatures increased to the eastwards from about 10°C at Faroe to almost 13°C at Flugga. At the first four stations which were comparatively shallow, bottom temperatures were around 8°C , in depths of over 600m the bottom temperatures were all in the region of -0.5°C . On this section the temperature increased from bottom to surface was fairly regular at all stations.

PLANKTON:

1 m. silk collections:- In the North Sea the 1 metre collections were fairly dense, consisting chiefly of Calanus and Limacina. Herring larvae were present in small numbers in C13b, C15a, C15c and C16a. Pelagia perla occurred in one collection in C18d.

Calanus and Limacina were also present at all stations of I.C.E.S. section 'A'. The former was most abundant at the Butt of Lewis and decreased in numbers towards the north. Limacina was very numerous north of Faroe Bank. Clione limacina and Themisto sp. were also noteworthy constituents of the 1 metre collections from this section. Sagitta maxima was noted at VV21a, VV22c and UU23d.

The 1 metre collections from the stations around Faroe were all practically blank, apart from large numbers of Aurelia aurita. The presence of these in numbers in the trawl also testified to their abundance on the grounds. Caligoid copepods were also fairly numerous in the collections from this area.

The most westerly stations of section 'C' yielded similar 1 metre collections to those around Faroe. The surface net at ZZ22c contained considerable numbers of Sebastes post-larvae. At A21a there was a dense population of Calanus and several Meganyctiphanes norvegica.

Five Oblique hauls, with as much as 700 fms. of wire out, were made with a 1 metre net. These yielded dense collections in which the large volume of Calanus and Limacina, caught in the upper layers, completely masked the sparser constituents from the deep levels at a casual examination. All however contained Scopelid fish.

The Hensen collections were very small in volume, over the whole area, apart from one haul in the Fair Isle passage and one to the east

of Shetland. Calanus and Limacina were the dominant constituents of the Hensen collections except around Faroe, where Acartia sp. predominated.

The only phytoplankton populations of any density occurred around the Faroe Islands and to the east of Shetland. At WW23a the population consisted chiefly of Rhizosolenia alata and a small species of Chaetoceros; at XX23d of R. alata and Coscinodiscus concinnus; while at XX22d the population was a dinoflagellate one consisting of Ceratium furca, C. fusus and C. longipes. The Shetland phytoplankton patch was almost exclusively R. alata.

TRAWLING:

Haddock over 25 cm. in size were very scarce in the trawl catches except at C15a and C15c, Muckle Flugga, Balta Sound and West of Shetland. 1+ Haddock were numerous at C15a and C15c, Fair Isle, Balta Sound, WW22b, XX23d and XX22b. 0 group haddock occurred only in small numbers in the North Sea and around Shetland. They were present in considerable numbers on Faroe Bank and were very abundant at three of the stations around the Faroe Islands.

Whiting was very poorly represented in the trawl catches - the largest hauls being made in C15a and C15c. 0 group whiting occurred in small numbers at these two stations at at XX22b.

17 large Cod were taken at VV23d and 28 at D20a. 151 Sebastes under 25 cm. occurred at WW22d. 0 group G. esmarkii were very numerous around Shetland, on the North Scottish coast, and on Faroe Bank. Lemon Soles occurred frequently but in small numbers. The largest catches were made at XX22b and WW22b. Fairly large hauls of Megrims occurred at Faroe Bank and Muckle Flugga.

ALAN SAVILLE.

11th October, 1949.

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