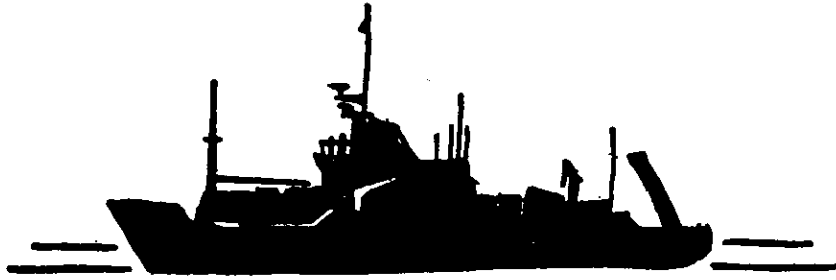


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***Scottish Marine Biological Association***

***Dunstaffnage Marine Research Laboratory***



# **CRUISE REPORT**

R.R.S. FREDERICK RUSSELL

Cruise 13/1985

4-17 December 1985

***S.M.B.A., P.O. Box No. 3, Oban, Argyll, Scotland.***

R.R.S. FREDERICK RUSSELL, Cruise 13/1985

Duration of cruise: 1800 h 4 December - 1640 h 17 December 1985  
All times GMT.

Locality: Firth of Clyde, North Channel, Scottish  
continental shelf 55°-57°N.

Staff: D.J. Ellett  
A. Edwards  
Dr J.M. Graham  
C.R. Griffiths  
N. MacDougall  
R. Anderson (U.C. of Swansea)  
Miss J. Verduin (U.C. of Swansea)  
R. Payne (Marine Laboratory, Aberdeen) (9-10 Dec.)

Aims:

- 1) To deploy SMBA and DAFS current meter moorings at six sites (C1 - C6) in the Firth of Clyde and carry out a CTD survey of the Firth.
- 2) To make CTD transects across the shelf between the Mull of Galloway and the Butt of Lewis, and to collect radiocaesium samples upon some transects for analysis by Glasgow University and the Fisheries Radiobiological Laboratory.
- 3) To service SMBA current meter mooring Y in the T'ree Passage and to recover or service mooring B (57°16'N, 10°54'W) as time and weather permit.
- 4) To work as much of the Anton Dohrn Seamount CTD section as time permits.

Narrative:

FREDERICK RUSSELL sailed from Falmouth at 1800 h 4 December and sailed northwards to berth at Campbeltown 0900 h 6 December, where the scientific staff joined the ship. After loading equipment, the ship sailed at 1507 h and at 1700 h commenced the CTD grid in Kilbrannan Sound and Loch Fyne. At 0815 h 7 December deployment of the westernmost current meter mooring (C5) began, and this was completed by 0845 h. Moorings C4 and C6 followed at 0950-1003 h and 1125-1140 h respectively.

After working the eastern CTD stations between Bute and Girvan, the ship entered the North Channel and completed the Copeland-Portpatrick and Corsewall-Sanda sections between 1528 h 8 December and 0210 h 9 December. FREDERICK RUSSELL berthed at Troon between 0910 and 1306 h 9 December to take aboard Mr Payne and the three DAFS moorings. The latter (C1-3) were deployed between 1556 and 1928 h, after which the Kintyre-Antrim section was worked and the remaining stations of the Firth of Clyde CTD grid completed at 0749 h 10 December. En route from Irvine where Mr Payne was landed at 1128 h, CTD tests and radiocaesium sampling were carried out at station AB30, in the Arran Deep. Southerly winds had reached force 7 during the morning and a moderate westerly swell slowed the passage around the Mull of Kintyre to stations 1-5B, which were completed by 0038 h 11 December. Section C, from Islay to Lough Foyle, was worked between 0328 and 0945 h, after which the ship steamed to station OD, worked at 1527-1545 h. The southerly force 7 winds strengthened en route to 1D and at 1700 h the ship steamed for shelter towards Inishtrahull, which was passed at 2240 h, and remained hove-to overnight off Culdaff Bay. With continuing strong winds on 12 December, FREDERICK RUSSELL anchored in the bay at 1213 h and remained at anchor until 0832 h 13 December, when moderating winds and swell made it possible to get under way to station 1D, reached at 1217 h. Section D was completed at the western Islay coast at 1916 h and a section from thence to Skerryvore at 0210 h 14 December. The Firth of Lorne section (1-5E) was completed at 0811 h, and the ship steamed to Oban, arriving at the North Pier at 1150 h to take on fuel and water, and to exchange gear. Further gales were forecast, so the ship remained alongside until 1007 h 15 December, when courses were set for the Tیره Passage via the Sound of Mull in moderating westerly winds. Mooring Y was recovered and redeployed between 1424 and 1550 h, and stations westward towards Barra Head were begun. At 2226 h at station 7G a generator fault cut out both bow thruster and hydrographic winch and the 25 litre Niskin bottle was retrieved by hand from 40 m depth. Repairs were effected by 0055 h 16 December, but the fault recurred when the ship returned to the station, being finally cured at 0318 h. After working 7G the southwesterly wind reached force 8-9 and course was set at 0515 h for Castlebay, Barra, where FREDERICK RUSSELL anchored at 0945 h. With a forecast of improved weather, the ship sailed at 1434 h to work the stations westwards from Barra Head to the shelf-edge.

Towards midnight, news of a family death made it necessary to plan for the landing of the Principal Scientist on the following day. With two working days left of the cruise the alternatives were to abandon the outer shelf stations and return to Coll to allow Mr Ellett to catch the morning ferry for Oban, and then to spend the final day sampling in the Sea of the Hebrides, or to complete the section to the shelf-edge and return to Oban thereafter. As the radiocaesium sampling was judged to be the more important aim, and also a component of commissioned work, the second alternative was decided upon. Station 16G was completed at 0310 h 17 December and stations 8-10G, missed earlier, at 1030 h. The ship berthed at Oban North Pier at 1640 h where gear and scientific staff (with the exception of Mr Anderson) were disembarked, the ship sailing for Barry during the evening.

#### Results:

Aim 1). The three SMBA Clyde moorings were deployed on 7 December and the three DAFS moorings on 9 December. Details are given in Table 1. Five moorings are intended to measure the exchange of water across the sill of the Outer Firth, and the sixth to monitor inflow of dense water from the sill into the Arran Deep. The grid of CTD stations covering the Outer Firth, Kilbrannan Sound and Lower Loch Fyne was worked during 6-10 December.

Aim 2). Eight CTD sections (see Table 2) were worked between the Mull of Galloway and Barra Head during the course of the cruise. Radiocaesium samples were collected at surface, mid-water and near-bottom depths for the Lowestoft laboratory upon the Sound of Mull - shelf-edge section, and at the central four stations of the Copeland - Portpatrick section for Glasgow University. Surface caesium samples and a limited number of subsurface samples were also collected for Glasgow on the transect west of Islay, and at some stations of the A, B and E sections.

Aim 3). Current meter mooring Y was serviced on 15 December as detailed in Table 1. Weather did not provide the opportunity to visit mooring B, on the south-eastern flank of Anton Dohrn Seamount.

Aim 4). Similarly, both lack of time and unsuitable weather prevented the working of CTD stations west of the shelf-edge.

Miscellaneous. Extensive tests of the Neil Brown 'Smart' CTD continued. Although notably improved following return to the manufacturers, some problems remained to be overcome.

Table 1. Moorings deployed or serviced during Cruise 13/1985

Moorings	Institute	Depth m.	Lat. °	N '	Long. °	W '	Dates	No. of current meters	Remarks
C1	DAFS	31	55	13.4	4	58.2	Deployed 9 Dec.	1	All moorings U-shaped with surface spar marker
C2	DAFS	47	55	14.0	5	03.2	Deployed 9 Dec.	2	
C3	DAFS	49	55	17.0	5	12.6	Deployed 9 Dec.	2	
C4	SMBA	51	55	19.5	5	20.9	Deployed 7 Dec.	2	
C5	SMBA	38	55	22.3	5	27.1	Deployed 7 Dec.	1	
C6	SMBA	94	55	23.4	5	05.5	Deployed 7 Dec.	2	
Y	SMBA	44	56	37.4	6	24.0	19 Aug.-15 Dec.	1	
Y	SMBA	45	56	37.4	6	24.0	Deployed 15 Dec.	1	

Table 2. Sections worked during Cruise 13/1985

Stations	Location	Dates	Observations
AB1 - AB48	Outer Firth of Clyde & Loch Fyne	6-10 Dec.	CTD; Cs surface, mid-water, near bottom at AB30.
1Z - 6Z	Copeland - Portpatrick	8 Dec.	CTD; Surface Cs; mid-water & near bottom Cs (2-5)
1Y - 5Y	Corsewall - Sanda	8 Dec.	CTD
5A - 1A	Antrim - Kintyre	9 & 10 Dec.	CTD; Surface Cs (1 & 5)
1B - 5B	Gigha - Islay	10-11 Dec.	CTD; Surface Cs (1,3,4); Near-bottom Cs (3)
7C - 1C	Loch Indaal - Lough Foyle	11 Dec.	CTD
D0 - D8	West of Islay	11 & 13 Dec.	CTD; Surface Cs; Sub-surface Cs (0,4,7)
P7 - P1	Islay - Skerryvore	13-14 Dec.	CTD
5E - 1E	Firth of Lorne	14 Dec.	CTD; Surface Cs (1 & 3)
1G - 16G	Sound of Mull - shelf-edge	15-17 Dec.	Surface S <sub>0</sub> ; CTD, surface & sub-surface Cs (1,2,4, 6,7,9-11, 13,15,16)

R.R.S. FREDERICK RUSSELL

Cruise 13/1985

4-17 December 1985

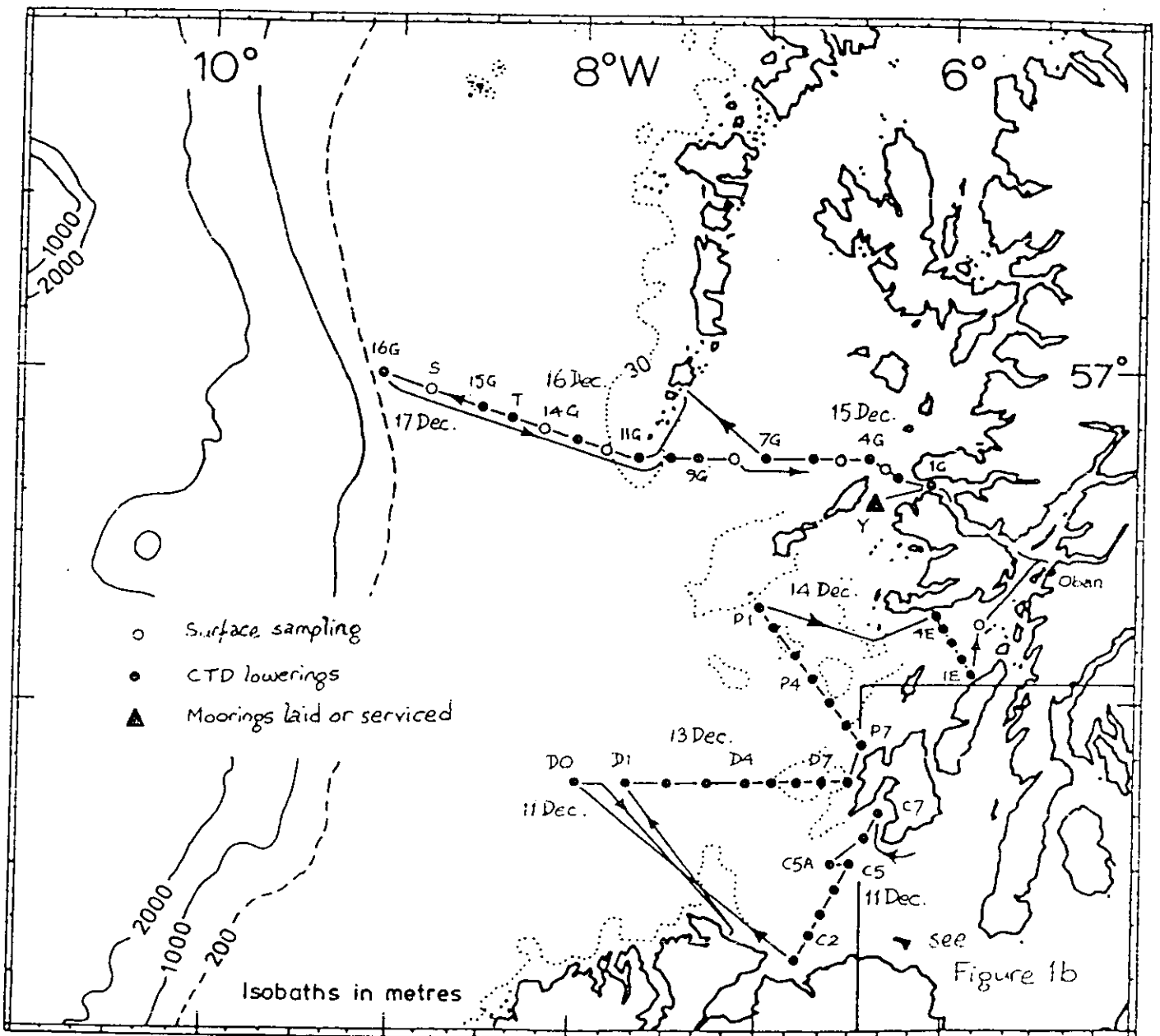


Figure 1a



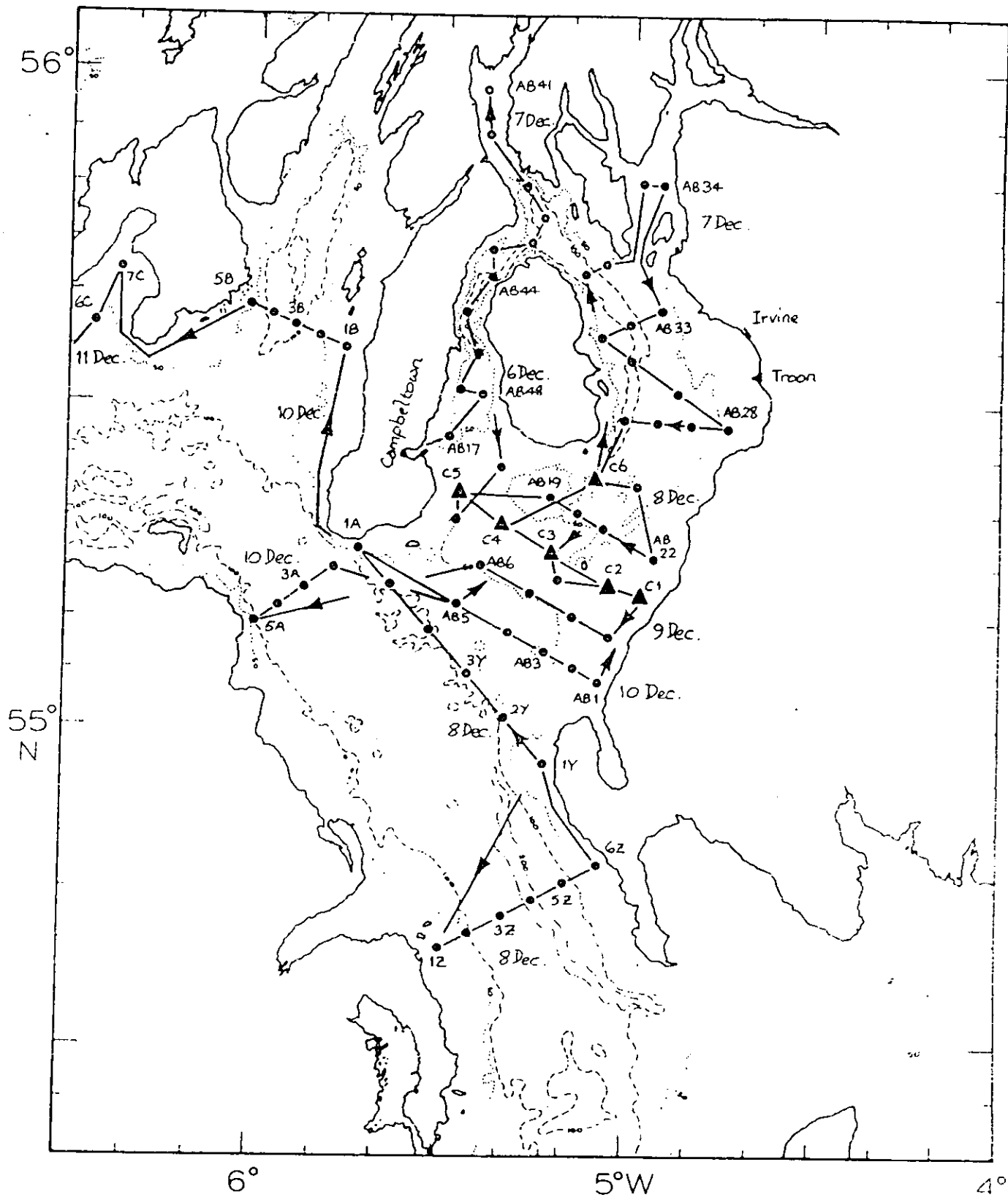


Figure 1b