

MISS HOWARD

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND

1970 RESEARCH VESSEL PROGRAMME

REPORT: R V CORELLA: CRUISE 2 (b)

STAFF

J W Talbot
J E Portmann
J Wooltorton
S R Jones
M J Wardle

DURATION

Scientific staff joined and gear installed 16 February

Left Plymouth 0500 hours 17 February

Arrived Lowestoft 1345 hours 27 February

LOCALITY

South Cornish coast

AIM

To carry out a hydrographic survey of the area in the vicinity of Maenease Point, Cornwall, with particular reference to features that may affect the dispersal of china clay waste.

NARRATIVE

After leaving Plymouth CORELLA proceeded direct to St Austell Bay where she met the M V EXACT which had come from Mevagissey with 10 5-gallon containers of rhodamine-B. This dye had been contributed by the English China Clay Company in order to supplement the quantity available from the Ministry's supply. The dye was taken aboard CORELLA which then proceeded to the Dodman Point area. The first rhodamine-B release was made at the midday slack low water 0.8 miles off Dodman Point and this dye patch was then surveyed for half a tidal cycle. During the work involved in preparing the underwater rhodamine sensor for use a small but vital part was inadvertently broken. S R Jones left the ship that afternoon in order to take the broken part back to Lowestoft for repair.

The next morning, 18 February, samples were collected off Dodman Point for suspended load analysis but the Coulter counter showed that very little particulate matter was in suspension. A survey of the dye patch produced by the previous day's release was also carried out around low water slack, and the dye patch was found to have moved between 2 and 3 miles to the north-east since its release two tides earlier. On completion of the rhodamine-B survey, preparation was made to work a current meter station off Dodman Point but increasing swell and a strong southwesterly wind caused this work to be discontinued and the ship sheltered at anchor off Mevagissey for the night.

Early on the morning of 19 February S R Jones rejoined the ship, bringing with him the repaired part and the rest of the morning was occupied in assembling the underwater rhodamine unit. At low water slack, early that afternoon, a second release of rhodamine-B was made 1.1 miles off Dodman Point in 10 fathoms of water. The weather at the time of this release was rather unfavourable, the south westerly wind being force 7, but the release was carried out in order to give some comparison with the more inshore release two days' earlier. Survey work on the dye patch that day continued until 1915 hours when work was stopped because of the unfavourable weather conditions, the southwesterly wind having increased to 40-45 knots. The next day, 20 February, was spent surveying this rhodamine patch which was found to have moved to a position a little over a mile to the south of Gribbin Head in less than 24 hours. By this time the dye patch had become some 3 miles long. A survey during the evening of this day, 30 hours after release of the dye patch, revealed two areas of significant concentration. The major one was about $2\frac{1}{2}$ miles offshore from Fowey and the second was about one mile off the Mevagissey area.

On 21 and 22 February westerly gales prevented a further dye release but a hydrographic station was worked off St Austell about midway between Black Head and Gribbin Head. This station was close to the path of the dye patch surveyed the previous day and was worked for salinity, temperature, water velocity and suspended load. At all depths sampled the suspended load was very small down to particles of 3 micron, the lower limit of detection. On 22 February a grid was worked for surface salinity and temperature covering the area within about 3 miles of the shore from Dodman Point to Gribbin Head. By the end of this survey the wind was force 8-9 with a heavy swell running and the ship anchored in shelter off Mevagissey.

A third rhodamine release 0.6 miles off Dodman Point was made at 1030 hours, 23 February, the morning high water slack period. This release was surveyed until 1300 hours, and during this time the patch moved across Veryan Bay and then returned on the flood tide towards Dodman Point.

The fourth and last rhodamine release was at 1050 hours, 24 February, and was 1.1 miles off Dodman Point. This release was made at a depth of 8 fathoms. Survey work on this dye patch continued until 2010 hours, 24 February, and was resumed at 0857 the following morning, continuing until 1605 hours. This survey work included simultaneous measurements at depths of 1 and 5 fathoms. On its completion CORELLA set course for Lowestoft.

During the working of the hydrographic station on 21 February the propeller of Direct Recording Current Meter 168 fell off and was lost.

RESULTS

The rhodamine-B experiments revealed a general north-easterly residual flow in the survey area. The low water releases kept close inshore and followed the general line of the coast, keeping just to seaward of the white water off St Austell Bay and Fowey. High water releases moved initially westwards across Veryan Bay but tended to turn in a clockwise direction as they returned towards Dodman Point.

J W Talbot
10 March 1970

Seen in draft: W C Master
R A A Skipper

DISTRIBUTION Basic List
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