IN CONFIDENCE: Not To be quoted without reference to the Laboratory.

CRUISE REPORT

FRS "EXPLORER"

August 20 - September 6 1971

OBJECTIVES:

1. Faroe-Shetland hydrographic lines.
2. Fish-environmental survey of Faroe Bank and Faroe plateau.
3. Ornithological studies for Aberdeen University (cancelled).

NARRATIVE:

Objective 3 had to be cancelled because Dr W R P Bourne was detained in Aberdeen due to pressure of other work. "Explorer" sailed from Aberdeen in fine weather at noon on 20 August and after collecting low-nutrient sea water in the Fladen area, work began on the section Fair Isle - Munken Rock (Faroe 2) at 1438 hours on 21 August. This section was completed and the Faroe trawling survey commenced a day later. This was continued until the evening of the 25th when strong winds accompanied by a heavy swell which continued on the 26th, interrupted work. On August 27th a brief visit was made to Thorshavn where packages of deep-frozen sea-birds were picked up for Dr Bourne. Next morning the wind had moderated and the trawling survey was continued until 1 September, when all the trawl positions on the Faroe plateau had been worked. Owing to further strong southerly winds only three of the six trawl stations on Faroe Bank were subsequently worked but it was possible, despite adverse sea conditions, to complete the Faroe Bank - Butt of Lewis hydrographic section. "Explorer" docked in Aberdeen, at 1315 hours on September 6.

HYDROGRAPHY

Both hydrographic sections were worked in full with extra sampling for duplicate salinity and chemistry as planned. Thermal stratification was never very marked and surface discontinuities were absent for most positions north of 62°N. Surface temperatures ranged from about 12.5°C over the Scottish part of the continental shelf to 10.0°C in the mixed waters north of 62°N at Faroe. Nutrient levels were well above their summer minima.

PLANKTON

Chlorophyll a concentrations (0.7-1.7 mg chlorophyll a per m^3) were low for samples taken between Fair Isle and Munken Rock, and for the northern and eastern part of the Faroe plateau (0.4-1.7). Values were generally higher for the western part (0.9-3.7) with 4.4 to 5.3 mg/m^3 for West Bay. Between Faroe Bank and Butt of Lewis the chlorophyll a decreased from about 1.1 to 0.5 units. These levels are typical of early autumn phytoplankton conditions except for the unexpectedly high values for West Bay.

Jelly fish (mainly Aurelia) were abundant throughout the cruise. Gulf III samples were taken for dry weight determination only; no species analysis was attempted. Plankton catches were generally small.

TRAWLING

Of the 41 planned trawl hauls 37 were made, plus an additional 15 minute haul for live fish which yielded a fair number of undamaged haddock. Catches ranged between 10-42 baskets per hour the main species caught being haddock, cod and saithe. Sebastes sp, mainly small fish were the next most frequent apart from the small industrial species. More than 50 baskets of jellyfish were included in one haul on Faroe Bank. Stomach samples were collected from all species and from a wide size range of each species on an area basis.

A record of the amount of dead shells was made and a representative sample was kept for Dr J Wilson of the National Institute of Oceanography.

FISH COUNTING

Both fish counting systems were in use during the cruise, and a considerable amount of data was obtained. There was some trouble with the high frequency system due to a fault in the pulse height analyser and the flooding of the underwater transducer housing, but once these faults were corrected the system worked well. The Simrad sounder was occasionally troubled by severe interference, which was presumably electrical since it affected the ship's radio as well.

It became clear that neither system had the ideal parameters for the prevailing marine population. The high frequency system responded well to individual fish echoes, but the density of fish was rather low to give really significant results. On the other hand, the much wider beam of the Simrad resulted in a high background level of signals from planktonic organisms which tended to swamp the echoes from individual fish.

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22.9.71