

CRUISE REPORTF.R.S. "SCOTIA"6th-22nd October 1953

The revised cruise programme consisted of two sections. The first, a gear test, commenced at dawn on October 7 and was completed on the 15th. The second section, a herring larval survey was commenced on 16th October and completed on 22nd October. During the trawling programme the forty-eight trawls were completed with only one hold-up due to the net coming fast, and another for a period of twelve hours due to engine defect. Fishing was begun at grounds off St. Cyrus where haddock were reported. When the weather deteriorated fishing was continued off the Dunbar coast until a change of wind dictated a move to the Firth of Forth grounds. On the last day, hauls were made off Scurdy Ness on the way north to Aberdeen.

Gear Tests

A series of sixteen hauls with each codend covered and eight with each codend uncovered was made with "Scotia's" trawl fitted alternately with a normal double sisal codend of 150's twine, and a single cotton codend of 12/24 twine, as used in the coastal inshore trawl fisheries off the south coast of England (Brixham). Mean mesh sizes in the two codends during the experiment were: sisal codend 97 mm; cotton codend 81.5 mm. The report on the results is being prepared.

Herring Larvae SurveyHydrography

Bottom water temperatures can be conveniently considered in three zones, viz. (1) above 12°C; (2) 12-9°C; (3) less than 9°C.

In zones 1 and 2 the areas included are little different from the previous survey 16th-29th September. In the third zone there is an increase in the water of temperature below 7°C. and a consequent displacement westwards of the other isotherms.

Corresponding to zone 1 the surface water temperature in the region is some 0.5° cooler than in September and now a completely homogeneous temperature stratum is present. In the 12-9°C. zone, the surface water shows an increasing thermocline effect in an easterly direction, to a maximum of up to 2°C extending to a depth of about 75 m. In zone 3 the thermocline is still well established although to a slightly less extent than in the previous month; the maximum temperature change noted was 4.1° between 40 and 50 m. in E15b. Surface temperature is uniformly 11.0°.

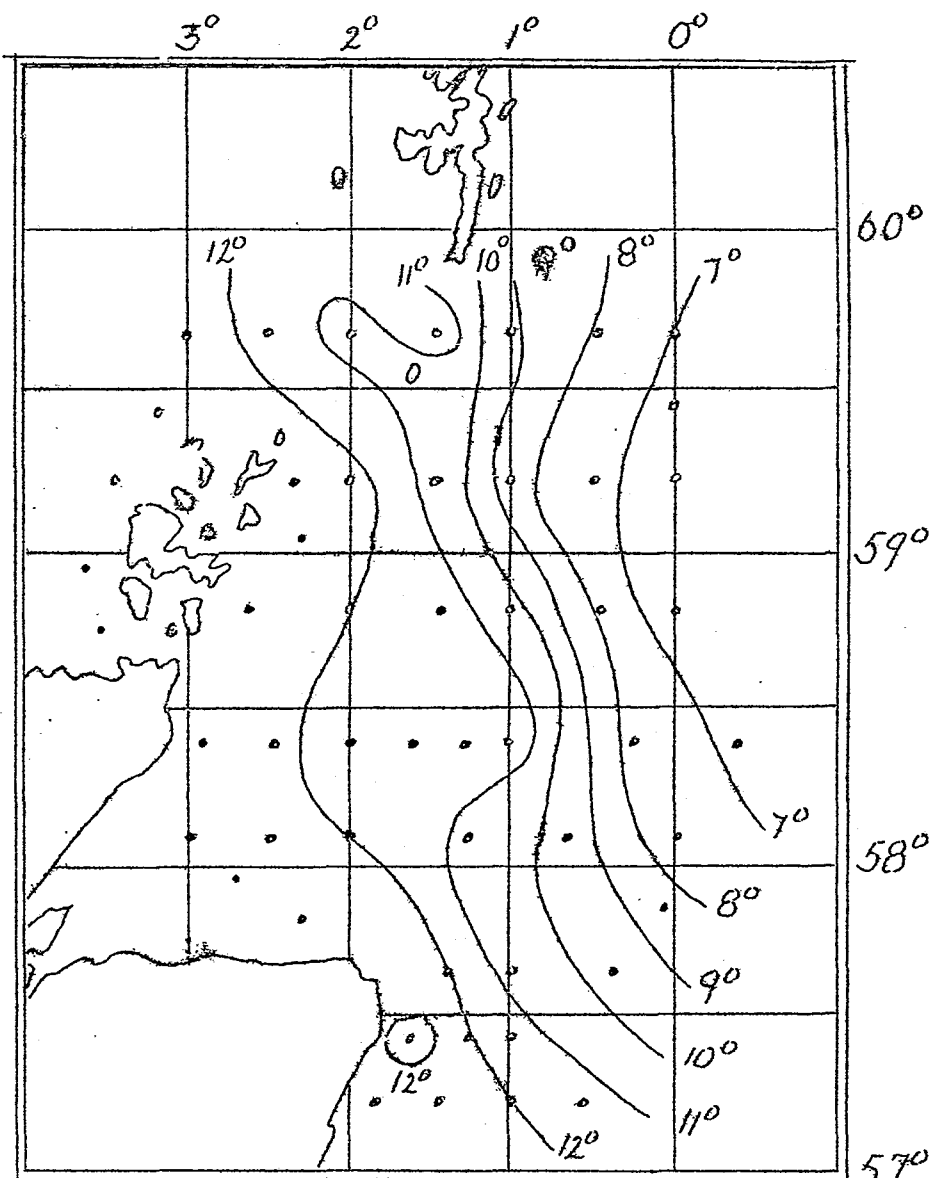
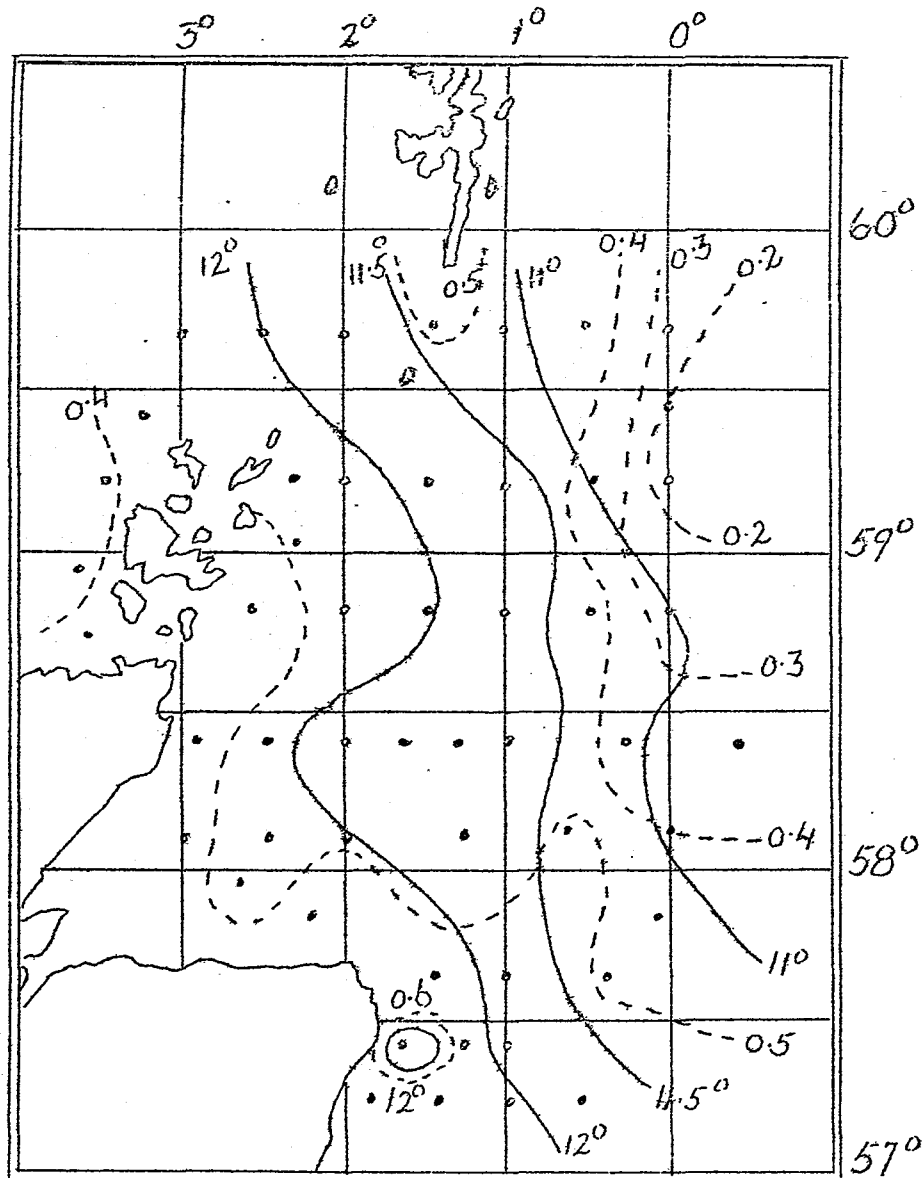
The phosphate distribution is related to these zones. In the uniform 12° zone, surface phosphate values were highest at ≥ 0.5 $\mu\text{g-at}$. phosphate-phosphorus per litre. Values 0.15-0.40 were associated with zone 3 and fairly uniform values of 0.4-0.5 with the intermediate zone.

These conclusions bear out the observation that in these three zones, in serial order, a progressively diminished amount of mixing had occurred. The stations exhibiting a thermoclinic condition are all of depths greater than 100 m. (maximum 140 metres), but it is not known whether this is a critical depth for this time of year.

One station in the area, Cl3a showed rather anomalous surface to bottom temperature (-0.3°) and surface phosphate (+0.07) values compared with neighbouring stations.

Plankton

Only a very rough survey of the numerous plankton collections is possible at this moment. Catches on the whole were moderate to very good though sometimes encumbered with large numbers of *Cyanea*, especially in the region of Fair Isle. Clupeoid larvae were fairly numerous to the south-east of Orkney extending to the Fladen region, accompanied by abundant *Calanus*. *Galettta australis* was abundant in the Orkney-Shetland Channel together with *Salpa fusiformis* in lesser numbers.



SURFACE TEMPERATURES —
 SURFACE PHOSPHATE - - - -

BOTTOM TEMPERATURES

SCOTIA 17-22 OCT. 1953.

Most collections were rich in Calanus, with Limacina and Pleurobrachia present in varying proportions.

Of particular note was the occurrence of Clione limacina in Cl4d. A garfish (32.5 cm.) was caught in the surface townet at 58°25'N 1°20'W.

No echometer traces of interest were obtained during the period, when the instrument was running in a satisfactory manner.

R. JOHNSTON

14th November 1953

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