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R.V. CLIONE

Report for Cruise 12/1968

<u>Staff</u>	<u>Duration</u>
H. W. Hill	1600 hours, 29 October-
J. W. Ramster	0920 hours, 20 November
G. C. Baxter	
E. Teare	(all times are BST)
J. W. Read	
T. W. Boon	

Aims

1. To test the PRT 5 airborne radiation thermometer.
2. To measure currents at three depths at each of eight stations in the western Irish Sea over a period of 15 days using moored current meters.
3. To test the Plessey current meter as a continuous temperature/current recording instrument.
4. To release surface drifters of various types at 53°17'30"N, 04°55'W, and to follow the patch of drifters while recording the wind speed and direction, surface and subsurface currents by means of further current meter stations and parachute drogues, the initial stages of the dispersion to be recorded by aerial photography.
5. To work temperature and salinity sections across the area of the moored current meter array, recording the surface currents across the sections by GEK.
6. To release surface and sea-bed drifters at the eight moored current meter stations.

Narrative

CLIONE sailed from Lowestoft at 1600 hours, 29 October. Immediately outside the harbour entrance a thermistor was streamed and towed along Corton Roads, east to Corton buoy, and then south until abeam of Aldeburgh, to provide a reference set for the PRT 5 airborne radiation thermometer (ART) while it was flown along a predetermined grid over the coastal strip from Aldeburgh to Great Yarmouth, the aircraft overflying CLIONE at 1615 hours. On completion of the ART trial, the ship proceeded to the Irish Sea, arriving at the first buoy position at 53°17'30"N, 05°36'W (Station A) at 0250 hours, 1 November. The rig was laid by 0425 hours with meters in the surface, midwater and bottom layers, and then, in a steadily increasing swell, similar rigs were laid at 53°17'30"N, 05°20'W (Station B), 53°17'30"N, 04°55'W (Station C), and 53°39'N, 04°34'W

(Station D), by which time conditions for buoy laying were marginal, and the ship set course for Liverpool, docking at 2006 hours, 1 November. Thirteen extra Plessey current meters were taken aboard that evening and the associated buoys and weights were delivered by Moss Hutchinson the next morning.

CLIONE was ready to sail at 1000 hours, 2 November but had to cancel sailing until 2125 hours, 3 November, because the sea state at Bar Light Vessel was too rough to land the pilot; use was made of this delay to assemble the drifters and load the mooring wires on to the winches. After sailing, the ship proceeded to lay similar current meter rigs during the morning of 4 November at 54°32'N, 04°20'W (Station J), and in the North Channel at 54°40'N, 05°13'W (Station I). That evening three more current meter rigs were laid due west of the Calf of Man, along the 54°04'N parallel, at 05°40' (Station H), 05°19'W (Station G), and 04°58'W (Station F), making nine stations laid with a total of 27 meters.

CLIONE then set course for Station D to begin routine checks of the current meter stations. At Station D the buoy was found to be upright, but the light was not working at 0330 hours, 5 November. No attempt was made to change the light because of the maximum tide running and CLIONE having arranged with RAF, Wyton (Central Reconnaissance Unit) to attempt the drifter experiment at Station C at first light, 5 November; one day later than originally planned because of the delay in Liverpool. The ship therefore set course for Station C where the buoy light was found to be dim and irregular. After an unsuccessful attempt to change the buoy at 0550 hours in rapidly deteriorating weather and after checking the ETA of the reconnaissance flights via Valley Air Traffic Controller, 250 yellow mushroom drifters and 250 NIO double drift envelopes were released near Station C at 0905 hours. The patch was lost an hour later, and although a grid search was made until 1230 hours, no trace was found. The aircraft flew over at 1145 hours - 1½ hours late - and took photographs of the last recorded position and current estimated position of the patch. The ship then returned to Station C to change the buoy light and release the second half of the drifters for the afternoon flight, but on arrival the weather was found to be too bad for further work and the remaining flights were postponed. The ship then ran to a lee position southwest of the Isle of Man, anchoring at 1824 hours.

During southeasterly gale force winds CLIONE stayed at anchor until 0826 hours, 7 November when the weather appeared to have improved sufficiently to attempt a hydrographic section along the line FGH. Only half the section was completed by 1315 hours when work had to be abandoned, but the buoy at Station F had been checked and found in good order and the buoy at Station G had been found to be overturned. Unfortunately the seas were too rough to attempt a buoy change before the ship returned to the anchorage off the Isle of Man at 1700 hours.

At 0800 hours, 8 November, the last possible day for the repeat of the drifter experiment, the aircraft allocated for that day were cancelled. At 0817 hours, in rough seas and with an easterly Force 7-8 wind forecast (later moderating to Force 4), the ship sailed for Station G to attempt a buoy change, which was completed at 1045 hours. The hydrographic section was then completed, arriving at Station H at 1325 hours to find the buoy upside down. While attempting to close on the buoy it suddenly turned upright, and it then became apparent that the complete rig was caught in the purse-seine of BOYS PRIDE (registered number: B 432) fishing nearby.

After attempting to haul his gear, the skipper of BOYS PRIDE was persuaded to release his net on a dahn buoy. CLIONE then recovered the current meter rig intact, as well as BOYS PRIDE's net and dahn which were returned undamaged.

CLIONE then sailed for the North Channel, found Buoy I to be working correctly, and completed a hydrographic section across the Channel before steaming for Buoy J, where the light was changed at 0850 hours, 9 November. After working a hydrographic section on a line due north through Station J and towing GEK along the section, the vessel proceeded to Station D where the buoy was found to be missing at 2030 hours although the surface pellet was seen in the searchlight beam, and hydrophone checks indicated that at least one meter was working satisfactorily.

Mr Long (deckhand) was landed by the rubber boat at Holyhead at 2330 hours, 9 November, and CLIONE then proceeded to check buoys C and B, but before arriving at Station A the weather had deteriorated sufficiently to compel CLIONE to dodge into a southeasterly gale for 12 hours towards the Cardigan coast. The ship then steamed along the shore in sheltered waters, and anchored overnight in Holyhead harbour.

At 0820 hours the next morning CLIONE sailed to salvage the rig at Station D, which was recovered at 1330 hours. The ship then sailed to Liverpool to unload the meters and buoys aboard, docking at 2350 hours, 11 November, and sailing again at 1740 hours, 12 November. By 0230 hours, 13 November, CLIONE was again sheltering from a southeasterly gale, southwest of the Isle of Man and, apart from a short, unsuccessful attempt to inspect Station F in the evening of 14 November, she remained there until 0815 hours, 16 November, when it appeared that the ship would be 2-3 days late returning to Lowestoft, and hence the opportunity was taken in slightly improved conditions to run for Belfast to obtain extra food. Approaching Buoy I, the swell appeared to be moderating fast and the rig was therefore recovered in marginal conditions at 1220 hours en route for Belfast, which was reached at 1540 hours.

In order to take maximum advantage of the improving weather CLIONE sailed again at 1915 hours after receiving Mr Vickers, Fisheries Officer for Belfast, aboard and informing him of the lost toroid and the incident with BOYS PRIDE. The remaining six buoys were recovered by 2130 hours, 17 November, although the subsurface float was found to be split at Stations I, C, B and A and it had also leaked at Station F, although not sufficiently at this station to cause the meter wire to sink to the bottom, as had probably happened at some stage at Station I and certainly at A and B, where there was evidence of sand and shell on all three meters on both rigs. At Station C the rig was badly tangled, and in order to salvage the meters the ground wire, weights and part of the buoy tow were cut away.

The ship left Station A for Lowestoft at 2200 hours, 17 November, and arrived at Lowestoft at 0920 hours, 20 November.

## Results

### Aim 1

A successful reference grid was provided against which to test the PRT 5 results.

### Aim 2

Nine current meter stations were moored for periods varying between 4 and 16 days with meters at three depths at each station. Buoys were inspected/recovered on sixteen occasions. Thirteen times the buoys were found to be the right way up, but in only six cases were the lights working correctly. All the lights used but one (a Stone Chance which worked well) were Wallace and Tiernan. One toroid was lost (the buoy tow parted 20 fathoms from the bottom weight) and one radar reflector was washed away. Five subsurface floats failed, in at least two cases, and probably three, causing the meter wire to collapse to the bottom.

All the meters were recovered without serious damage although several A frames were bent and in one case the meter key ring (double variety) was missing. Of the 27 meters used, 14 appeared to be working correctly and were undamaged on recovery; 6 had damaged fins (one completely broken and, in this case, the propeller was broken too); one had a transducer failure; 5 showed evidence of leakage, which in three cases was associated with an excess of tape on the take-up spool (one of these firing continuously) and in a fourth case the meter had stopped working; one meter had a short record and jammed tape.

### Aim 3

Twelve of the meters were fitted with thermistors. The failures did not appear to be associated with these meters, although in one case the leakage may have been through the external sensor socket into which the thermistor is fitted.

### Aim 4

As indicated in the narrative, this aim was not accomplished successfully. Before the loss of the first release, the NIO envelopes appeared to be maintaining a more circular patch than the mushroom drifters and keeping flat along the surface. There was no noticeable sailing before the wind (20-30 knots). The mushroom drifters quickly spread into an elongated ellipse some 300 ft by 50 ft, the major axis being along the general direction of the wind. VHF contact was found to be satisfactory between the ship and the aircraft.

### Aim 5

Three hydrographic sections were worked; a thermistor and GEK were towed along each section.

### Aim 6

Fifty surface and 50 bottom drifters were released at each of the current meter stations, except Station F.

Acknowledgement

It is a pleasure to acknowledge the expertise of the officers and crew of R.V. CLIONE, and in particular that of Mr A. H. Button and Mr A. Lerner, to whom a large part of the success of the salvage operations was due.

H. W. Hill  
H. W. Hill

21 November 1968

Initialled        AJL  
Seen in draft:   MRS

Distribution

Basic list, plus the following

Scientific staff on cruise

Mr Hill  
Mr Ramster  
Mr Baxter  
Mr Teare  
Mr Read  
Mr Boon