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CRUISE REPORT
F.R.S. "SCOTIA"
23rd May - 16th June 1968

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Introduction

The objective of this cruise was to evaluate the performance of several types of otterboard. The same net (30 ft Aberdeen with double sweeps) was used on all tests to establish a common basis for the results and tests were carried out on the following types of otterboard:

a) Conventional flat boards

b) 'V' boards. There were four attachment points available for connecting the towing warp to the boards, and tests were carried out with all of these.

c) Cambered boards.

d) "Fibreglass" flat boards. These were of a novel design, having a metal keel and frame as for type (a) but with the body made of fibreglass with a chipboard centre.

Narrative

SCOTIA sailed from Aberdeen at 1100 hours on the 23rd May and proceeded to a deep water trawling station N.W. of Flugga. Trawling began in excellent weather conditions on the evening of the 24th. Work continued until the 27th, when deteriorating weather conditions necessitated a change of station to the Scalloway deeps. In this more sheltered area the tests were continued without interruption until the evening of the 30th, when the ship steamed for Lerwick where she docked at 0900 hours on the 31st and took on water.

On sailing from Lerwick the next day, SCOTIA returned to the Scalloway ground and trawled there until the 4th June. Then a station near Fetlar was worked until the 6th, when the ship steamed for Aberdeen, docking there on the evening of the 7th. Oil and water were taken on board, and the otterboards carried were changed. Messrs Cattanach and Tsang joined the ship, and Mr. McLeod left to join GOLDSEEKER.

SCOTIA sailed again at noon on the 9th June, and as the weather was favourable, work at the deep water station N. . of Flugga was resumed. The programme of deep water tests was completed by 12th June, when the ship proceeded to the Fetlar area. Gear testing there continued until the afternoon of the 15th, when SCOTIA steamed for Aberdeen, docking there at 1815 hours on 16th June.

Trawling

A total of 50 hauls were made, using the four otterboard types, rigged in various ways where appropriate. On almost all the hauls the full available instrument set was used to record data relating to the test.

At first some difficulty was experienced in shooting the cambered

boards. These were rather large for SCOTIA, and apart form the handling problem the ship's speed during shooting was severely curtailed, which caused one or both boards to fall over as soon as they touched bottom. This situation was successfully rectified by moving the backstrop attachment point forward, and after this the cambered boards fished well with a larger spread than any other type. To properly compare the results, of course, scaling factors depending on the size of the boards will have to be applied, and this will particularly affect the results for the cambered boards.

The "fibreglass" boards initially appeared to be planing instead of running properly on the bottom. Minor adjustments to the rigging appeared to cure this, although the situation may also have been affected by the exposure of the chipboard core to the water at one or two of the bolt holes on the board. This should not have occurred, as fibreglass plugs were incorporated at all bolt hole positions, but if in future the manufacturing tolerances are suitably tightened, this problem should be overcome. At the end of the test programme, the fibreglass boards were used on fairly rough ground. The warp tension recorder showed tension peaks up to 7 tons, but on hauling the boards showed no damage beyond a few scratches. The indications are that this type of board will stand up well to normal commercial use, although of course an extended series of tests would be necessary to prove this.

The main problem which arose with the 'V' boards lay in preventing them from coming off the bottom and planing. It was found that there is a threshold point at which the board lifts off the bottom which depends (among other things) on speed, warp attachment position, and water depth. Warp length was not found to have a significant effect within the variation limits possible.

The main purpose of the present cruise was to obtain relevant engineering data, and so it was not possible to incorporate in these tests the conditions necessary for a comparative fishing experiment. However, this series of trials will be continued with comparative fishing experiments involving one or more vessels.

Processing of results

A preliminary examination of the results has been made, leading to the conclusions given above. However, in view of the large amount of data involved, these results are suitable for processing by computer. Accordingly, the data are being transferred to paper tape and programs are being written for off-line analysis of these tapes. In the present instance there will be some delay in obtaining the final results as the analysis programs are still under development. However, in the future, the processing of such trials data should be possible with much faster turn round times.

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14th August, 1968