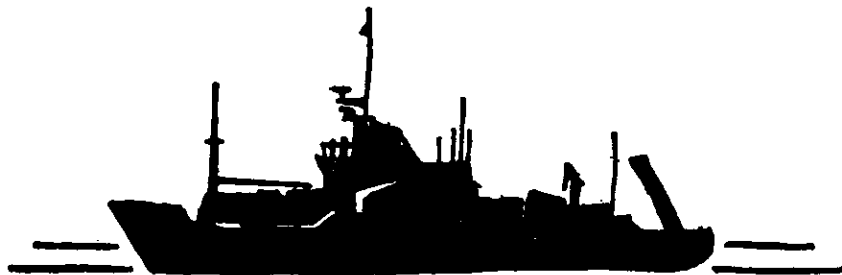


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*Scottish Marine Biological Association*

*Dunstaffnage Marine Research Laboratory*



**CRUISE REPORT**

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

Scottish Marine Biological Association

Dunstaffnage Marine Research Laboratory

Cruise Report

R.R.S. CHALLENGER

*Challenger* Cruise 1/1985

20 January - 5 February 1985

R.R.S. CHALLENGER, Cruise 1/1985

Duration of cruise: 1600 h 20 January - 1008 h 5 February 1985  
All times GMT.

Locality: Scottish continental shelf, 55-58°N, Rockall  
Channel, 57-58°N.

Staff:

D.J. Ellett	(from 24 January)
D.T. Meldrum	(from 24 January)
Dr J.M. Graham	(from 24 January)
C.R. Griffiths	
N. MacDougall	(from 24 January)
Mrs C.M.L. Petre	(from 24 January)

Aims:

- 1) To recover North Channel current meter moorings LE and LF, and to lay mooring LG for recovery by r.v. CLIONE in April.
- 2) To service SMBA moorings S (SE Islay), Y (Tiree Passage) and F (57°30'N, 12°15'W).
- 3) To collect surface, mid-water and near-bottom water samples for radiocaesium analysis on CTD transects between Copeland and Portpatrick, and between the Sound of Mull and the shelf-edge for MAFF, Lowestoft and Glasgow University Chemistry Department.
- 4) To work CTD sections across the Rockall Channel, the Scottish shelf and in the Firth of Clyde.

Narrative:

CHALLENGER left North Trinity Pier, Plymouth at 1600 h 20 January with Mr Griffiths aboard. Strong north-westerly winds were encountered in the Irish Sea towards evening 21 January, and reached forces 8-9 on the morning of 22 January. The poor weather conditions precluded a full search for moorings in the North Channel, but mooring LF was sighted in position at 1312 h. The ship anchored for shelter in Campbeltown Loch at 1933 h and remained until 1227 h 23 January, when conditions had moderated somewhat. CHALLENGER passed by the position of mooring S and verified that both spar buoys were present, and berthed at the North Pier, Oban at 0806 h 24 January, where equipment was loaded and the remainder of the scientific staff joined the ship.

CHALLENGER left Oban at 1244 h and, with the prospect of good weather, set course for mooring F in the Rockall Channel. This was located and released at 1413 h 25 January and was retrieved by 1550 h. Station D of the Anton Dohrn Seamount section was next worked at 1830 h, and alternate stations of the CTD section were worked eastward to the Scottish shelf at Station R, completed at 1902 h 26 January. CTD stations C10 to C7 with radiocaesium sampling were worked in freshening south-easterly winds, and work was halted at Station C6 at 0647 h 27 January when the main plotting room bench was shifted in a heavy roll, disconnecting the electricity supply to the CTD logging system. CHALLENGER ran before a heavy swell north-eastward to the vicinity of Dunvegan Head, where repairs were made to the bench. Following this, Stations 1K to 9K were worked from Loch Seaforth to Gareloch between 1541 and 2135 h.

With moderating winds, the ship steamed to the Tiree Passage, where mooring Y was recovered between 1013 and 1033 h 28 January. Stations C1 to C3 were worked before returning to re-deploy mooring Y between 1701 and 1714 h at the next slack water. Subsequently the remaining CTD and radiocaesium sampling stations (C4 to C6) were worked and course was set for the shelf section west of Islay at 0052 h 29 January.

Southerly winds of force 6 slowed progress to this section, but the nine stations were completed between 1025 and 1835 h. A section from Portrush to Islay was worked between 2304 and 0455 h 30 January, and the section between Islay and Gigha commenced at 0755 h. Upon the completion of Station 2B at 0948 h the ship steamed to the position of mooring S for slack water, and both the current meter mooring and watch buoy were retrieved between 1116 and 1205 h. The lack of a replacement data tape for the Bell acoustic current meter was discovered whilst preparing the mooring for re-deployment, and in view of the nearness of Dunstaffnage and the requirement to make a CTD section across the Firth of Lorne, it was decided to collect replacements from the laboratory rather than use a tape of uncertain quality. Accordingly, after working CTD Station 1B, CHALLENGER arrived off Dunstaffnage at 2045 h and collected tapes from SEOL MARA at 2112 h. Winds were southerly, forces 7-8, by this time, and after completing the section across the Firth of Lorne at 0418 h 31 January the ship hove-to off Colonsay to await daylight for the passage southward through the Sound of Jura.

A heavy swell at the position for mooring S prevented re-deployment, which was therefore postponed, and sections from Antrim to Kintyre, Kintyre to Corsewall and Portpatrick to Copeland were worked between 1433 h 31 January and 0432 h 1 February in improving weather. Two toroids were sighted when a search for moorings LE and LF began, one 3 cables from the shore in Dunaree Bay and the other about 1.5 n.m. north of the LF position. This proved to be from LE when recovered between 0846 and 0904 h and attached to it were the ground-line, sub-surface buoy anchor and release link. It appeared that the current meters and sub-surface buoy had been released when the mooring had been dragged off position. An acoustic search was made for the release of LF between 0930 and 1600 h without result, but when the release frequency was transmitted at the laying position, the mooring rose to the surface alongside the ship, and was inboard by 1620 h.

Wire tests of the release to be moored at LG were carried out and eventually proved satisfactory. The single-strand sub-surface mooring was laid between 2121 and 2131 h, and the ship steamed through the three mooring positions to release three batches of sea-bed drifters. Recovery of the second toroid was not attempted at this stage due to its proximity to shore and the strong onshore winds.

Course was set for the Sound of Jura and heavy weather was encountered in the early hours of 2 February. Wire tests to check the frequencies of the recovered Lowestoft release were made over deep water off Craighouse between 0928 and 1000 h, and a short section of 3 CTD stations was worked from off Loch Caolisport to Skervuile. The ship then steamed south in rapidly calming weather to reach the mooring S site at high water slack. The watch buoy was deployed at 1420 h, and the main mooring between 1449 and 1501 h.

CHALLENGER returned southwards to work two CTD sections between Galloway and the Isle of Man between 0216 and 1034 h 3 February. With quiet sea conditions and light southerly winds it was possible to approach the LF toroid, which had drifted to Glenacardoch Bay, south of Portpatrick. With the aid of the ship's inflatable, this was recovered between 1400 and 1520 h and proved to have parted its mooring at a point two-thirds of the way down to the toroid anchor. Leaving this position, we were informed by the Portpatrick lifeboat of another toroid in Port Logan Bay, to the southward, but although the bay was examined from seaward, this was not seen.

A grid of CTD sections and stations around the Firth of Clyde, Lower Loch Fyne and Kilbrannan Sound was begun at 1946 h 3 February and completed at 0256 h 5 February. The ship hove to off the Cumbraes, picking up the pilot at 0900 h, and berthed at Ardrossan at 1008 h.

Results:

Aim 1): Current meter mooring LF was recovered in two parts, complete except for the anchors and ground line. The current meters were at their original position and appear to have recorded satisfactorily. Details are given in Table 1.

Only the toroid, buoy wire and chain, ground line and sub-surface buoy anchor were recovered for mooring LE. The sub-surface buoy, current meters and release appeared to have become free when the mooring was dragged from position.

Mooring IG was laid with a single current meter 10 m above bottom and without surface marker on 1 February.

Aim 2): Mooring F was recovered successfully on 25 January and all four current meters appear to have given satisfactory records since deployment on 20 November 1984. A brief search was made for the previous F mooring which was not found in November, but without results. The mooring was not relayed due to insufficient wire stocks.

Mooring Y was recovered and re-deployed on 28 January.

The two Aanderaa meters and the Bell acoustic current meter on mooring S, recovered on 30 January, appear to have provided data, and the mooring was re-deployed on 2 February.

Aim 3): The CTD section between the Sound of Mull and the shelf-edge was worked between 1818 h 26 and 0052 h 28 January. Large volume samples for radiocaesium analysis were collected at two depths at C2, C7, C9 and C10 and at three depths at the remaining six stations of the section for analysis by MAFF, Lowestoft. Between Copeland and Portpatrick radiocaesium samples were collected at the surface at all stations, and at mid-water and near-bottom depths at the four central stations, for analysis by Glasgow University. Surface radiocaesium samples were also collected for Glasgow at three stations in the North Minch and at

five stations in the northern Irish Sea. A near-bottom sample was also collected at one of these latter stations.

Aim 4): CTD sections worked during the cruise are listed in Table 3. Alternate stations of the Anton Dohrn Seamount section were worked in order to make the most of a fairly brief weather window, but excellent cover of the coastal current waters between the Irish Sea and the North Minch was obtained. An extensive grid of CTD stations in the outer Firth of Clyde, Kilbrannan Sound and Lower Loch Fyne was worked during 3-5 February.



Table 1. Mooring recoveries during Cruise 1/1985

Mooring	Institute	Depth m.	Lat. °	N '	Long. °	W '	Deployment dates	No. of current meters	Remarks
F	SMBA	1830	57	24.8	12	13.5	20 Nov. 1984 - 25 Jan. 1985 66	4	Single strand mooring with acoustic release
Y	SMBA	47	56	36.8	06	24.5	1 Dec. 1984 - 28 Jan. 1985 58	1	U-shaped mooring, surface spar
S	SMBA	55	55	33.6	06	04.7	4 Dec. 1984 - 30 Jan. 1985 57	3	U-shaped, surface spar & surface acoustic c/m.
LE	MAFF	120	54	45.9	05	09.0	16 Nov. 1984 - 1 Feb. 1985	-	Surface toroid & ground-line only recovered.
LF	MAFF	136	54	43.9	05	10.6	17 Nov. 1984 - 1 Feb. 1985 7	2	Recovered by acoustic release. Surface toroid recovered 3 Feb.

MAFF = Fisheries Laboratory, Lowestoft

Table 2. Mooring deployment during Cruise 1/1985

Mooring	Institute	Depth m.	Lat. °	N	Long. °	W.	Date deployed 1985	No. of current meters	Remarks
Y	SMBA	38	56	36.8	06	24.5	28 January	1	Surface spar
LG	MAFF	230	54	42.5	05	13.2	1 February	2	Surface toroid, acoustic release
S	SMBA	55	55	33.6	06	04.9	2 February	3	Surface toroid, surface acoustic c/m.

Table 3. Sections worked during Cruise 1/1985

Stations	Location	Dates	Observations
1-10 D, F, H, J, L, N, P, R, S, T.	Anton Dohrn Seamount section	25-26 Jan.	CTD
11-14 C10 - C7'	Shelf-edge - Sound of Mull	26-27 Jan.	CTD; Surface & sub-surface Cs.
15-20 C1 - C6	" " " " "	28-29 Jan.	CTD; Surface & sub-surface Cs.
21-29 1K - 9K	Loch Gairloch - Loch Seaforth	27 Jan.	CTD; Surface Cs (2 - 4)
30 Y	Mooring Y	28 Jan.	CTD
31-39 0D - 8D	West from Islay	29 Jan.	CTD
40-46 1F - 7F	Lough Foyle - Loch Indaal	29-30 Jan.	CTD.
47-51 5B - 1B	Islay - Gigha	30 Jan.	CTD
52-56 5E - 1E	Firth of Lorne	31 Jan.	CTD
57-61 5A - 1A	Antrim - Kintyre	31 Jan.	CTD
62-66 5Y - 1Y	Sanda - Corsewall	31 Jan.	CTD
67-72 6Z - 1Z	Copeland - Portpatrick	1 Feb.	CTD; Surface Cs; sub-surface Cs (2-5)
73-75 SJ1 - SJ3	Loch Caolisport - Skervuile	2 Feb.	CTD
76-80 1W - 5W	Wigton Bay - Pt. of Ayre	3 Feb.	CTD; Surface Cs (1,3-5); sub-surface Cs(4).
81-85 1X - 5X	Jurby - Mull of Galloway	3 Feb.	CTD; Surface Cs (1-3).
86-118 FC1 - FC31	Firth of Clyde & Loch Fyne	3-5 Feb.	CTD

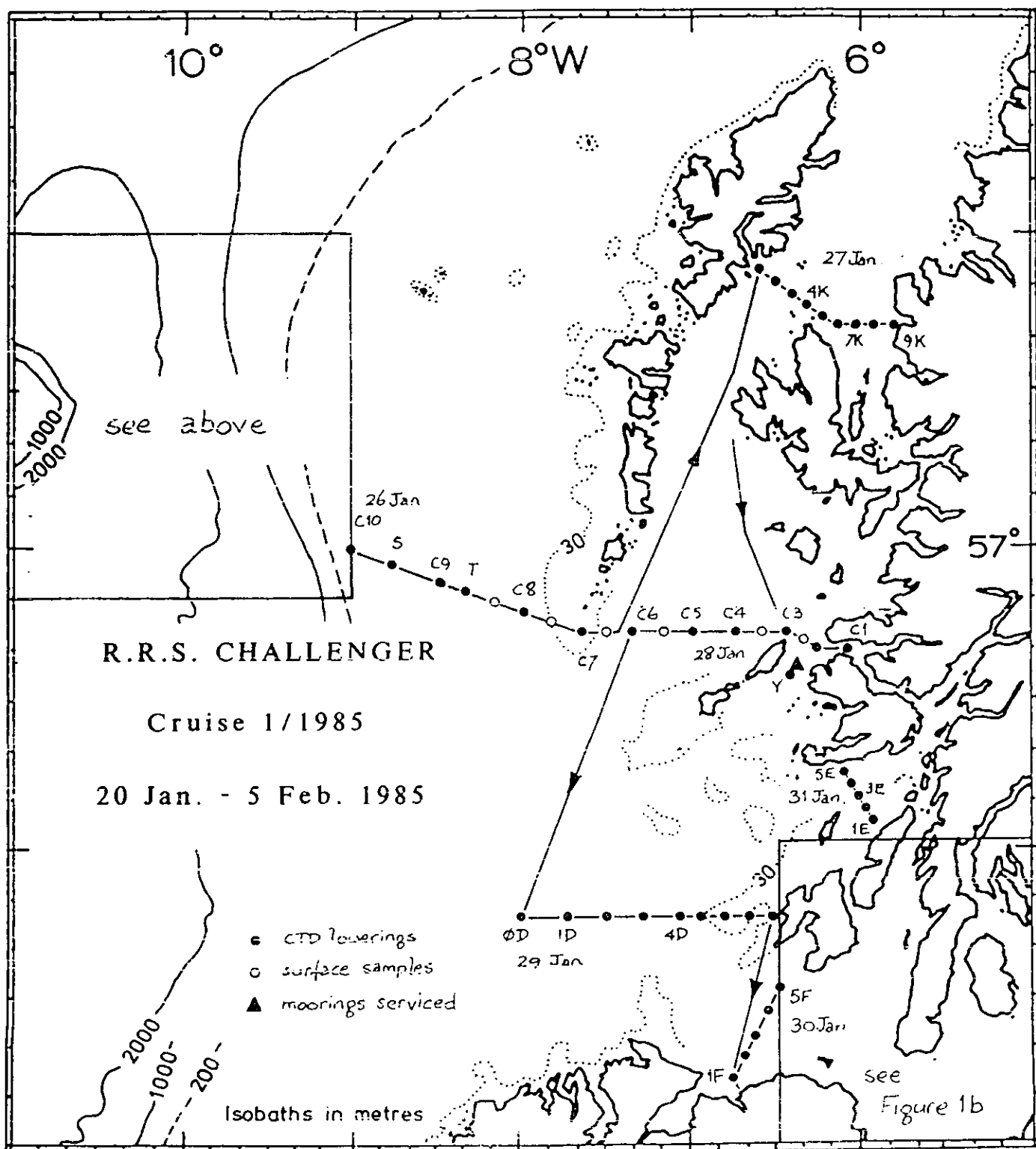
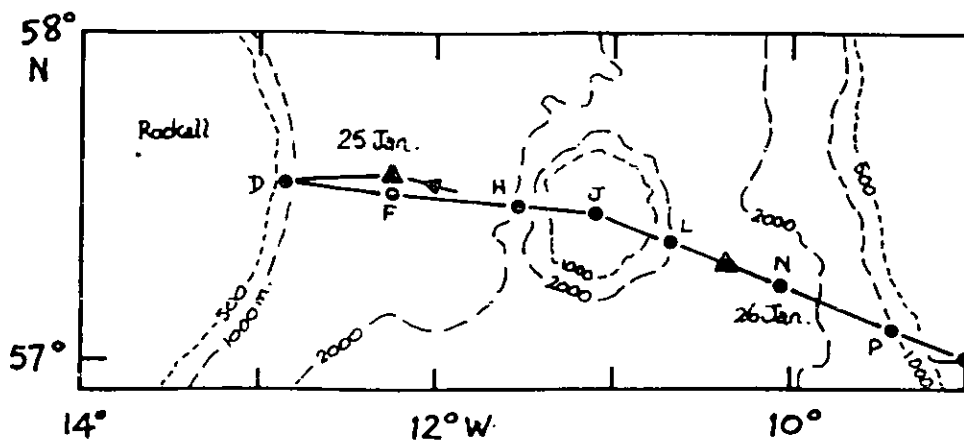


Figure 1a

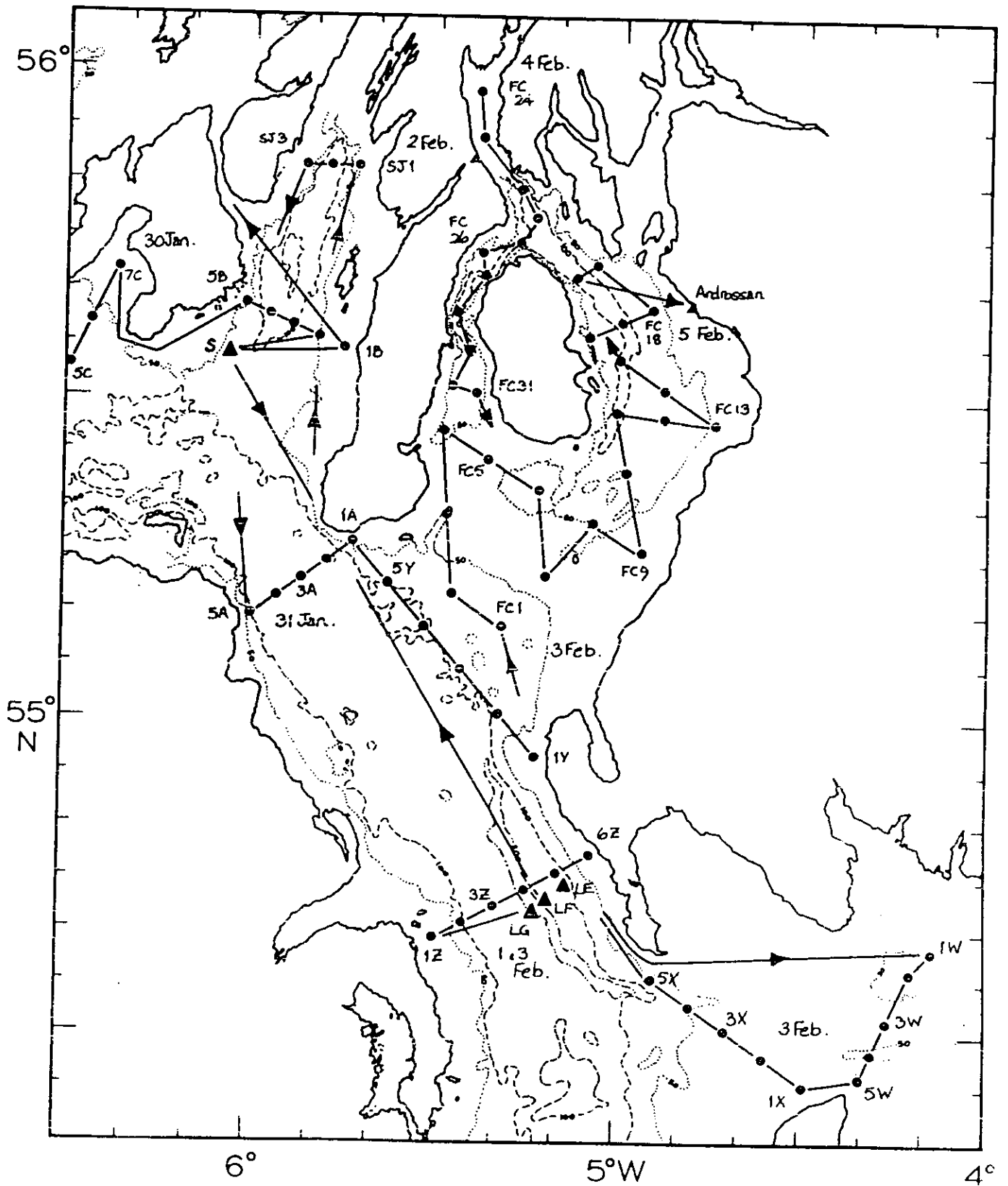


Figure 1b