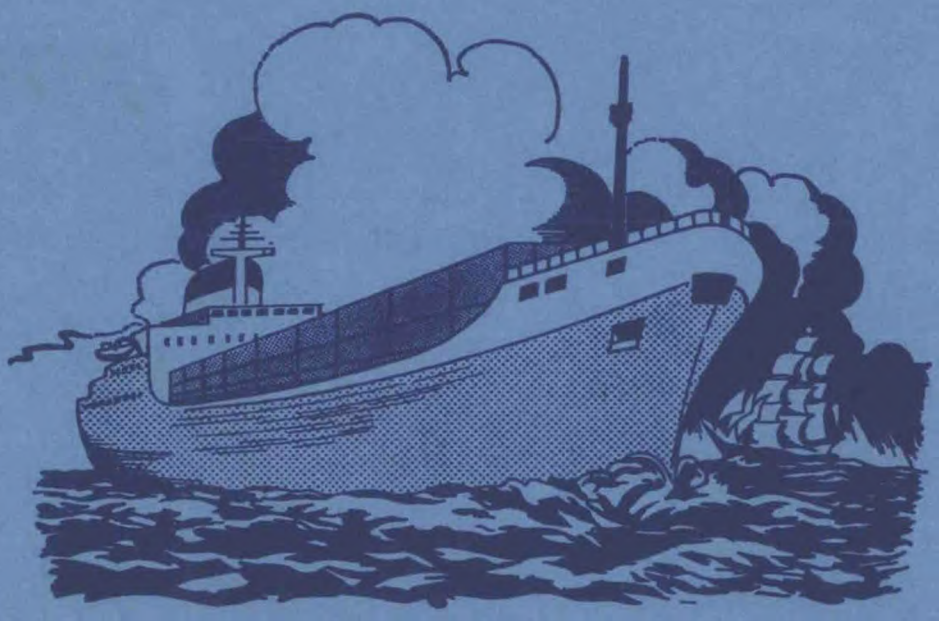
Met. O. 966

The Marine Observer

A quarterly journal of Maritime Meteorology



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THE MARINE OBSERVER

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prepared by the Marine Division of the
Meteorological Office

Vol. 55

1985

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VOL. 55 No. 287 JANUARY 1985

CONTENTS

Letters to the Editor, and books for review, should be sent to the Editor 'The Marine Observer', Meteorological Office, Eastern Road, Bracknell, Berkshire RG12 2UR

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Editorial

Every day at the Central Forecasting Office at Bracknell some 32 000 observations covering all parts of the earth's surface are fed into the Cyber 205—the mammoth computer at Bracknell which solves the atmospheric circulation model equations to produce our global forecasts. Since about three-quarters of the earth's surface is covered by ocean, the contribution made by observations from ships is absolutely indispensable. Towards the provision of these global observations the UK certainly plays its part. In July 1984, 527 ships were reporting observations which represented a substantial fraction, namely six per cent, of ship reports world-wide.

It is sometimes said that with more observations from satellites the need for observations from ships and other surface platforms is reduced. In fact the opposite is the case. Satellite observations require coincident observations from the surface for comparison and validation purposes, and further, there are key quantities such as surface pressure which as yet cannot be measured from space. Also, as models develop and improve they become more and more hungry for observations which are required to be increasingly accurate and available at finer horizontal resolution.

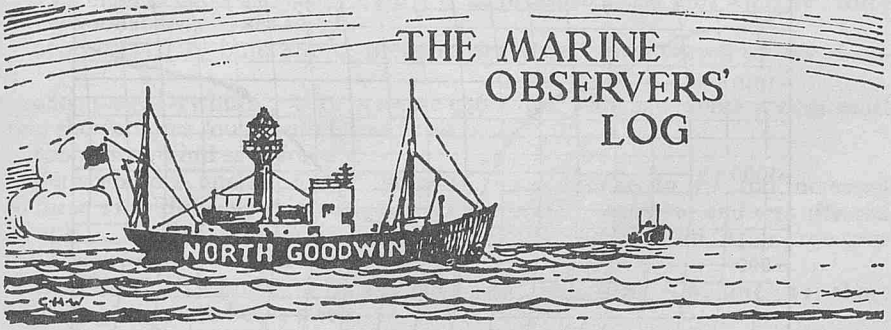
A further requirement for ships' observations arises from the need to continuously update the unique Marine Data Bank which we hold at Bracknell which contains 58 million observations taken over the past 130 years. New data are added at the rate of 1·3 million observations per year, of which some 19 per cent (249 000) are provided from ships of UK origin. Marine engineers and offshore operators have an increasing need for such data. They are also vital in investigations currently being pursued in international experiments such as the World Climate Research Programme which are looking into the causes of climate change and whether man's activities are influencing the climate.

The meteorological community, therefore, will continue to press for more and better observations from around the oceans so that in turn the models can be improved and better forecasts provided to ships and to shipping operators.

Over the last few years as the models and the input data to them have improved, so have the forecasts. Forecasts for 48 hours ahead now have similar skill to forecasts 24 hours ahead of a few years ago, and useful skill is now possible up to four or five days ahead. Particularly noticeable during the past year or so has been our ability to predict over the British Isles major changes in weather type, for instance changes from blocking situations to westerly air flow, five or six days ahead. This improved capability together with the wave model which has been developed at Bracknell means that we are able to provide routeing information for ships over all the world's oceans which ships' masters and shipping operators are finding of great value. With the advent of satellite data communications for ships through Inmarsat the links between our meteorological service and shipping can be closer than ever before to our mutual advantage.

It therefore gives me great pleasure at the beginning of this New Year 1985 to salute all those at sea who so generously co-operate with us in this global meteorological enterprise.

J. T. Houghton
Director-General



January, February, March

The Marine Observers' Log is a quarterly selection of observations of interest and value. The observations are derived from the logbooks of marine observers and from individual manuscripts. Responsibility for each observation rests with the contributor.

Observing officers are reminded that preserved samples of discoloured water, luminescent water, etc. considerably enhance the value of such an observation. Port Meteorological Officers in the UK will supply instructions on how to preserve and pack such samples on request.

PASSAGE OF TROPICAL DEPRESSION 'HAJA'

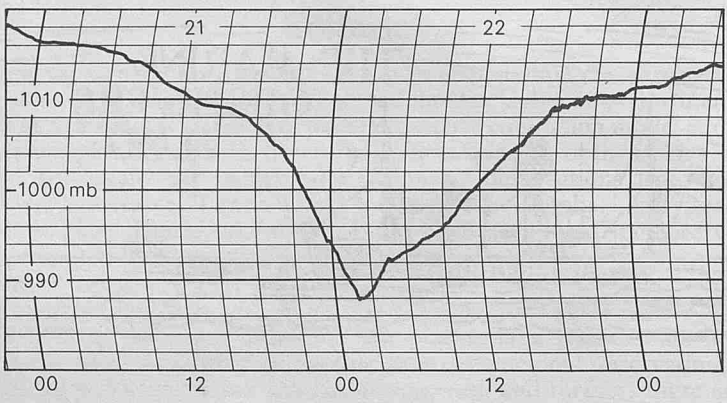
South Indian Ocean

m.v. *Wellpark*. Captain J. R. Corrin. Kwinana to Hamburg. Observers: the Master and all Deck Officers.

22 February 1984. The tropical depression Haja passed close to the vessel. The depression was some 300 n. mile from its forecast position, so it appeared that either its movement had been exceptionally rapid, or its initial position was not accurately known. The following observations were made:

Date and Time		Wind		Baro.	Remarks
	(GMT)	Dir'n	Force	Pressure (mb)	
21st	2200	N'E	8	999·1	
22nd	0000	N	8	993·9	Very rough sea; mod. N'ly swell.
	0200	N'W	9	988·8	Closest approach estimated as 60 n. mile to SW. Very rough sea; very heavy and at times mountainous, confused swell (hove-to in position 33° 42'S, 58° 22'E).
	0400	NW	9	992·5	Very rough sea; steep heavy swell.
	0600	W'N	9	994·5	
	0800	W'S	9	996·2	Very rough sea; heavy W'ly swell.
	1000	SW'W	9	999·7	

There was very little precipitation associated with the depression but visibility was considerably reduced by mist/drizzle and spray. No unusual swell or cloud formation had been noted up until darkness on the 21st, to give any warning that the depression was approaching.



Position of ship at 2200 GMT on 21st: 33° 42′S, 58° 30′E.

INTENSE DEPRESSION

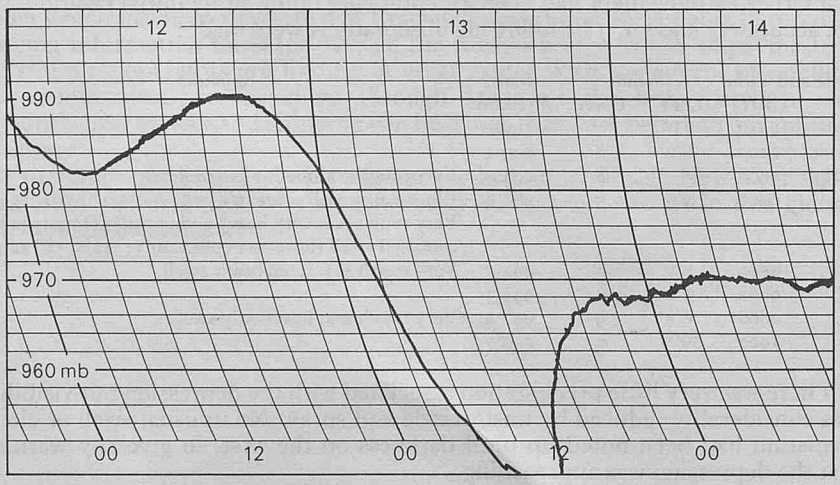
North Sea

m.v. *Matco Thames*. Captain B. D. Jones. Southwold Anchorage to Beryl Terminal. Observer: Mr D. J. O'Keefe, 2nd Officer.

12–13 January 1984. During these two days the vessel passed through an intense depression in the North Sea. The following extracts from the deck and meteorological logs cover the period of the depression.

12 January, 1200 GMT. Dry bulb 6·2 °C, barometric pressure 989·5 mb, wind w's, force 9, sea rough with heavy swell.

The wind was w'ly, force 7 during the afternoon and evening of the 12th, with occasional rain, sleet, hail and snow showers.



13 January, 0000 GMT. Dry bulb 5·5 °C, pressure 984·6 mb, wind SW, force 7, occasional drizzle, sea rough.

0600 GMT. Dry bulb 8·0 °C, pressure 955·3 mb, wind veered to SSW, force 7.

0800 GMT. Dry bulb 7·5 °C, pressure 946·2 mb, wind SSW, force 7, occasional rain showers, sea rough with heavy swell.

1000 GMT. Wind SSW, force 7.

Between 1000 and 1100 GMT the wind veered quickly to N'W and increased to force 11 with heavy rain and snow. The visibility was poor and was affected by spray. The lowest observed barometric pressure was 943 mb. After 1100 GMT the pressure started to rise rapidly.

1200 GMT. Dry bulb 3·8 °C, pressure 949·3 mb, wind N'W, force 11, short very rough sea with heavy swell.

1300 GMT. Pressure 956·0 mb, wind N'W, force 11.

1400 GMT. Pressure 959·4 mb, wind NW, force 10, rain, sleet and snow showers.

1600 GMT. Dry bulb 4·5 °C, pressure 964·6 mb, wind NW, force 8, sea rough with heavy swell.

2000 GMT (at Beryl oil field). Dry bulb 1·2 °C, pressure 969·7 mb, wind W'N, force 8, sea rough with heavy swell.

The wind stayed westerly with rain, hail and snow showers. By 1200 GMT on the 14th it had decreased to W'ly, force 4 with moderate sea and heavy NW'ly swell.

Position of ship at 1200 GMT on 12 January: 55° 45′N, 02° 33′E.
Position of ship at 0000 GMT on 13 January: 57° 06′N, 02° 13′E.
Position of ship at 1200 GMT on 13 January: 59° 01′N, 01° 42′E.

INTENSE WAVE DEPRESSION

North Sea

m.v. *Elk*. Captain B. Luke. Teesport to Göteborg. Observer: Mr P. Brookes, 3rd Officer.

12–15 January 1984. During this period the exceptional barograph trace shown was recorded. The following amplifying remarks are from the deck and meteorological logs.

12 January, 2030 GMT. Fairway Buoy bearing 243° × 0·6 n. mile. F.A.O.P. course 064°.

2100 GMT. Pressure dropped 7·0 mb within last 3 hours.

2339 GMT. Vessel hove-to in position 55° 07′N, 00° 24′E. Course 220°. Between 2100 and 2359 GMT pressure dropped 14·0 mb.

13 January, 0300 GMT. Altered course to 235°. Cloudy with occasional squalls. Barometric pressure 971·0 mb, wind SW, force 10. Very rough seas, short heavy swell, good visibility. Courses to Master's orders.

0800 GMT. Barograph trace steadies at 960·0 mb for approximately one hour. Wind WSW, force 11–12. Very rough seas, very heavy short swell, moderate visibility. Sea white with spray, crests of waves blown into froth. After accommodation block vibrating owing to wind effect.

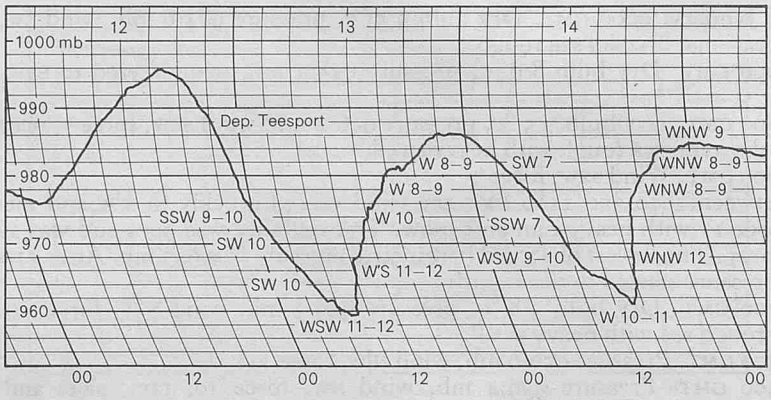
1014 GMT. Pressure 970·6 mb, wind W'ly, force 10–11, very rough seas, moderate to heavy swell, good visibility.

1415 GMT. Vessel proceeding seaward. Pressure 979·0 mb, wind W'ly, force 8, rough seas, moderate swell, good visibility.

1646 GMT. Owing to increasing swell, course altered to 260° to return to shelter. Pressure 981·0 mb, wind W'ly, force 8–9, rough seas, short heavy swell, good visibility.

2000 GMT. Pressure 987·0 mb, wind W'ly, force 9, rough seas, heavy swell, good visibility, cloudy, fine and clear.

2230 GMT. Barograph trace levels off at 988·0 mb. Wind W'ly, force 7–8, rough seas, moderate to heavy swell, good visibility.



14 January, 0412 GMT. Vessel proceeding seaward, course 064°. Pressure 982·7 mb, wind SW, force 7, rough seas, heavy swell, good visibility. Cloudy and clear.

0740 GMT. Vessel experiencing increasing wind and rain squalls. Alteration of course to reduce fetch in anticipated deteriorating weather conditions. Pressure 976·0 mb, wind SSW, force 7, rough seas, heavy swell, moderate to good visibility.

1200 GMT. Vessel pitching to very rough seas and short, steep swell. Cloudy with occasional rain showers. Pressure 968·5 mb, wind WSW, force 9–10, very rough seas, heavy swell, moderate to good visibility.

1400 GMT. Barograph trace levels off at 961·0 mb. Wind w'ly, force 10–11, very rough seas, heavy swell, good visibility.

1600 GMT. Vessel pitching to very rough bow seas and heavy swell. Sea white with spray; foam and spray fill air immediately above sea. Overcast with heavy squalls. Vessel shipping spray overall. Pressure 972·0 mb, wind WNW, force 12, very rough seas, heavy swell, good visibility.

2000 GMT. Barograph trace begins to level off at 987·0 mb. Wind WNW, force 8–9, rough seas, heavy swell, good visibility.

15 January, 0000 GMT. Vessel pitching to rough seas. Cloudy, fine and clear. Pressure 988·2 mb, wind W'N, force 7, rough seas, moderate to heavy swell, good visibility.

0200 GMT. Decrease in weather, vessel proceeding towards Göteborg. Pressure 986·1 mb, wind WSW, force 6–7, rough seas, moderate swell, good visibility.

0800 GMT. Vessel rolling and pitching moderately at times to heavy following swell. Overcast with wintry showers. Pressure 986·0 mb, wind WSW, force 8, rough seas, heavy swell, good visibility.

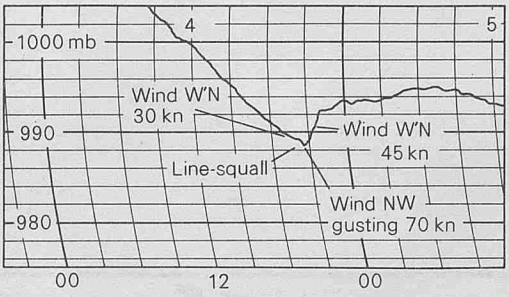
Position of ship at 0900 GMT on 13 January: 54° 58′N, 01° 05′W.
Position of ship at 1200 GMT on 14 January: 55° 08′N, 00° 26′E.
Position of ship at 0800 GMT on 15 January: 55° 43′N, 02 04′E.

PASSAGE OF LINE-SQUALL

North Sea

s.s. *Esso Warwickshire*. Tees Bay to Brent Spar. Captain C. C. Jorgensen. Observers: Mr J. D. Peel, 3rd Officer and Mr T. Old.

4 February 1984. At 2015 GMT heavy precipitation was observed on the P.P.I., approaching from the west and approximately 6 n. mile across. The wind at this time was 260°, 30 knots. At 2025 the wind veered to 300° and increased to 50 knots, gusting to 55 knots. Continuous moderate rain began to fall and at 2045 the wind was 300°, 60 knots gusting to 70 knots. At 2050 the wind had backed to 270° and eased to 40–45 knots.



Approximate position of ship: 56° 00′N, 00° 57′W.

ICEBERGS

South Pacific Ocean

m.v. *ACT 7*. Captain D. M. McPhail. Port Chalmers to Zeebrugge. Observers: the Master, Mr M. J. Power, Chief Officer, Mr M. J. O'Keefe, 2nd Officer, Mr D. G. Robbie, 3rd Officer and Mr N. R. Smirk, Radio Officer.

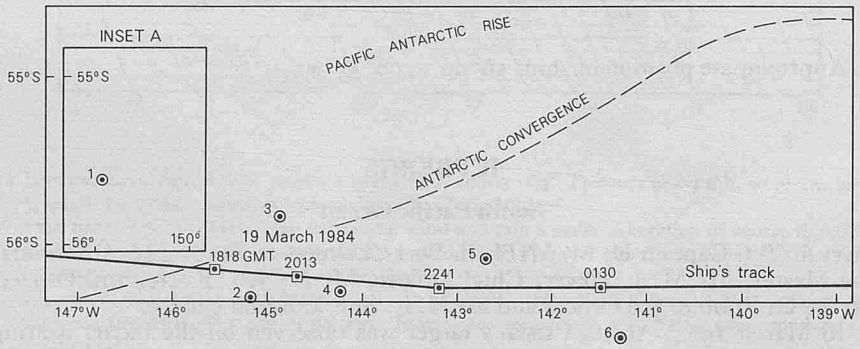
19 March 1984. At 0843 GMT a target was observed on the radar, bearing 018½° at a distance of 10·8 n. mile from the vessel. The target was originally detected at a range of 16·0 n. mile and gave a strong point. As it is unusual to meet other vessels on this route it was called on VHF Channel 16 but no reply was heard. The target was plotted and found to be stationary and at this point the Master was called to the bridge as it was thought that the target could have been an iceberg. At this time the vessel was some 40–50 n. mile north of the Antarctic Convergence Line. Several more calls were made on Channel 16 but again no replies were heard. Although the exact nature of the target was unknown, an entry was made in the deck log noting the time and position of the target, which was suspected to be an iceberg.

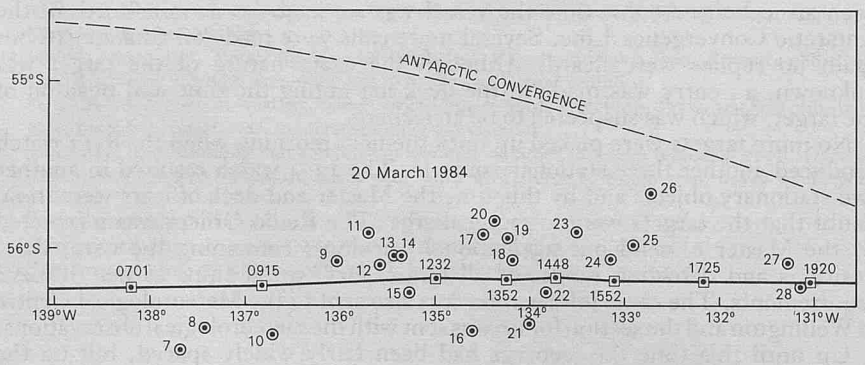
No more targets were picked up until the next morning when the 8–12 watch produced another three stationary objects. The 12–4 watch resulted in another two stationary objects and by this time the Master and deck officers were in no doubt that the targets were in fact icebergs. The Radio Officer was instructed by the Master to send out navigational warnings, containing the GMT, date, positions and detection ranges of all targets, CQ to all ships as per SOLAS requirements. The same information was also sent to the Meteorological Centre in Wellington and the section for ice was sent with the meteorological observations.

Up until this time the icebergs had been fairly widely spaced, but on the evening of the 19th/20th (Ship's Time) 20 icebergs were located in an 8–hour period, to the north and south of the vessel, giving much denser concentration than before, as can be seen from the accompanying chart. The closest approach of any iceberg was 2·2 n. mile on the morning of the 21st (Ship's Time) but the berg was not seen owing to the poor visibility.

The vessel left the Antarctic Convergence Zone at approximately 2300 GMT on the 20th and it was thought that no more bergs would be detected. This was not the case; although there was a gap of almost 11 hours when no bergs were detected, another six icebergs were subsequently picked up. These were all outside the Antarctic Convergence Zone (as were two of the first group) and were widely spaced, four of them occurring in two pairs of two.

In all a total of 34 icebergs were observed on radar during the three days. Their positions and other relevant information taken from the meteorological and deck logbooks are listed in the following table.


INSET A
55°S
55°S
56°S
56°
150°
PACIFIC ANTARCTIC RISE
ANTARCTIC CONVERGENCE
19 March 1984
1818 GMT
2013
2241
0130
Ship's track
147°W
146°
145°
144°
143°
142°
141°
140°
139°W
1
2
3
4
5
6


55°S
56°S
ANTARCTIC CONVERGENCE
20 March 1984
0701
0915
1232
1352
1448
1552
1725
1920
139°W
138°
137°
136°
135°
134°
133°
132°
131°W
7
8
9
10
11
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13
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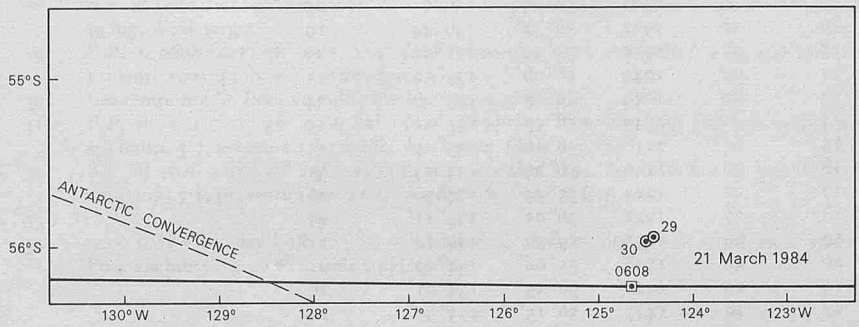
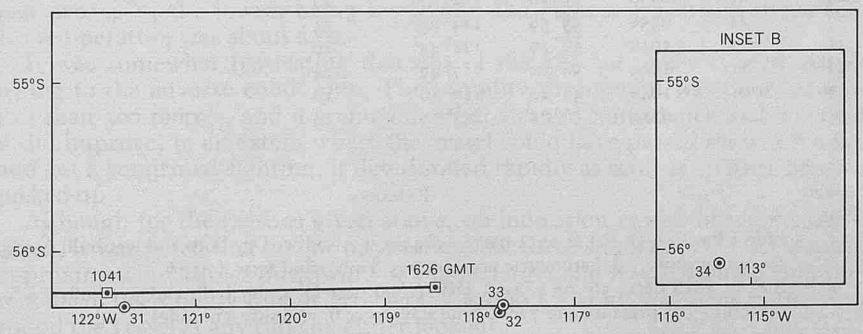

55°S
56°S
ANTARCTIC CONVERGENCE
29
30
21 March 1984
0608
130° W
129°
128°
127°
126°
125°
124°
123° W


INSET B
55°S
56°S
1041
1626 GMT
33
34
113°
56°
122° W
31
121°
120°
119°
118°
32
117°
116°
115° W

Iceberg No.	Date	Time (GMT)	Lat S	Long W	Detection Range (n. mile)	Remarks (*see* below)
1	19	0843	55° 37′	150° 55′	16	
2	19	1914	56° 18′	145° 10′	10	
3	19	1914	55° 50′	144° 52′	20	
4	19	2035	56° 17′	144° 13′	08	
5	19	2246	56° 05′	142° 41′	20	
6	20	0117	56° 33′	141° 17′	20	
7	20	0728	56° 37′	137° 42′	25	
8	20	0749	56° 28′	137° 26′	19	
9	20	0922	56° 05′	136° 02′	25	
10	20	0922	56° 32′	136° 42′	19	
11	20	1012	55° 55′	135° 40′	23	
12	20	1049	56° 06′	135° 34′	25	
13	20	1049	56° 03′	135° 26′	24	
14	20	1049	56° 03′	135° 21′	15	
15	20	1116	56° 16′	135° 17′	14	
16	20	1142	56° 29′	134° 37′	31	
17	20	1214	55° 55′	134° 30′	26	
18	20	1222	56° 05′	134° 11′	27	
19	20	1258	55° 56′	134° 14′	21	
20	20	1258	55° 02′	134° 23′	21	
21	20	1416	56° 25′	134° 01′	16	
22	20	1437	56° 15′	133° 50′	24	
23	20	1510	55° 54′	133° 31′	23	
24	20	1548	56° 04′	133° 09′	25	
25	20	1606	55° 59′	132° 55′	22	
26	20	1655	55° 41′	132° 44′	31	
27	20	1743	56° 05′	131° 17′	24	
28	20	1909	56° 13′	131° 09′	08	
29	21	0556	55° 58′	124° 27′	27	
30	21	0556	55° 59′	124° 29′	24	
31	21	1016	56° 20′	121° 45′	16	
32	21	1642	56° 22′	117° 47′	24	
33	21	1642	56° 20′	117° 46′	16	
34	22	0110	56° 05′	113° 20′	19	

Iceberg Nos	Remarks
1	Ship's Position (S.P.) at 0754 GMT: 55° 45′S, 151° 28′W. Dry bulb and wet bulb 6·3 °C, sea temperature 3·8, barometric pressure 995·8 mb, wind NNW, force 6.
2	S.P. at 1818 GMT: 56° 08′S, 145° 33′W (1800 GMT Obs. dry bulb and wet bulb 5·0 °C, sea temp. 3·2, pressure 995·7 mb, wind N'ly, force 6, visibility 2 n. mile).
3	—
4	S.P. at 2013 GMT: 56° 11′S, 144° 41′W. Poor target.
5	S.P. at 2241 GMT: 56° 15′S, 143° 12′W (2130 GMT Obs. dry bulb and wet bulb 5·8 °C, sea temp. 3·5, pressure 995·6 mb, wind NNW, force 5–6).
6	S.P. at 0132 GMT: 56° 15′S, 141° 29′W (0130 GMT Obs. dry bulb 6·7 °C, wet bulb 6·5, sea temp. 2·7, pressure 997·2 mb, wind NNW, force 5).
7, 8	S.P. at 0701 GMT: 56° 14′S, 138° 12′W, dry bulb 7·8 °C, wet bulb 7·7, sea temp. 7·2, pressure 998·9 mb, wind NNW, force 5–6.
9, 10	S.P. at 0915 GMT: 56° 13′S, 136° 50′W, dry bulb 7·4 °C, wet bulb 7·2, sea temp. 7·2, pressure 999·3 mb, wind NNW, force 5–6, visibility 300 m.
11	Dry bulb 7·4 °C, wet bulb 7·3, sea temp. 7·2, pressure 999·5 mb, wind NW'N, force 5.
12–15	—
16	1200 GMT Obs. dry bulb 7·0 °C, wet bulb 6·9, sea temp. 3·9, pressure 999·7 mb, wind NW, force 5, visibility approx. ½ n. mile.
17	—
18	S.P. at 1232 GMT: 56° 10′S, 134° 59′W (1230 GMT Obs. dry bulb and wet bulb 6·0 °C, pressure 999·7 mb, wind NW, force 4–5).

19, 20

21 S.P. at 1352 GMT: 56° 11′S, 134° 15′W.

22 Two or possibly three small targets detected to SE of main echo, distance approx. 7 cables (radar on 6 n. mile range).

23 S.P. at 1448 GMT: 56° 10′S, 133° 43′W. Visibility poor owing to thick fog.

24 S.P. at 1552 GMT: 56° 11′S, 133° 06′W.

25 1630 GMT Obs. dry bulb and wet bulb 6·1 °C, sea temp. 6·4, pressure 1000·2 mb, wind NNW, force 6. Rough sea, heavy swell. Visibility poor owing to fog.

26 S.P. at 1725 GMT: 56° 11′S, 132° 11′W.

27 1800 GMT Obs. dry bulb 5·8 °C, wet bulb 5·7, sea temp. 4·4, pressure 1000·8 mb, wind NW'W, force 5. Visibility down to 100 m at times.

28 S.P. at 1920 GMT: 56° 12′S, 131° 02′W. Closest approach at 2·2 n. mile not observed owing to fog. Weak target.

29 S.P. at 0608 GMT: 56° 15′S, 124° 38′W (0600 GMT Obs. dry bulb 6·4 °C, wet bulb 6·3, pressure 1001·4 mb, wind WNW, force 5).

30 Sea temp. 6·2 °C. Poor visibility owing to fog and drizzle.

31 S.P. at 1041 GMT: 56° 15′S, 121° 56′W (0830 GMT Obs. dry bulb and wet bulb 6·2 °C, sea temp. 5·7, pressure 1001·0 mb, wind WNW, force 4–5, fog).

32 S.P. at 1626 GMT: 56° 13′S, 118° 29′W (1600 GMT Obs. dry bulb 6·9 °C, wet bulb 6·8, sea temp. 7·1, pressure 1000·2 mb, wind NW'W, force 4, fog).

33 —

34 0000 GMT Obs. dry bulb 6·3 °C, wet bulb 6·2, pressure 996·4 mb, wind WNW, force 4. Poor visibility owing to drizzle and fog.

Most of the icebergs were detected at around 20 n. mile and the weakest target, which actually passed the closest, was detected at 8 n. mile just outside the limit of sea clutter. One or two produced points which would have put them in the ULCC category had they been ships. The range in sea temperature was just over 4 °C, the lowest being 2·7 °C and the highest 7·2 °C and the average sea temperature was about 6 °C.

It was somewhat frustrating that out of the 34, not one was seen visually owing to the adverse conditions. The visibility throughout was poor, at times less than 300 metres, and it seemed a rather strange coincidence that whenever it did improve, to an extent where the vessel could have passed safely off a berg and got a confirmed sighting, it deteriorated rapidly as soon as another berg was picked up.

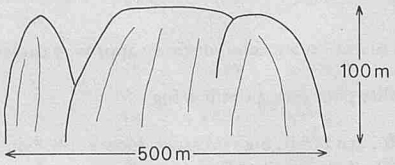
Although for the reasons given above, no indication of size of targets can be given, it was noted that on one occasion two or three small targets were detected approximately 7 cables downwind of a large target and it was thought that these may have been bergy bits or growlers. Also no ice at all was seen in the water round the vessel at any time by either lookout.

Weather conditions at 0843 GMT on the 19th: dry bulb and wet bulb 6·3 °C, sea temperature 3·8, barometric pressure 995·8 mb, wind NNW, force 6, overcast with continuous moderate rain, rough sea, moderate swell, visibility 2 n. mile.

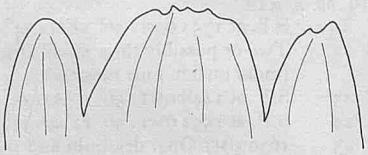
Position of ship at 0843 GMT on the 19th: 55° 47′S, 150° 58′W.

m.v. *Mairangi Bay*. Captain R. Brinkworth. Dunedin to Zeebrugge. Observers: the Master, Mr J. Overton, 2nd Officer, Mr B. Rolf, 3rd Officer, Cadet S. Allen, and other members of the ship's company.

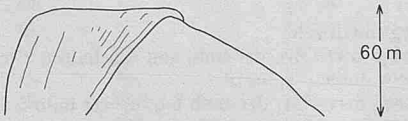
22 April 1984. At 1530 GMT a very large pinnacled iceberg was observed in position 56° 14′ S, 124° 55′W. The berg was light-greyish in colour and clearly visible up to a range of 18 n. mile. The minimum range was 11 n. mile, due south.



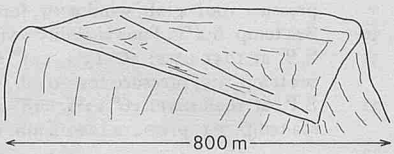
Bearing 180°
@ 11 n. miles



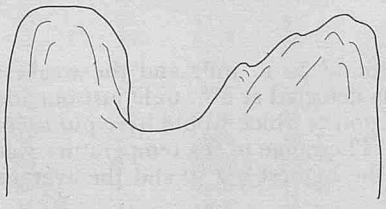
Bearing 240°



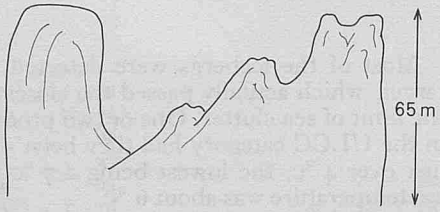
Bearing 050°



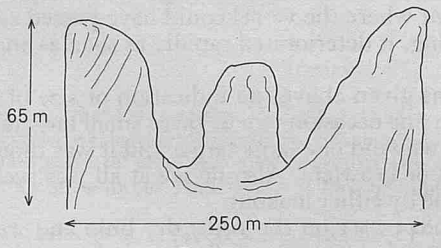
Bearing 340°



Bearing 115°



Bearing 120°



Bearing 180°

At 2100 GMT a very large tilted iceberg was observed in position 55° 44′S, 121° 33′W. The berg was bright white in colour when on a bearing of 050° but changed to duller grey when around due north. The appearance of the berg changed rapidly with change of aspect and bearing and colour change seemed to correspond to change of aspect of berg. The sea-water temperature was 5·6 °C and the minimum range 8 n. mile when the berg was due north.

At 2130 GMT a very large weathered iceberg was observed in position 55° 55′S, 121° 15′W. The berg was originally detected by faint ice blink and confirmed by 10 cm radar at a distance of 15 n. mile. Once observed visually, the berg appeared dark grey in colour, changing to very dark grey and almost black with change of aspect at long range. On closer approach the iceberg changed through

light grey to brilliant white. At the closest range of 1 n. mile the berg appeared smooth and glassy, generally white with overall blue hue and narrow light-grey striations in vertical bands in places.

The sea-water temperature remained steady at 5·6 °C in the vicinity of the iceberg and the air temperature was constant at 4·6 °C.

Position of ship at 1800 GMT: 55° 54′S, 123° 24′W.

Note 1. This report would normally have been published in the April 1985 issue of *The Marine Observer*; it has been brought forward so that it may be read in conjunction with the preceding report from m.v. *ACT* 7.

Note 2. The following extract is from a meteorological logbook covering March 1982 submitted by the *Mairangi Bay*.

'Whilst on passage from Wellington to Zeebrugge via Cape Horn, 14 icebergs were encountered on 7 and 8 March in latitude 56° 30′S between 144°W and 120°W. All bergs were relatively small, one being measured by vertical sextant angle to have a height of approximately 350 ft, and they varied in appearance from being well-weathered to being sharper in appearance. It is interesting to note that on the previous voyage there were nine iceberg sightings in the same area in November 1981, whilst on seven other passages made over the last two years only two isolated bergs were sighted.

'A particular danger area appears to be to the south of 56° 30′S between 145°W and 135°W where the sea temperature has been observed regularly to fall to about 1 °C.'

CETACEA

Grand Bank and western North Atlantic

m.v. *Dart Britain*. Captain A. G. Pound. Le Havre to New York. Observers: Mr M. G. Price, Chief Officer and Mr P. A. Rickard, 3rd Officer.

17 March 1984. At 1104 GMT approximately eight whales were seen. Four were adults and the others only medium size. The visibility being good at the time, their plumes were seen approximately 6 n. mile ahead. The occasional sight of an orange/brown colour did cause a bit of bafflement. The vessel eventually passed a few hundred metres from the nearest of the pod, swimming and diving in a circle with the occasional lunge half out of the water, on their sides with their jaws open, hence the orange/brown colour—the top inside of the jaw. The underbellies were whiteish as were the flukes when raised, although this only happened on several occasions. A turquoisy blue colour was glimpsed on the underbelly of one whale but this might have been an optical illusion attributable to the clearness of the water.

28 March 1984. At 1230 GMT three whales were observed, possibly believed to be fin whales, swimming in a w'ly direction and just breaking the surface. Two were estimated to be about 18 metres in length and the third 14 metres. As they passed close to the vessel it was observed that the flukes did not break the surface at all and that the dorsal fin was about 60 cm long, curving at the end towards the tail. Although they passed within 60 metres of the vessel, our presence seemed to be unnoticed by the whales.

Position of ship on 17th: 46° 50′N, 48° 46′W.

Position of ship on 28th: 43° 04′N, 61° 20′W.

Note. Mr D. A. McBrearty, of the Department of Anatomy, University of Cambridge, comments as follows:

'17 March. The indications here are that what Mr Price was watching was a pod of humpback whales (*Megaptera novaeangliae*) feeding. These whales feed on small schooling fish and on swarms of shrimp and other crustacea. When the whale locates a swarm or school it dives on the outer edge in a spiral movement releasing a curtain of air bubbles as it descends. This bubble curtain tends

to concentrate the fish or shrimp into a much tighter school, whereupon the whale then lunges up through the bottom of the curtain to the surface with the mouth open like a huge scoop. At the surface the mouth is closed and sea water drains out through the baleen plates with the food being retained by the sieve and swallowed.

'The white underparts on the flukes vary from whale to whale and are a characteristic by which individual whales may be recognized. They do not change throughout the life of the whale and are a means of noting the migration times, distance travelled, number of successful births and many other things about individual animals. To this end photographs of the flukes of humpbacks are most welcome.

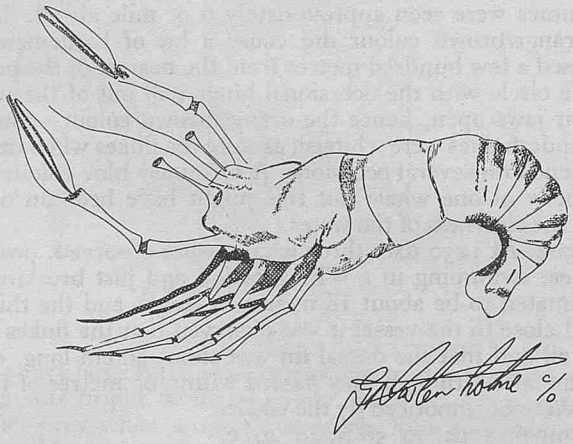
'28 March. These could, as the observers say, have been fin whales (*Balaenoptera physalus*), they could also have been sei whales (*Balaenoptera borealis*) which have an upper size limit of about 18 m. Differences in the shape and angle of the dorsal fin would separate these (sei whale has the more curved fin, forming an angle with the animal's back greater than 40°) as would observation of the baleen from close quarters (fin whale right one-third front white, others alternate bands of yellowish white and grey. Sei whale is ash black with greyish bristles).'

CRUSTACEA

San Carlos Water

m.v. *Lincolnbrook*. Captain R. G. Davis. At anchor in Ajax Bay. Observer: Mr G. W. Wostenholme, Chief Officer.

29 February–11 March 1984. During the vessel's stay in Ajax Bay, San Carlos Water, East Falkland Islands, the 2nd Officer, Mr N. J. Bennett, constructed two small pot nets weighted down and baited with herring. These were cast overboard and within minutes hauled inboard. They contained numerous crustaceans about 7 cm in length which were presumed to belong to the crayfish family. When boiled and shelled these creatures made delicious eating and the



supply seemed inexhaustible during the ten-day stay. Small spiny crabs, red in colour, were also caught, the larger of which unfortunately soon adorned our plates. All in all, a very pleasant stay at San Carlos Water, gastronomically speaking.

Any information would be greatly appreciated, especially the name and hints on cooking.

Position of ship: 51° 30′S, 59° 08′W.

Note. Dr Frank Evans, of the Dove Marine Laboratory, University of Newcastle upon Tyne, comments as follows:

'The lively sketch caused me a good deal of puzzlement. I suspect it is a long time since much scientific interest was shown in these creatures, which are in fact a kind of squat lobster, related to hermit crabs. The following account, combining reports written by Falklands whaling scientists in 1932 and 1935 may be of interest.

'*Munida subrugosa* and *M. gregaria,* two closely related species of squat lobster are found in New Zealand, in the Bass Strait, and in plenty at the Falklands Islands, Tierra del Fuego, the Magellan Strait and Patagonia, where surface temperatures vary between 5·5 and 9, but are entirely absent from the much colder waters of the South Shetlands, South Georgia and Bouvet Island. At Tristan da Cunha and Gough Island, where temperatures are higher than at the Falklands neither species has been found and there are no records from the Kerguelen area. They extend from the shore to 600 fathoms (1932).

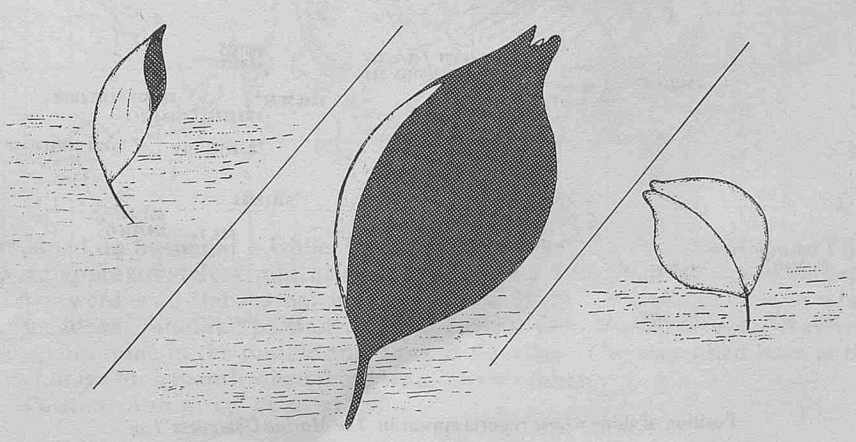
'In certain areas they occur in very great abundance. *Munida* were found to be excellent eating (in the ships of the expedition) and they are utilized as food in the small ports on the coasts of Chilean and Argentine Patagonia under the wide term "Camerones". It is possible that in the future they may acquire commercial importance, for more use could be made of them for human consumption (1935).'

MANTA RAY AND SKUAS

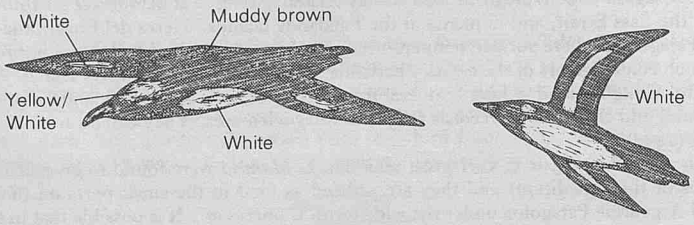
South Atlantic Ocean

m.v. *Appleby*. Captain T. Armstrong. Hampton Roads to Richards Bay. Observers: the Master, Mr P. Hamlin, 2nd Officer and Mr N. Ferguson, 3rd Officer.

2 March 1984, 0930 GMT. A Manta Ray was observed abaft the starboard beam. It was jumping from the water, turning in mid-air and landing on its back, probably to remove parasites. Only two jumps were observed. The ray measured approximately 2 m across its back and had a white belly and black back. The sighting was thought to be a strange coincidence in view of the fact that a Manta Ray was also reported by m.v. *Troutbank* in position 4° 00′S, 18° 27′W on 21 August 1981 (*The Marine Observer,* July 1982, p. 124); possibly the two fish were related.



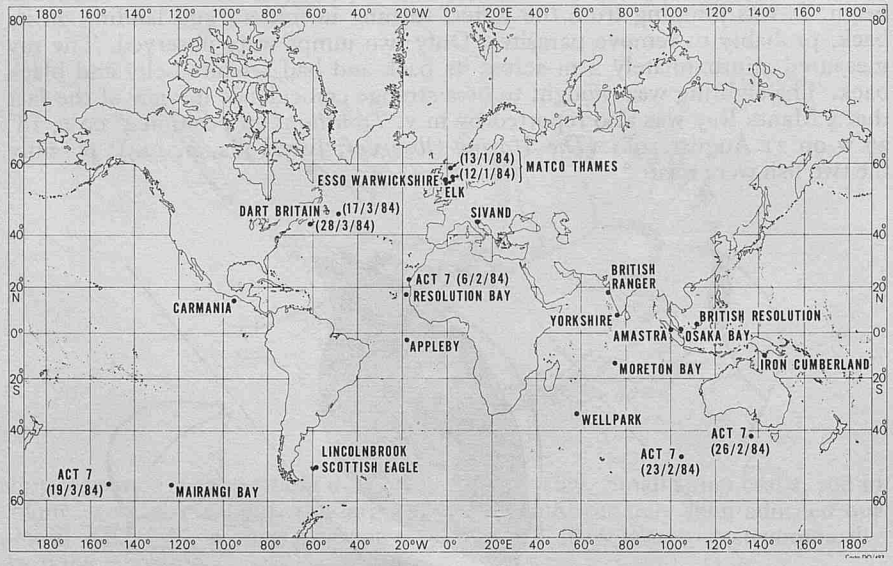
The only other marine life observed was a flock of birds to port. They were thought to be either Arctic or Pomarine Skuas. Only one approached the vessel.



It had a yellow/white nape with a white belly. There were small white wing flashes and the centre of the underwing was white. The bird was 50 cm long with its centre tail feathers 5 cm long.

Sea temperature 28·5 °C, wind light variable, force 1.

Position of ship: 03° 30′S, 18° 34′W.



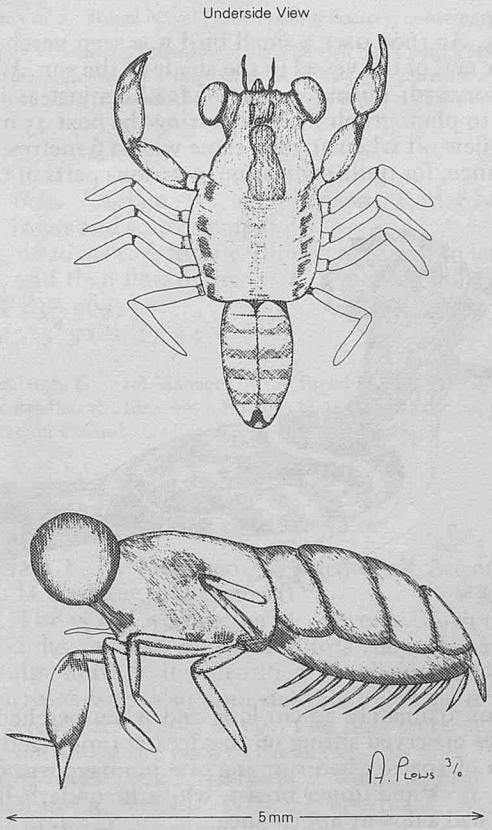
Position of ships whose reports appear in '*The Marine Observers' Log*'

MARINE LIFE

Arabian Sea

s.s. *British Ranger*. Captain P. N. Johnson. At anchor off west coast of India. Observers: the Master, Mr J. Harding, Chief Officer, Mr R. McAleese, 2nd Officer and Mr A. M. Plows, 3rd Officer.

28 February 1984. Whilst the vessel was at anchor, a trip round the ship in the lifeboat showed a multitude of organisms growing at the waterline and for approximately a metre below the surface. A sample of this growth was obtained and was found to consist mainly of barnacles and weed, but in the weed were several lobster-type creatures as shown in the sketches. These creatures were



retained on board for a while, but after a day all the 'lobsters' had died. They were approximately 5 mm in length, but had a very definable set of pincers. They were semi-transparent in colour when alive, but were an opaque white when dead. Another prominent feature were the very large eyes, mainly a turquoise blue in the middle and black at the edge. The vessel had been at the anchorage for a month when these samples were taken.

Position of ship: 17° 55′N, 72° 30′E.

Note. Dr Evans comments as follows:

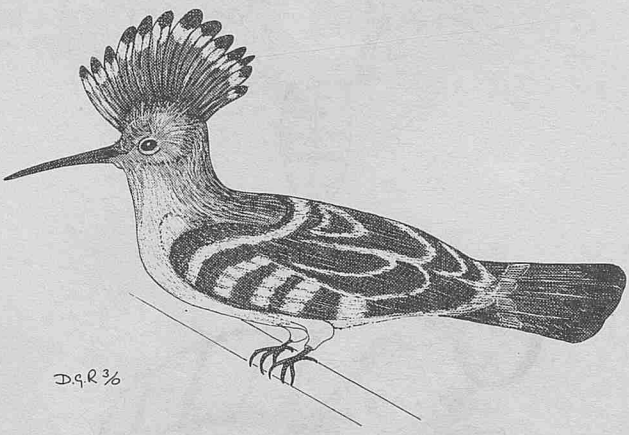
'The creatures illustrated were most probably larval crabs which had swum out of the plankton and were beginning to settle on the weed. Crabs have a floating larval phase with several moults before they take up the adult form. The pre-adult stage, which I believe these were, resembles the adult crab but has a "tail", actually the abdomen, which is going to be folded under the body to produce the characteristic crab outline.'

BIRDS

Eastern North Atlantic

m.v. *ACT 7*. Captain D. M. McPhail. Rotterdam to Melbourne. Observers: the Master, Mr M. Power, Chief Officer, Mr M. J. O'Keefe, 2nd Officer, Mr D. G. Robbie, 3rd Officer, Mr K. Spencer, Lookout, and other members of the ship's company.

6 February 1984. At 1600 GMT a small bird was seen perched on a container support at the after end of the vessel in the shade of the sun. When approached, the bird flew off forward, raising a crest of feathers just as it took flight. An attempt was made to photograph the bird during the next 45 minutes but it was easily startled and flew off when anyone came within 6 metres. However, it was observed, at a distance, for quite some time in various parts of the vessel.



The bird was approximately 20 cm long and when perched stood 12–14 cm tall, although it was observed sitting on the deck at times, and it was noted that it had a good turn of speed when running. Its plumage was of a pinky-orange colour on its head, neck and upper breast, whilst its underbelly was white with black speckles and had a downy appearance.

The wings and back were mainly black with white bars running across the upper back and white tips to some of its feathers. The beak was long and had a slight downwards curve similar to that of a humming bird. When first observed the bird appeared to have a crest similar to that of a lapwing, that is to say lying back flat along its head; however, when startled the crest was raised. The colour of the crest feathers was the same as that of the head except that they had black and white tips. When in flight it was noticed that the wings appeared similar to those of a condor in that the outer wing feathers were splayed and curved slightly forward (the flight path was of an undulating nature with sharp peaks, like the edge of a scalloped awning).

It was thought that the bird was a species of hoopoe which had been blown offshore in the strong winds.

Weather conditions: dry bulb 17·0 °C, wet bulb 15·2, barometric pressure 1019·8 mb, wind NE'E, force 6, visibility 5½ n. mile in haze.

At 1700 GMT several large seabirds were seen flying astern of the vessel, one of which, it is thought, may have been harassing the hoopoe previously described. On consulting 'Seabirds' by P. Harrison (Reeds), one species was positively identified as the Pomarine Skua and it was thought that there was also a Great Skua present.

Course 192°, speed 20·5 knots.

Position of ship at 1600 GMT: 23° 13'N, 17° 17'W.

Note. Commander M. B. Casement, Chairman of the Royal Naval Birdwatching Society, commends the excellent sketch and confirms the identification of the first-mentioned bird as a Hoopoe (*Upupa epops*).

Captain A. S. Young, of the Royal Naval Birdwatching Society, comments as follows:

'The Pomarine Skua (*Stercorarius pomarinus*) is a largish Skua with a fairly distinctive "twisted" tail extension which distinguishes it from both the Arctic (*S. parasiticus*) and Long-tailed (*S. longicaudus*). The Great Skua (*Catharacta skua*) is a very bulky dark seabird with diagnostic white wing patches.'

m.v. *Resolution Bay.* Captain W. A. Murison. Rotterdam to Melbourne. Observers: The Master and ship's company.

21 March 1984, 0820 GMT. A female 'Blue' racing pigeon landed on the vessel, rested for a time, and then flew on her way. The bird was ringed and bore the identification ESP 83A 06973.

Position of ship: 15° 50'N, 17° 44'W.

Note. Major L. Lewis, MBE, General Manager of the Royal Pigeon Racing Association, states that the ring number indicates that the bird was a Spanish pigeon and that a copy of the report has been sent to the Real Federación Colombófila Española in Madrid.

Italian coastal waters

s.s. *Sivand.* Captain J. F. Thomson. At anchor off Ancona. Observers: the Master and Mr S. D. Punton, 2nd Officer.

5 March 1984. The vessel was anchored 5 n. mile north of Ancona. Several kittiwakes, four adults and two immature birds (farrocks) were sighted in the vicinity. The adults were easily identified by their black-tipped outer four primaries. The farrocks were also unmistakable by virtue of the distinctive 'W' pattern forming across each upper wing. The bills were dark and there was a black band on the tail and at the back of the neck.

On referring to Gerald Tuck's 'Seabirds' it would appear that kittiwakes are not commonly seen in the Adriatic. N.B. Several black-headed gulls were also present at the time of the observation.

Position of ship: 43° 42'N, 13° 32'E.

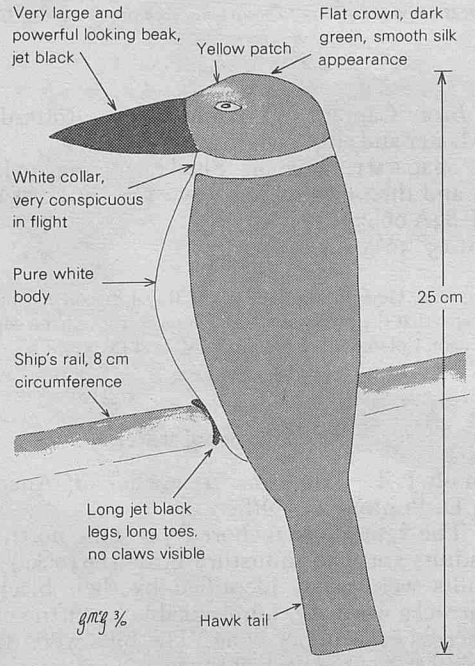
Note. Captain Young comments as follows:

'Yes, Kittiwake (*Larus tridactyla*) are not common in the eastern Mediterranean or Adriatic, so this is an interesting report and with the distinctive immatures would appear very "positive".

'Three species of gull may be met with here, all with black (or dark-brown) hoods: Blackheaded Gull (*Larus ridibundus*), Mediterranean Blackheaded Gull (*Larus melanocephalus*), and Little Gull (*Larus minutus*) the smallest of the gulls. In breeding plumage they all have dark hoods of varying extent. The very much larger Great Blackheaded Gull (*Larus ichthyaetus*) is a rare visitor in the eastern Mediterranean area.'

s.s. *British Resolution*. Captain A. H. Skellern. At anchor off NW Borneo. Observers: the Master and Mr G. McGill, 3rd Officer.

14 February 1984, 0200 GMT. The vessel was anchored off the NW coast of Borneo, 55 n. mile from the nearest point of land. After seven days no sightings of birds had been made. A steady convoy of vegetation, including some large tree trunks, drifted in a south-westerly direction. The weather had been unfavourable, with the NE'ly monsoon averaging force 4 and frequent heavy rain and thunderstorms, the sky always being overcast. The visibility was generally good. About 10 minutes before our visitor arrived the rain stopped and the sun appeared.



The bird flew past the bridge wing like a tern. Its green plumage and white collar were very evident. It circled and then came to rest above the deck pipelines. Aware that it was the subject of attention, it posed in various positions. With the aid of binoculars, several sketches were drawn. The bird flicked its tail constantly and was always alert, showing no signs of exhaustion. After 15 minutes it scuttled around the decklines and was lost from sight.

Description: A strong build, gleaming green and white plumage. Large dominant black beak like that of some gannets. Flat, dark green crown. Yellow around the eyes. Very distinct white collar separating the dark green of the head from the lighter green on the back and wings. Chest pure white. Strong legs and feet, black with long toes, no claw visible. Hawk-shaped tail.

Darwin might well have recorded this one as a hybrid between a gannet and a kingfisher.

Position of ship: 03° 26′N, 110° 41′E.

Note. Commander Casement comments as follows:

'Probably a Collared Kingfisher (*Halcyon chloris*), widely distributed throughout South-east Asia. Recorded by Captain D. M. Simpson in *Sea Swallow*, **32**, p. 39.'

Southern Ocean

m.v. *ACT 7*. Captain D. M. McPhail. Rotterdam to Melbourne. Observers: the Master and ship's company.

26 February 1984. At 1700 GMT whilst the lookout was on the boat deck filling the sea-water bucket he found a small, bedraggled bird sitting on the deck. The weather at the time was fine but there had been NW'ly gales and rain some 20 hours previously. The bird was brought to the bridge where it was examined. It did not seem to mind being handled and was apparently uninjured although its plumage was wet and dishevelled. It was about 20 cm long and had dark plumage on its upper body, a square-shaped black tail and white underbelly with a darker stripe down the middle towards the tail. At first it was thought that the bird was a dark-bellied storm petrel; however, on examination of the bill, there was found to be no characteristic horn, so the exact identification remains uncertain. The bird was put in a cardboard box with a dry towel and covered over to allow it to rest and dry out, and was also given water. Later an attempt was made to feed the petrel with sardine oil from an eye-dropper. At first the bird refused to co-operate, but once having tasted the liquid it promptly devoured the lot.

By tea-time that evening the petrel seemed to have made a complete recovery and was becoming restless, so it was decided to let it go. It was set down on the starboard bridge-wing and after a few false starts flew off apparently none the worse for its ordeal.

Later on the same day a second storm petrel was found. The bird, when found, was in much the same condition as the first one. It, too, was put in a cardboard box and allowed to rest and dry out. The plumage of this petrel was different from that of the first. The upper plumage was a grey-bluish colour with a lighter shade on its rump and a black tail, similar in shape to that of the first petrel. It had a dark patch on the crown of its head and a white face with another dark patch round the eyes. The underbelly was white and there were no signs of any stripes in this case. It was approximately the same length as the other petrel and again appeared to be uninjured. A few hours after the first bird was released the second one was also freed. Before being taken on to the bridge-wing it was fed by the same method as the first bird, and like the first one, refused at first but soon found that sardine was very palatable.

When the bird was set down it flapped its wings a few times but made no effort to leave; in fact it scampered for shelter underneath one of the bridge-wing gratings. It was fished out and set down again several times, but each time the result was the same. It was decided to put the bird back in the box and release it in the early hours of the morning just before the vessel picked up the Melbourne pilot. This time the bird flew away. It was identified as a white-faced storm petrel. (N.B. the bills in both cases were very much alike.)

Weather conditions at 1700 GMT on 26 February: dry bulb 12·9 °C, wet bulb 9·5, sea temperature 14·2, barometric pressure 1000·1 mb, wind W'S, force 5–6, moderate following sea and swell.

Course 064°, speed 19·5 knots.

Position of ship: 41° 34′S, 137° 03′E.

Note. Captain Young comments as follows:

'In the absence of a photograph, I would agree with the observer, viz. White-faced Storm Petrel (*Pelagodroma marina*), similar in size to the Black-bellied Storm Petrel but otherwise much lighter (grey/brown) plumage with fairly distinctive markings, especially about the head. Dark cap and eye/ear bar, much white under body and lightish rump, longish legs and yellowish webs.

'With regard to these little birds found on board, usually in a somewhat distressed condition, as here they usually respond to rest and warmth—to dry out—a little *fresh* water may be taken and "eye-dropper" feeding oil and finely mashed sardine helps greatly. However, they can be "killed by kindness"—do not hang on to them longer than necessary for recovery as they are much more at home in their own "hostile" environment. The fact that they do not run and jump around, but usually only shuffle about, is due to the fact that as they only come ashore to breed, their legs seldom have to support the body weight and so are very weak. A helping hand at "take-off" is all they usually need. This applies to most pelagic birds. Well done *ACT 7*.'

San Carlos Water

m.v. *Scottish Eagle*. Captains J. B. Caley and M. D. Whiteley. At anchor in San Carlos Water, Falkland Islands. Observer: Mr R. G. Kirkby, 3rd Officer.

March–May 1984. During the months of March and April large numbers of penguins, believed to be 'Gentoos' and 'Rock-hoppers' were found on the shore. They could be approached quite easily without being frightened away, as can be seen in the photograph on the facing page.

After April the penguins were not observed in large numbers but sightings of up to three were quite common. It was also quite common to have penguins swimming round the ship, normally one at a time.

Position of ship: 51° 30′S, 59° 08′W.

Note. Captain Young comments as follows:

'Good photographs of Gentoo Penguin (*Pygoscelis papua*) which do breed on the Falklands, also other sub-antarctic islands. One of them would appear to be Rockhopper Penguin (*Eudyptes chrysocome*), though very similar to slightly larger Macaroni Penguin (*Eudyptes chrysolophus*) which also frequents the Falklands, though not so numerous.

'All these species disperse seawards after breeding and moult around April/May which falls in with this interesting report.'

INSECTS

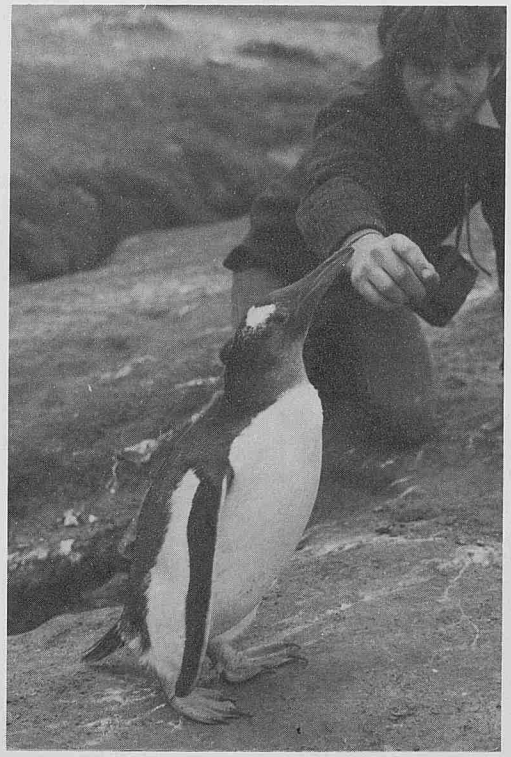
Arabian Sea

m.v. *Yorkshire*. Captain R. J. Court. Bombay to Singapore. Observer: not named.

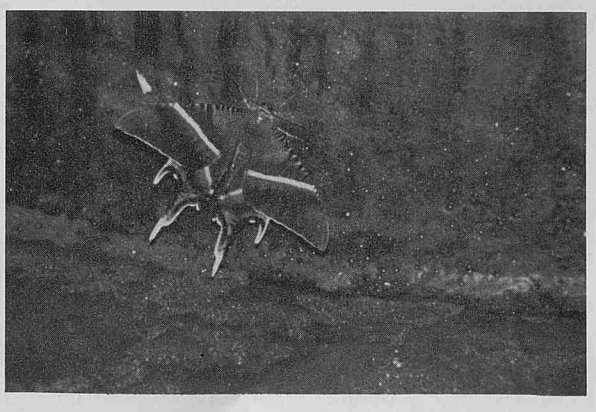
4 February 1984. Following a loading operation conducted 18 n. mile off the port of Bombay, the vessel sailed with an assorted menagerie which included pigeons, a green parrot and a crow. Among the many insects were small and large moths, crickets and the inevitable flies. However, the most spectacular find must have been the beetle described and illustrated below. Since it was dead when found on the maindeck, it was also the easiest creature to examine closely.

Its length overall was 10 cm, and its colour khaki with dark brown patches. What was of particular interest (or rather horror) were the large front mandibles

Opposite page 24



Penguin at San Carlos Water (*see facing page*).



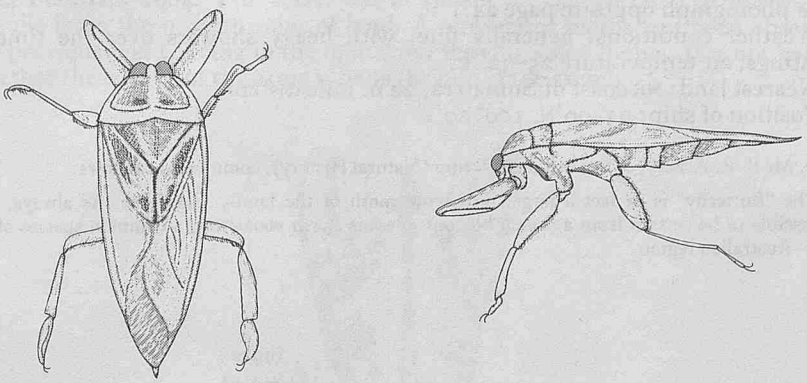
Butterfly found aboard m.v. *Amastra* (*see page 25*).

Opposite page 25

Royal Princess

P & O's new $150 million, 44 348 grt cruise ship was delivered to P & O Cruises at the end of October and named in Southampton by H.R.H. the Princess of Wales on 15 November 1984. She has a passenger capacity of 1260 maximum and a service speed of 22 knots and is a selected weather observing ship.

(shown folded in the sketch, which is half life-size, as they were found). One can only hope that these limbs enabled the insect to eat plants and did not have a more predatory purpose!

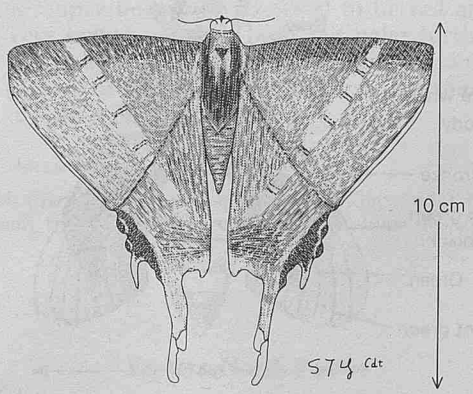


Position of ship at 1200 GMT on 4 February: 08° 06′N, 76° 54′E.

Strait of Malacca

m.v. *Amastra*. Captain R. Palmer. At anchor at One Fathom Bank. Observers: Mr G. P. Donnelly, 2nd Officer and Cadet S. J. Young.

29 February 1984. At 0200 GMT the butterfly depicted in the sketch was seen resting on a tank lid; it had been sighted on the bridge wing some days previously. The forward sections of the wings were made of feathery whorls



with the rear section of a somewhat smoother, flatter appearance. The main body had a small triangular patch just behind its head; this patch had a shiny, eggshell appearance. To the rear of this, the body was covered in a fine fur as far as a distinctive V-shaped mark. From here to the tail of the body seemed to consist of layered rows of an 'armoured-plating' appearance. The antennae were fairly short and covered in very fine hairs. The whole underneath of the

main body was a light-grey fur, with six legs. The underneath forward sections of the wings were brown and white speckled, the after sections being totally brown. The top of the body and wings shown as brown were in effect a much darker brown with dark narrow bands across the very well-defined white stripes. (*See* photograph opposite page 24.)

Weather conditions: generally fine, with heavy showers over the time of sightings, air temperature 25–32 °C.

Nearest land: NE coast of Sumatera, 22 n. mile distant.

Position of ship: 03° 00′N, 100° 20′E.

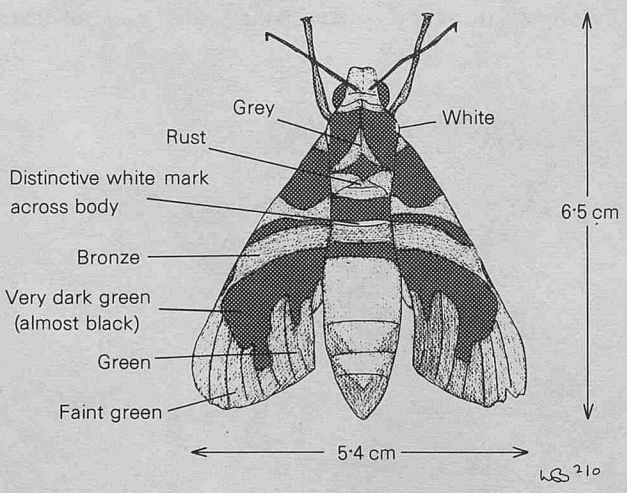
Note. Mr P. R. Ackery, of the British Museum (Natural History), comments as follows:

'The "Butterfly" is in fact a large, day-flying moth of the family Uraniidae. As always, it is impossible to be certain from a sketch but our guess is *Lyssa menoetius*, a common species of the Indo–Australian region.'

Singaporean waters

m.v. *Osaka Bay*. Captain J. K. Blackburn. Singapore Roads to Hong Kong. Observer: Mr W. J. Stoker, 2nd Officer.

11 February 1984. At 2116 GMT, whilst singling up aft on departure from Singapore, a large moth landed on deck close by. Attention was drawn to it only by virtue of the fact that it landed rather noisily, that is to say with a thump! The moth was immediately imprisoned in a half-pint mug and lived for another 4 days. It was thought to be a type of Hawkmoth.



Position of ship: 01° 15′N, 103° 51′E.

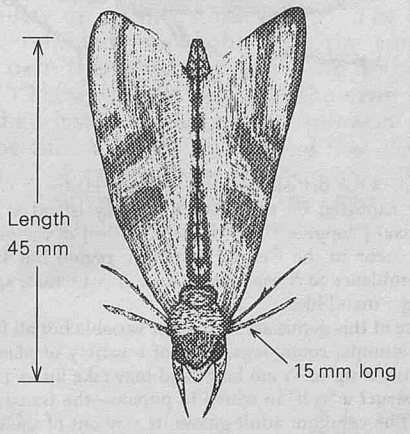
Note. Mr Allan Watson, of the British Museum (Natural History), comments as follows:

'The specimen received from m.v. *Osaka Bay* was, as suggested, a Hawkmoth. The species is *Daphnis hypothous* Cramer, a relative of the Oleander Hawkmoth that sometimes reaches Britain. The range of *D. hypothous* extends from India to China and Malaya.'

South China Sea

s.s. *British Resolution*. Captain A. H. Skellern. At anchor off NW Borneo. Observers: the Master and Mr R. D. Mead, 2nd Officer.

24 February 1984. The vessel was at anchor off the NW coast of Borneo, 55 n. mile from the nearest point of land. A number of moths had been observed the previous night, flying in the light from the ship's floodlights. It is not known whether these were of the same type as the one in the sketch.



The moth was observed at 1930 GMT, near one of the ship's floodlights, in a dormant state. The body was hidden by the wings, which were a brown/grey colour with some patches darker than others.

When woken, the upper body was observed to be red and black in colour. The colours were very bright near the head but paler further down the body. The underside of the body was unmarked and light in colour. The eyes were a very dark colour (brown or black) and about 3 mm in diameter.

Position of ship: 03° 26′N, 110° 41′E.

Note. Mr Watson comments as follows:

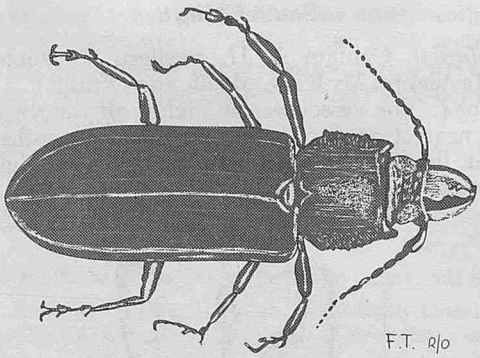
'This is a Hawkmoth (*Agrius convolvuli* Linnaeus), the Convolvulus Hawk of Britain, which migrates here occasionally from southern Europe. Outside Europe this species occurs in most of the Old World tropics.'

Eastern North Pacific

m.v. *Carmania*. Captain D. M. Kissane. Golfito to Los Angeles. Observers: the Master, Mr C. H. Denny, Chief Officer, Mr D. A. Smith, 2nd Officer, Mr M. K. Clark, 3rd Officer and Mr F. Tordoff, Radio Officer.

22 March 1984. Two days after departing Golfito, Costa Rica, the bug shown in the sketch was captured on the vessel's monkey island by the Radio Officer. It had a hard, black exoskeleton and was 6 cm in length. Its mandibles were serrated, not unlike lobster claws.

Position of ship at 1200 GMT: 14° 42′N, 95° 12′W.



Note: Dr Jane E. Marshall, of the British Museum (Natural History), comments as follows:

'The illustrated insect captured on the vessel's monkey island is a prionine longicorn beetle (Coleoptera: Cerambycidae) ["longhorn" or "timber" beetles] of the genus *Stenodontes*. A number of species of this genus occur in the Central American region but from the enclosed figure the specimen bears most resemblance to *S. molarius* Bates. It is a female specimen, the males generally being larger and with longer mandibles.

'The habits of the larvae of this genus are somewhat variable but all form galleries in wood (living or dead trees, branches, stumps, roots, logs, etc.) of a variety of plants. They feed on the wood, are fleshy and grub-like (often up to 11 cm long) and may take up to 3 or 4 years to develop. When fully developed they construct a "cell" in which to pupate—the transformation stage from larva to adult (as in butterflies). The resultant adult gnaws its way out of the preformed "plugged-up" exit tunnel to the "outside world".

'Some species are of economic importance when they occur in trees of value to man, but this occurs only rarely in this genus. In a number of regions the large, fatty larvae are "in great demand" by the natives and are "consumed with obvious relish", sometimes being "broiled over charcoal".'

AURORA BOREALIS

North Sea

s.s. *Esso Warwickshire*. Captain C. C. Jorgensen. Tees Bay to Brent Spar. Observers: the Master, Mr D. J. Wilson, Chief Officer, Mr J. D. Peel, 3rd Officer, and Mr T. Old.

4 February 1984. At 2130 GMT, shortly after the passage of a severe line-squall, the northern sky became brilliant white over an arc of the horizon of about 100°. The light was more apparent at first owing to a backdrop of dark cumulonimbus against the horizon, with base approximately 2000 ft and maximum elevation of 25°. Lines of parallel light of moderate intensity and grey/white colouring, closely resembling searchlight beams, were emitted from the centre of the incandescence. The lines tended to drift across the sky in ripples which produced a curtain-like effect. The incandescence extended to an elevation of about 50°, the remainder of the sky being very clear with hues of blue and violet and the stars very prominent. A slight prismatic effect occurred at the interface between light and dark. The phenomenon continued in this manner until 2155 GMT and then faded as a band of altocumulus spread across the horizon from the west.

Weather conditions: dry bulb 5·0 °C, wet bulb 3·6, sea temperature 7·4, wind w'ly, force 8, visibility 12 n. mile.

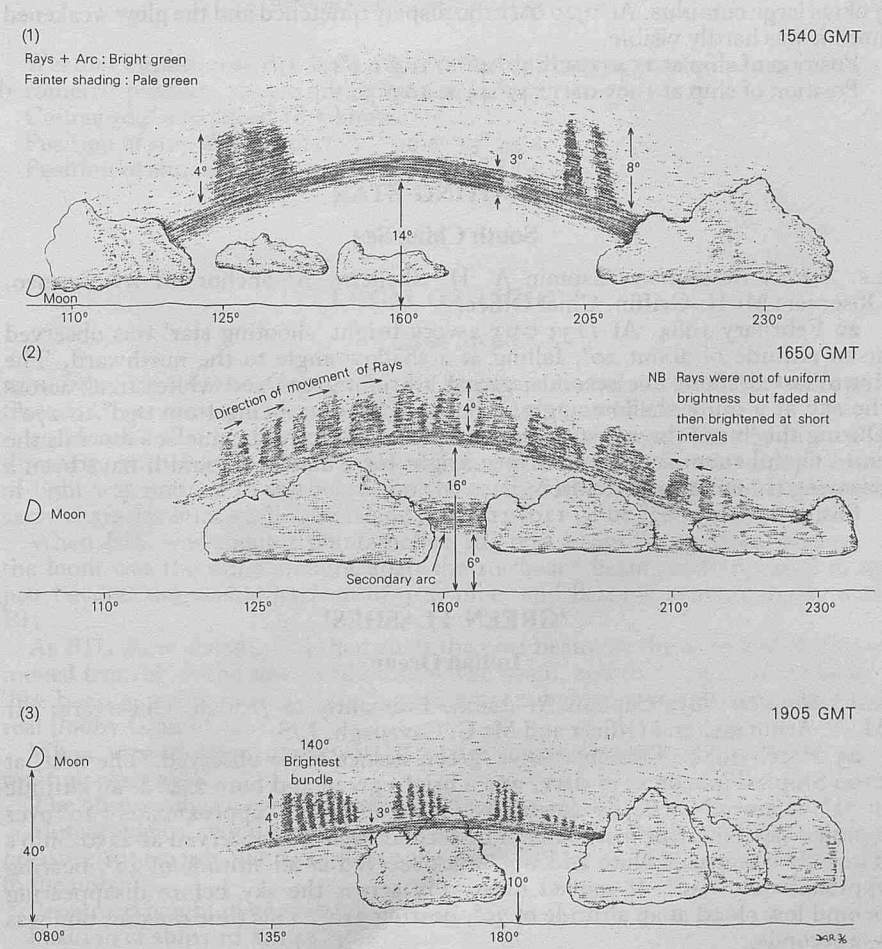
Position of ship: 56° 06′N, 00° 56′W.

AURORA AUSTRALIS

South Indian Ocean

m.v. *ACT 7*. Captain D. M. McPhail. Rotterdam to Melbourne. Observers: Mr M. J. O'Keefe, 2nd Officer, Mr D. G. Robbie, 3rd Officer, and Mr S. Mifsuo and Mr K. Spencer, Lookouts.

23 February 1984. A bright green glow was observed to the south just as the moon was rising at 2230 Local Time (1530 GMT). This took the form of an arc with dimensions as shown in sketch (1). The arc was brightest at the bottom and decreased in intensity up to an altitude of 30°. The brightest part of the arc overshadowed the reflected moonlight from the cumulus clouds in the foreground. At 1550 GMT there was ray and band activity. Two rays were observed bearing 205°. These were as bright as the main arc and extended up to 20° in altitude. They lasted for about five minutes and appeared to be stationary. At the same time a bright green band was observed bearing 125°. This went to an altitude of 15° and was bright enough to blot out the stars behind it. The band was moving up towards the centre of the arc, but it too lasted for only a few minutes before disappearing.



At 1605 GMT all ray and band activity stopped and the arc appeared to be sinking towards the horizon and diminishing in brightness as the moon rose. At 1650 GMT there was renewed activity. The arc reactivated so that it was easily visible in the by then bright moonlight. The activity took the form of a rayed arc; although the rays were only of a small altitude they were nevertheless bright and appeared to move across the arc from E to W. The arc regained its original altitude and had a kink in it at 210°. There was also some activity between the lower edge of the arc and the southern horizon. This took the form of a secondary arc, and occasional bright flashes were observed coming from this area at 1710 GMT. This display lasted just over 20 minutes.

At 1800 GMT activity was declining. There were now two bands across the southern horizon, the upper band being approximately 20° in altitude with a brightness comparable to that of the Milky Way and a lower band at an altitude of 10° approximately twice as bright as the upper band.

At 1905 GMT there was renewed activity with a thin arc of moderate brightness with bright bundles of rays extending upwards. The rays varied in intensity for approximately 10 minutes before being obscured by passing cloud (sketch (3)). At 1925 GMT there was an arc across the sky from 130° to 230° up to 25° altitude, which had a weak diffuse glow with brief bursts of activity in the form of isolated rays (one bearing 185° at the time). The cloud cover in the area was 7 oktas large cumulus. At 1940 GMT the display quietened and the glow weakened until it was hardly visible.

Position of ship at 1540 GMT: 47° 46′S, 104° 14′E.
Position of ship at 1905 GMT: 47° 44′S, 105° 50′E.

SHOOTING STAR

South China Sea

s.s. *British Resolution*. Captain A. H. Skellern. At anchor off NW Borneo. Observer: Mr H. Griffin, Chief Officer.

26 February 1984. At 1133 GMT a very bright 'shooting star' was observed at an altitude of about 20°, falling at a shallow angle to the northward. The 'burn' lasted about five seconds, giving a bright green and white streak across the sky at a quite shallow angle, a possible heading being from 090° to 270°. During the 'burn' three distinct molten pieces fell from the nucleus towards the end. The phenomenon seemed very bright for a meteor—could it have been a decaying (re-entering) satellite?

Position of ship: 03° 26′N, 110° 41′E.

'GREEN FLASHES'

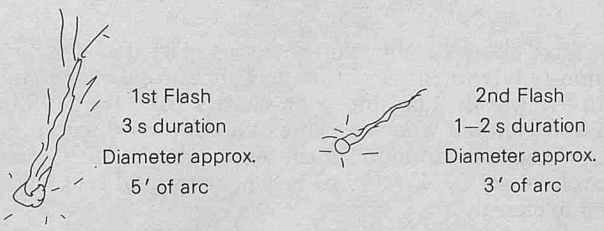
Indian Ocean

m.v. *Moreton Bay*. Captain A. Aston. Fremantle to Jeddah. Observers: Mr M. A. Armitage, 2nd Officer and Mr C. Cavanagh, L/S.

25 March 1984. Two successive 'green flashes' were observed. The first, at 2100 Ship's Time or 1530 GMT, was a bright green and bore 240° at an altitude of 75°; it moved vertically downwards to an altitude of approximately 20° over a period lasting about 3 seconds. The second flash was observed at 2250 Ship's Time. It was green/white and was first observed at an altitude of 40°, bearing approximately 340°. It moved diagonally across the sky before disappearing behind low cloud at an altitude of 30°, bearing 310°. This time the duration was 1–2 seconds.

In both cases the ship's radars were turned on but nothing was observed other than rain showers between 4 and 12 n. mile from the ship, mainly forward of the beam. Both flashes were of about the same brightness as that of lightning, the first being brighter than the second. In both cases it was difficult to judge the distance.

The phenomenon was thought to have possibly been some form of lightning as its appearance was unlike that of any flare and in both cases the distance from the ship did not appear to be great enough to be compatible with a meteor or other object entering the earth's atmosphere.



Relative Sizes/Appearances of Flashes

Weather conditions: dry bulb 28·0 °C, wet bulb 25·2, sea temperature 29·1, barometric pressure 1012·2 mb, wind E'N, force 3.

Course 304° and speed 18·5 knots.

Position of ship at 1530 GMT: 13° 09′S, 75° 24′E.

Position of ship at 1720 GMT: 12° 50′S, 74° 55′E.

LOOM OF LIGHT

Torres Strait

m.v. *Iron Cumberland.* Captain A. G. Chapman. Newcastle (N.S.W.) to Yampi Sound. Observers: the Master and Mr R. B. Dunn, 2nd Officer.

29 March 1984, 1745–1805 GMT. Whilst traversing Gannet Passage in a sw'ly direction, with Booby Island Light drawing astern along the port side, a loom of light was noticed to starboard, on the reciprocal bearing of, and having the same characteristics as, Booby Island Light.

When BIL was about 2 points before the port beam the apparent source of the loom was the same amount abaft the starboard beam, and appeared to be just beyond the visible horizon of 9 n. mile, and flashing synchronously with BIL.

As BIL drew abeam, and then abaft the port beam, so the source of the loom moved from abaft the starboard beam to the beam, and then ahead of the beam. The bearing of the source of the loom always remained reciprocal to that of the real Booby Island Light.

When viewed from above, BIL rotates anticlockwise and the 'loom' was rotating clockwise.

The observations were confirmed by Mr Dunn.

Meteorological conditions: dry bulb 27·0 °C, wet bulb 25·5, barometric pressure 1011·0 mb, wind SSE, force 3–4, visibility 11·0 n. mile, distant lightning to the north.

Presumed height of eye: 20 m.

Position of ship: 10°S, 142° 30′E.

551.507.2

Ocean weather ship as part of Europe's biggest private scientific fleet

By J. M. Davis

(John M. Davis and Associates, Kingston upon Hull)

Britain's chartered ocean weather ship *Starella* is part of what is now undisputedly the largest non-Government scientific fleet in Europe and possibly the largest of its kind in the world. The ship is on charter from the Hull-based company J. Marr and Son Limited who were able to make their 'biggest in Europe' claim in July 1984, when they announced the acquisition of the Government-owned fishery research vessel *G. A. Reay* to bring the total of scientific/survey vessels they operated to eleven.

Most, like *Starella,* are multi-role vessels based on North Atlantic stern trawler designs which have proved superbly adaptable to scientific/survey tasks. Some, again like *Starella,* have already made voyages which can rightly be described as 'historic' and others are engaged on, or booked for, ventures which will undoubtedly earn the same description.

Literally making history at the moment is the flagship of the fleet, *Farnella,* which is on charter to Britain's Institute of Oceanographic Sciences, in conjunction with the US Geological Survey, to carry out a sonar survey of the whole of the 200-mile exclusive economic zone (EEZ) off America's west coast.

Farnella is deploying IOS's unique long-range sidescan sonar GLORIA (Geological Long Range Inclined Asdic) which produces sonographs (akin to aerial photographs) of the sea bed, and early results have already excited both the American scientists and the US public who have been seeing their undersea 'moonscape' for the first time in their newspapers and on television.

Farnella, and *Starella* before her, had carried out an earlier scientific voyage for IOS, which is a component of the Natural Environment Research Council, and before leaving for the United States in March 1984 had spent a year in the Indian Ocean, researching the abyssal depths for mineral rich nodules on behalf of the Indian Government.

These voyages not only illustrate a growing trend by Governments and official bodies to charter commercial ships which offer greater flexibility and more economical operation than Government-run ships but also the rapid emergence of J. Marr and Son Limited, once owners of Europe's biggest private trawler fleet, as owner/operators and managers of a substantial scientific fleet.

While the company still runs several small stern trawlers its fleet of large vessels has now been completely superseded by a comparable scientific research and survey fleet.

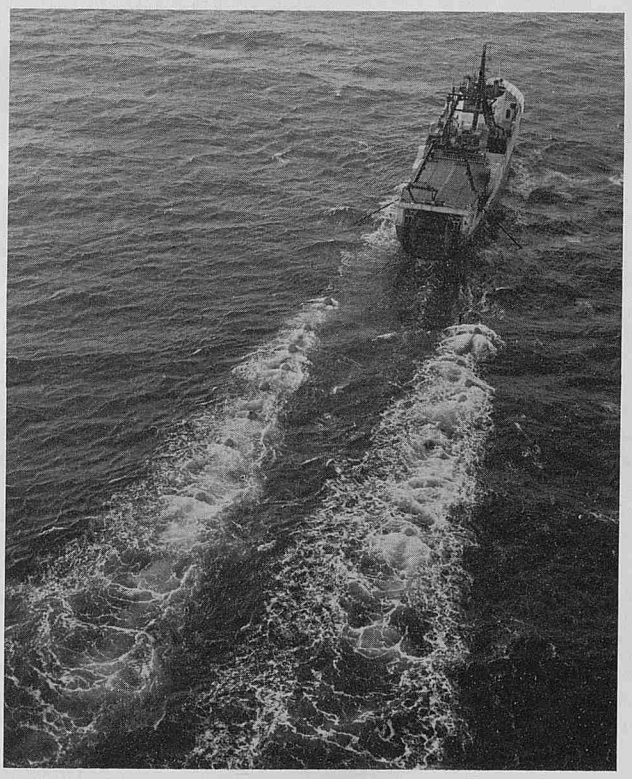
Most of the ships in this fleet, some of which are managed and operated by the company on behalf of owners like geophysical research companies, are on long-term commercial charter, notably in marine seismic survey in which the company has carried out a considerable amount of pioneering work with this class of vessel. Government-sponsored scientific work has developed alongside the commercial work owing to a noticeable 'crossover' effect—success in one stimulating interest and enquiry in the other.

From a modest beginning in 1975 with a small seismic survey using one of its own trawlers, expansion has been rapid. Indicating the standard achieved the first vessel to be extensively converted for sonar survey, *Criscilla,* was sold to Britain's Royal Aircraft Establishment for special research projects after only

Opposite page 32

Photograph by Richmond & Rigg, Hull

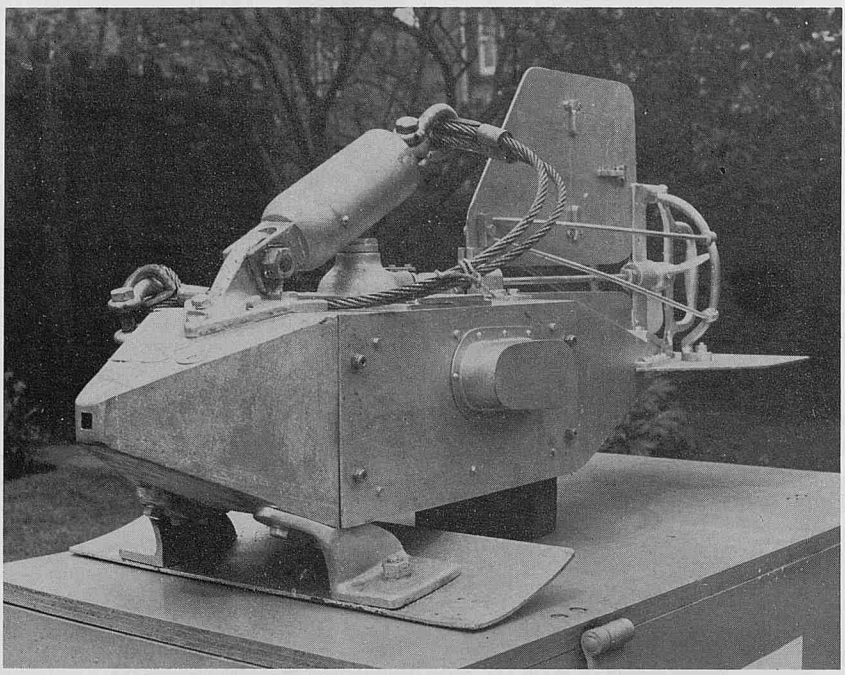
Swanella, as flagship of the Operation Raleigh adventure, sailing past her home port of Hull, with its recently opened marina. (*See* page 33.)



Photograph by FotoFlite, Ashford, Kent

Northern Horizon, on seismic survey work in the English Channel, captured by the FotoFlite camera at the precise moment of firing of the compressed air 'guns' trailed astern to provide the sound source. (*See* page 33.)

Opposite page 33



Continuous Plankton Recorder (*see* page 38).

three years of operation. Scientific charter by other Marr ships during this period included a highly disciplined 12-month weather survey in the Eastern Atlantic, sonar hunts and a sonar survey of the North Atlantic ridge.

The prelude to all these developments was a series of scientific voyages in the early 1970s undertaken by Marrs, a fishing company in England for well over a century, on charter to the British Ministry of Agriculture, Fisheries and Food. These included investigation of little-known fish species in very deep waters on the edge of the Continental Shelf and went to the company because, after heavy investment in the 1960s, it entered the 70s with one of the most modern fishing fleets in Europe, having pioneered the stern trawler design in the process.*

The spur to move into other areas of science-based marine work was the diminution of the British deepsea industry following the country's entry into the EEC. Marrs were fortunate in having both the vessels and the human resource with which to make the change, although it called for considerable courage and a substantial investment of risk capital from what is still a family business. The outcome in Hull is that Marrs have now converted all their large trawlers to other roles as well as acquiring other similar vessels for the purpose.

Farnella was one of the trawlers requisitioned for the Royal Navy for the Falklands Task Force (the only ships taken up from trade to become 'HMS' and earn Naval battle honours) and sister ships *Northella* and *Cordella* have also now left fishing for other work. The former is on charter to the Royal Navy for escort and training duties and the latter is acting as commodore guardship on the project to link the British and French electricity systems through Channel cables.

In addition the company has its first 'managed' vessel *Aqua Star* still engaged on shallow seismic work in the North Sea; *Starella* on charter as our ocean weather ship; *Northern Horizon* (formerly *Marbella*), *Seisella* (formerly *Southella*) and *Pacific Horizon* on high-resolution deep seismic work both around the British Isles and in more distant waters; *Swanella* (formerly *British Viking*) the flagship for the international 'Operation Raleigh' venture which started from Hull late last year; *Benella*, converted for special offshore work; and the newly acquired *G. A. Reay*. The last-named has been operated by the Ministry of Agriculture, Fisheries and Food's Torry Research Station in Aberdeen and Marrs hope to keep her on fishery research work, interest having already been shown in South America and the Far East.

Deepsea trawlers for North Atlantic fishing have all been designed to provide as stable a working platform as it is possible to achieve in some of the world's most hostile seas. All Marr's own ships, for instance, are built and maintained to Lloyds +100A1 classification with hulls strengthened for ice working. They also have a high degree of watertight integrity with the hull divided into at least three separate watertight compartments—an important consideration for a vessel likely to be carrying not only high value equipment but, with scientific crews, exceptionally valuable human talent.

The 'three big spaces' that come in this basic design envelope also have the further advantage of being at three different deck levels.

At the upper deck level is the former trawl or working deck, a large area extending from around midships to the stern and ideally situated for working with and/or launching a wide variety of scientific equipment ranging from seismic streamers and gun arrays to towed bodies and dredges or recovery equipment. Immediately below this is another area, usually of comparable size, which has been the factory or freezing deck and which can be readily converted to laboratory space or, as is the case with the seismic vessels, navigation and data acquisition and recording centres.

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* *See* 'The Search for New Species of Edible Fish', *Trawling Times*, No. 174, December 1973, and *The Marine Observer*, No. 245, July 1974.

Thirdly there is the former fish hold. In the seismic vessels this is an ideal location for the powerful diesel-powered air compressors which provide the energy source, particularly as the insulation from its refrigerated role can be retained to provide a good degree of sound insulation. Alternatively it provides a substantial cargo or stowage space.

In addition the original crew accommodation and the scope available to extend it allows for the standards of comfort that highly qualified scientific and technical people have come to expect.

Finally what the British company cites as its 'incalculable advantage' there is the unique skill and experience of the men who man the ships and support them on shore. Unique because the British deepsea fishermen who form the bulk of the crews are a breed of their own. The ancestry of many of them goes back to the whaling fleets which ranged the Arctic two centuries or more ago on trips frequently lasting a year or more.

They retain that questing spirit which makes them interested and involved support on a scientific voyage. They are not without technical knowledge and skills either. Their grandfathers may well have been sonar pioneers in wartime roles and they and their fathers have brought electronic fishfinding to a refined art.

They are used to long voyages and long hours of work and attuned to the idea that the sea is going to yield them a return, usually a commercial one.

The shore support is no less important. Commercial and scientific operators have discovered to their cost that there are plenty of people in the world who can get a ship from A to B to C across the oceans but few who can support an exploratory voyage over long distances and long periods as fishing companies have always done.

In the longer term the problem will most likely be the shortage of human skills as fishing, particularly in the northern hemisphere and especially in Britain, continues to decline. It is to be hoped that this will be matched by the growth in comparable skills in scientific work.

Future generations may not man converted stern trawlers but, with a long history of ship development behind them, J. Marr and Son Limited can see a general purpose scientific vessel evolving with many of the basic characteristics of the vessels they are offering now.

(*See* photographs opposite page 32.)

The Royal Research Ship *Charles Darwin*

The Natural Environment Research Council (NERC) was established by Royal Charter in 1965 under the Science and Technology Act with responsibility to encourage, plan and execute research in those sciences, physical and biological, that relate to man's natural environment and its resources. Such investigations seek to provide a better understanding not only of the nature and processes of the environment in which we live and on whose resources we depend, but also of their influence on man's activities and welfare and, of growing importance today, of man's influence on them.

The Council carries out research and training through its own institutes and the grant-aided institutes, and by grants, fellowships, and other post-graduate awards to universities and other institutes of higher education.

NERC assumed responsibility for the promotion of marine research in 1965 and implemented Department of Scientific and Industrial Research recommendations by the establishment of the Research Vessel Unit as a ship and scientific equipment maintenance base at Plymouth in June 1966. This Unit subsequently moved to Barry in South Wales in January 1969 and in June 1978 was renamed the Research Vessel Services (RVS).

Constructed at the North Devon Yard of Appledore Shipbuilders, the new ship named Royal Research Ship *Charles Darwin* after the eminent 19th century British scientist is expected to join the NERC research vessel fleet later this year.

Designed as a general purpose research ship but with special provision to undertake geological and geophysical investigations, the vessel will be employed on world-wide multidisciplinary research cruises.

The long, clear aft and amidship working decks incorporate bolt-down facilities enabling portable containers, winches and other scientific equipment to be rapidly installed and these decks are served by a 20-tonne aft gantry, a 12-tonne amidship gantry and two cranes.

The main winch, situated below the aft working deck, has two barrels—one housing 10 000 metres of 13-mm wire and the other 7000 metres of 16-mm wire. A twin-drum hydrographic winch accommodating 8800 metres of 6-mm wire and 7000 metres of 8-mm electrical conducting cable to monitor electronic packages is sited amidship on the forecastle deck.

The main laboratory complex consisting of a main/general-purpose laboratory together with the computer, controllable-temperature and wet laboratories is sited on the upper deck, providing direct access to the main working decks. The large scientific operations centre is situated immediately abaft the bridge, thereby ensuring close liaison with the watch-keeping officers.

Of particular interest is the dual arrangement for main propulsion—by either diesel-electric or direct diesel-engine drive. A single 2560 BHP Mirrless–Blackstone main engine drives a Stone–Vickers controllable-pitch propeller through a clutch and gearing, but there is also an integral motor on the propeller shafting. When the ship is required to operate particularly quietly for acoustic research and with precise speed control, the main engine can be disengaged so that the shaft-mounted motor can be powered by two resiliently mounted Mirrless–Blackstone-engined alternators, each of 1000 kW, 3-phase, 50 Hz. The main engine is also clutch-coupled at its forward end to a 1000 kW alternator. The main and auxiliary diesel engines are all turbo-charged, in-line 4-stroke units.

Before commissioning, a detailed model testing programme was carried out—propulsion, seakeeping, wind tunnel and hull/propeller noise tests, to ensure that operational requirements would be achieved. In addition, with the aid of further model tests, a roll-damping tank was installed.

In addition to the controllable-pitch propeller, the *Charles Darwin* is equipped with a White–Gill-type bow thruster capable of 5·8 tonnes thrust.

551.5:718:92

The Grave of Admiral FitzRoy*

By R. P. W. Lewis
(Meteorological Office, Bracknell)

About four years ago work was undertaken to renovate the grave of Admiral Robert FitzRoy, FRS—the first head of the Meteorological Office—including replacement of the footstone which had deteriorated badly; *see* upper two photographs on the facing page.

Miss R. Davis of Dulwich, a parishioner of All Saints, Upper Norwood, in the churchyard of which is the grave, reported to the Society for the Protection of Ancient Buildings in 1979 that the stones were in poor condition. On 19 February 1980 the Duke of Grafton, as the senior member of the FitzRoy family, wrote to the Director-General of the Meteorological Office asking whether the Office could have the footstone repaired.

As a result of this letter, Mr G. H. Parker of the London Weather Centre visited Upper Norwood on 20 April where he inspected the grave and met both Miss Davis and the Vicar of All Saints (the Revd R. St. L. Broadberry). Mr Parker's report led to efforts by the Administrative Division of the Office to see who could execute the work and whether the necessary finance could be found from official funds. These efforts soon met with success, and it was decided that the Commonwealth War Graves Commission would design a new footstone (the old one being beyond repair) and have it made and fixed, the cost being met from Defence Votes.

The drawing up of a design and the obtaining of necessary permission from the ecclesiastical authorities both took a good deal of time—the matter had, in fact, to be referred to the Diocesan Registrar at Canterbury—and it was not until 22 October 1981 that the old footstone was removed and the new one fixed in its place. The design of the new stone differs in certain respects from that of the old, but all the essential components of the latter are retained, including the pictorial representation of a North Cone and Drum, part of FitzRoy's original system of storm-warnings (*see* lower photograph on the facing page and those opposite page 37).

The grave of Admiral FitzRoy is now, we hope, in a state worthy of the remarkable and accomplished man who was our first Chief.

The following additional biographical information is extracted from *National Maritime Museum Technical Paper* No. 1 (1972).

Admiral Robert FitzRoy was born at Ampton Hall, Suffolk, on 5 July 1805. He was trained at the Royal Naval College, Portsmouth, then a school for cadets, and entered the navy in 1819. Gazetted Lieutenant in 1824 and appointed to the frigate *Thetis*, in August 1828, with the rank of Commander, he was given his first command, the *Beagle*, a 234 ton brig engaged with the *Adventure* in

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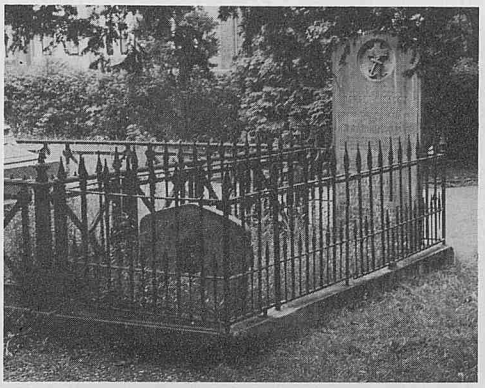
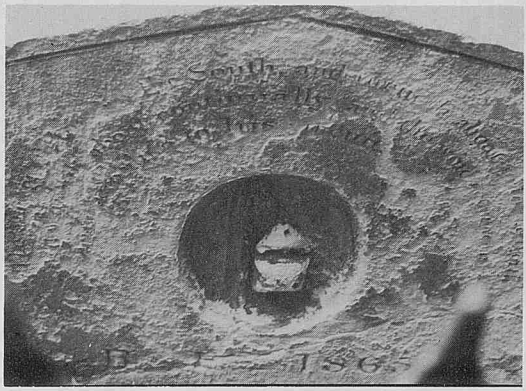
* Previously published in the *Meteorological Magazine*, 1984, **113**, pp. 239–242.

Opposite page 36



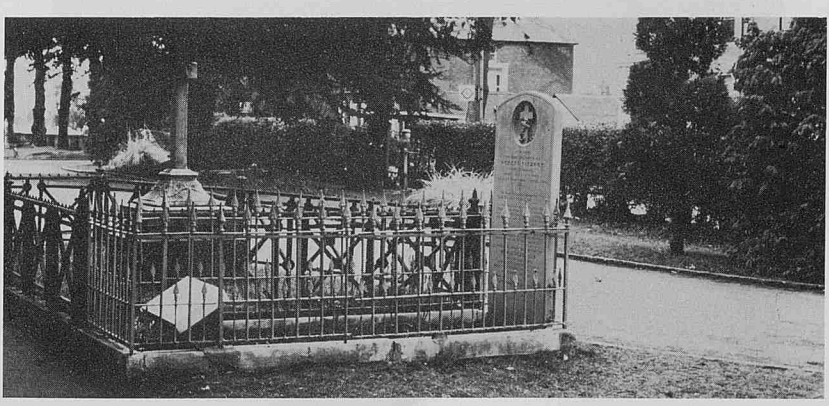
Photograph by courtesy of Mr D. Stanbury

Grave of Admiral FitzRoy before its renovation.



Photograph by courtesy of Mr D. Stanbury

The original footstone.

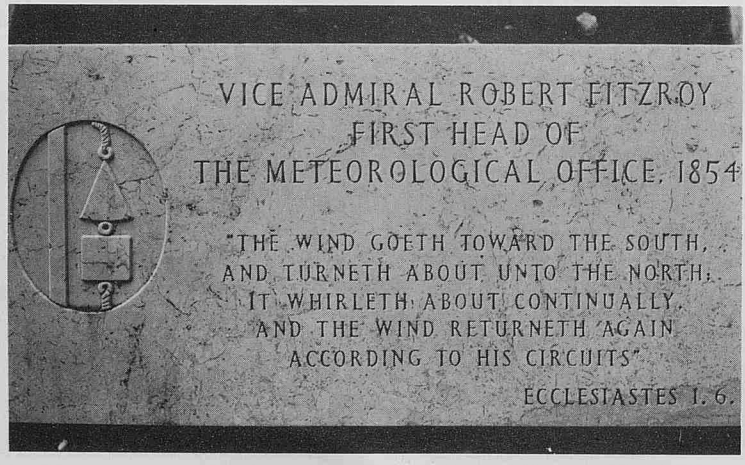


Photograph by courtesy of Mr R. P. W. Lewis

The grave after renovation (*see* facing page).

Opposite page 37

The original headstone after renovation.



Photographs by courtesy of Mr R. P. W. Lewis

The new footstone (*see* page 36).

survey work off the coasts of Patagonia and Tierra del Fuego. He returned to England in 1830, bringing with him five Fuegans whom he hoped to educate.

In December 1831, FitzRoy sailed for Tierra del Fuego to continue the survey and to return the five Fuegans, whose education was not a success. During the next five years (1832–36) FitzRoy surveyed the Strait of Magellan and the coasts of South America. This time he took as naturalist for the voyage a young scientist, Charles Darwin.

Darwin returned from the voyage of the *Beagle* with the initial concepts of evolution germinating in his mind and within a year (1837) began his first note-book on evolution, the first stone, in fact, of the epoch-making *Origin of Species* published in 1859.

FitzRoy was promoted to Captain during the voyage (1835).

When the expedition returned to England in 1836 FitzRoy proceeded to write up the narratives of the two voyages, which he published in 1839 under the title of *The Voyage of the Beagle*.

In 1841 he stood for Parliament, and was returned as Member for Durham.

He was appointed Governor of New Zealand in 1843 but, owing to his stern attitude towards the settlers in their unscrupulous dealings with the natives, he became very unpopular and was recalled in 1845.

His active sea career ended through ill-health in 1850, but he was subsequently advanced to Rear-Admiral in 1857 and Vice-Admiral in 1863 by order of seniority as was then customary.

FitzRoy had always had an interest in weather conditions, and his *Voyage of the Beagle* contains many references to weather phenomena observed during the voyage. An International Conference held in 1853 recommended that meteorological and sea-current observations be made for the benefit of shipping. As a result a Department of the Board of Trade was set up in the following year to organize the British contributions and on the recommendation of the President of the Royal Society, FitzRoy was appointed its chief, with the title of Meteorological Statist to the Board of Trade. He retained this position until he took his own life in 1865.

Note. It is perhaps of historical interest to state here that the display of gale warning cones in the UK such as the one depicted on the footstone of Admiral FitzRoy's grave was discontinued on 1 June 1984 after more than 120 years of this service, which was introduced by FitzRoy in 1863. As almost all vessels proceeding intentionally offshore are radio equipped and have the ability to receive weather forecasts and gale warnings, the visual gale warning system is superseded.

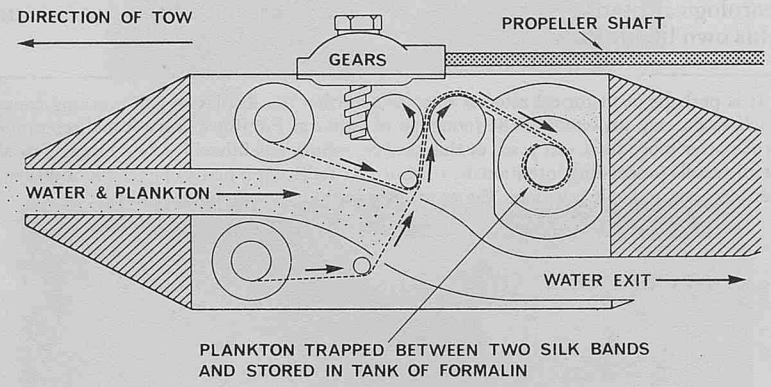
O.W.S. *Starella* and the Continuous Plankton Recorder*

Readers of Paul Horsman's challenging treatise on marine biology in the July 1984 edition of *The Marine Observer* (No. 285, p. 131), who have not had the privilege of his stimulating company on board, may wonder how regular collection of plankton is made for biological recording and research.

The study of plankton should prove beneficial to the fishing industry generally, and such investigation is carried out by several marine laboratories of the Natural Environment Research Council (NERC) and by the fishery laboratories of the Ministry of Agriculture, Fisheries and Food.

The Ocean Weather Ship *Starella* has followed her many predecessors in providing a service to NERC's Institute for Marine Environmental Research, Plymouth, by taking plankton samples in the North Atlantic. Whilst The Marine Society's eminent marine biologist employs his own unique methods of netting samples from merchant ships under way, *Starella* regularly tows a sampling machine known as a Continuous Plankton Recorder (CPR) at a depth of 10 metres, whilst on passages between her Fleetwood base and station LIMA in position 57° 00′ N 20° 00′ W (*see* photo opposite page 33). The CPR is a relatively robust item of marine research equipment designed to collect a continuous sample of the marine plankton when towed from vessels on regular services, as nearly as possible once in each calendar month. The results from monthly synoptic plankton charts are used in studies of the marine environment, fish stocks and possible effects of marine pollution.

The CPR is a basically square section approximately one metre long and 50 cm in height with diving planes, a fore-and-aft water tunnel and collection ribbon (*see* sketch). The main and tail diving planes are designed to keep the



machine at a uniform depth when steaming at speeds of up to 18 knots; in order to give it increased stability for towing at speeds over 18 knots, the diving planes are removed and a double fibre-glass tail fitted in their place. A continuous sample of the water through which it is being towed enters the tunnel in the machine's nose and passes through a band of gauze or silk which is wound over

* Material from the Institute for Marine Environmental Research loaned by Captain A. Britain, Ocean Weather Ship Officer, Fleetwood.

a system of spools whose motive power is supplied through gearing by an external impeller. After deposition on the ribbon, the sample is sandwiched by a second band and the whole wound on to a spool for storage in an integral tank of formalin preserving fluid. The ribbons are marked out in miles so that ship's positions can later be exactly correlated with the samples.

IMER stated in their 1983 Annual Report that the CPR survey continued on the same basis as in previous years, providing an uninterrupted series of data for the North Atlantic and North Sea since 1948. Data processing procedures have been modified and transferred to newly available GEC and Honeywell computers, and data manipulation now includes a large collection of analytical techniques to assess spatial and temporal variability in planktonic history. One example of recent studies concerns fluctuations in the abundance of one particular diatom, *Thalassiothrix longissima,* in the North Sea and North Atlantic. In agreement with previous results on the zooplankton, there has been a major decline in the abundance of this diatom since 1948, but there is also evidence that changes in North Sea plankton are affected by transport and migration from the Atlantic.

AURORA NOTES JANUARY TO MARCH 1984

By R. J. Livesey

(Director of the Aurora Section of the British Astronomical Association)

In Table No. 1 are summarized the auroral observations received from mariners during the period. Details of the land and marine reports received to date are summarized in Table No. 2. Isolated and doubtful observations have been omitted. In Table No. 3 are given the dates on which the planetary magnetic index K_p, which indicates the degree of field disturbance, averaged a value of 5 or more during a period of at least 3 hours in 24.

The observation of the visual aurora differs from many forms of meteorological investigation in that both weather and local conditions can badly affect the making of observations. An interesting situation arose when analysing the data obtained from the weather ships at Station 'Lima' since 1976. The present incumbents are the Dutch weather ship *Cumulus* and the British weather ship *Starella.* The number of aurora nights per annum seemed to fall with increase in sunspot activity and rise again as the sunspots declined. The question arose as to whether or not the effect was real or due to local conditions.

The matter was investigated with the assistance of Mr R. C. L. Aran, Meteorological Officer of the O.W.S. *Starella.* In 1977 the two British weather ships, *Weather Reporter* and *Weather Surveyor,* old Castle Class frigates, were overhauled and renamed *Admiral Beaufort* and *Admiral FitzRoy.* Mr Aran has reported that the observing platform was substantially modified and the deck security lighting increased. Both of these changes affected the ability to see auroral light. In February 1982 the frigates were taken out of service and the work distributed between the present British and Dutch weather ships. Conditions on the O.W.S. *Starella,* Mr Aran has found, are much improved for auroral observing.

In Table No. 4 is given the 'score' for observing aurora annually since 1976 by the 'Lima' weather ships compared with other parameters of reports received by the BAA Aurora Section.

Table 1—Marine Aurora Observations January to March 1984

Date 1984	Ship	Geographic Position		Time (GMT)	Forms in Sequence
7 Jan. ..	*Starella*	55° 52′N,	17° 56′W	0445–0550	qN
2 Feb. ..	*Cumulus*	56° 06′N,	18° 30′W	0030–0310	qhG, CsR
3 ..	*Cumulus*	55° 41′N,	17° 44′W	0130	qhG
3 ..	*Serenia*	60° 55′N,	01° 55′E	2240–2345	m_2R_3R, mRR, amRR, hB
4 ..	*Esso Warwickshire* ..	56° 06′N,	00° 56′W	2130–2155	qG, p_4RV
10 ..	*Esso Warwickshire* ..	60° 30′N,	19° 00′E	2120–2155	RA
20 ..	*Starella*	56° 50′N,	20° 03′W	2145–0245	qN
21 ..	*Starella*	57° 13′N,	20° 17′W	0215–0245	qN
22 ..	*ACT 6*	44° 30′S,	161° 05′E	0945	mRR
23 ..	*ACT 7*	47° 46′S,	104° 14′E	1540–1940	G, RB, RR, hB, RA, p_4RB, m_2hB, mRR, hA, qG
26 ..	*Starella*	57° 03′N,	20° 03′W	2245–0145	qN
1 Mar. ..	*Starella*	57° 12′N,	20° 18′W	2245–0545	p_2R_2BV, p_2R_1B, qR_1B, qR_2B, qhB, qN
21 ..	*Cumulus*	57° 00′N,	20° 00′W	0045–0200	N
22 ..	*Cumulus*	57° 07′N,	20° 15′W	0045–0200	qfhG
24 ..	*Cumulus*	57° 09′N,	19° 36′W	0510–0530	qhB
27 ..	*Cumulus*	56° 40′N,	19° 50′W	0350	qhG

KEY: a=active, f=fragmentary, h=homogeneous, m=multiple, q=quiet, p_2=flaming with light moving upwards, p_4=horizontal streaming of forms, s=striated, R_1=small-length rays, R_2=medium-length rays, R_3=long-length rays, V=veil, B=band, RB=rayed band, P=patch, C=coronal ray structure, A=arc, RA=rayed arc, G=glow, N=auroral light of unspecified form.

Looking back over the records we find that the radio and visual auroral activity rose with the development of the sunspot cycle and then faded as the sunspots passed their peak and went into decline. A secondary aurora peak developed late on in the decline period. On the other hand, looking at the magnetic record, although there was a peak of field disturbance relating to the auroral peak during the development of sunspots, by far the most disturbed magnetic field activity came late in the cycle, although the most intense magnetic storms were to be found near to sunspot maximum.

During the beginning of 1984 some massive sunspot groups formed which were associated with auroral activity on earth each time the sun rotated to put the spots in the same relative configuration, so that material ejected from flares on the sunspots could travel out and encounter the earth. Otherwise at this time of the sunspot cycle many of the aurorae are of the recurrent quieter variety associated with long-term outpouring of electrified particles from the coronal holes in the outer atmosphere of the sun which expand when sunspot activity is low. These are more likely to be seen in higher latitudes such as at 'Lima'.

One last comment before a sharp-eyed reader asks a question; the weather ship positions do vary about the nominal position of 'Lima' at 57°N, 20°W, which is at the boundary between zones of magnetic latitude 62 and 63 north. Thus both numbers appear against 'Lima' reports.

Table 2—Auroral Activity reported January to March 1984

Date (Night)	Location and Number of Observers	Geomagnetic Latitude Lowest	Highest	At Storm Peak	Maximum Storm Activity Code*	Time (GMT)
1/2 Jan.	Scotland, Norway (2)	58	60	60	2	2100–2200
3/4	Shetland, Norway (2)	60	60	60	4	2030–2350
7/8	'Lima', Scotland (2)	58	62	58	1	2200–0550
10/11	Shetland (1)	62	62	62	1	0030
25/26	Shetland, Alberta (2)	62	64	64	5	0450
28/29	Alberta (1)	64	64	64	2	0445–0510
29/30	Shetland (1)	62	62	62	1	2050–2350
31 Jan./ 1 Feb.	Scotland (2)	58	60	60	4	2200–2254
2/3	'Lima' (1)	62	62	62	6	0030–0310
3/4	Alberta, Norway, Scotland, 'Lima' (5)	59	66	64	5	1800–0245
4/5	Norway, Scotland (8)	58	66	58	5	1800–2200
6/7	Alberta, Norway (2)	64	67	64	5	1930–0300
10/11	Scotland (1)	60	60	60	3	0120–0200
13/14	Alberta (1)	64	64	64	6	0545–0610
14/15	Alberta (1)	64	64	64	5	0545–0610
15/16	Scotland (1)	59	59	59	1	0100
20/21	'Lima', Alberta (2)	63	64	64	5	2145–0400
22	Australasia (1)	—	—	—	4	0945
23	Australasia (1)	—	—	—	5	1540–1940
26/27	'Lima' (1)	63	63	63	1	2245–0145
27/28	Scotland (1)	59	59	59	2	1955–2113
1/2 Mar.	Manitoba, 'Lima', Norway (4)	59	63	60	6	2200–0545
2/3	England, Scotland (3)	58	59	58	3	2035–2200
3/4	Alberta (1)	64	64	64	2	0300–0316
6/7	Scotland, Shetland, Norway (4)	58	62	60	4	1848–2350
7/8	Shetland, Norway (2)	60	62	60	2	1900–2015
8/9	Alberta, Norway (2)	60	64	60	6	1900–0610
16/17	Alberta (1)	64	64	64	6	0225–0255
21/22	'Lima' (1)	59	63	59	2	0045–0346
22/23	'Lima', Alberta (2)	63	64	64	5	0045–0610
24/25	'Lima', Scotland (2)	58	63	63	2	2200–0530
27/28	'Lima' (1)	62	62	62	1	0350
28/29	Shetland (2)	62	62	62	6	2250–2310
29/30	Shetland (1)	62	62	62	6	2045–0220
31 Mar./ 1 Apr.	Scotland (1)	58	60	60	4	2045–0000

* Storm Activity Code: 1=Glow; 2=Homogeneous arc or band; 3=rayed arc or rayed band; 4=Ray bundles; 5=Active storm; 6=Coronal ray structure; 7=All sky storm.

Table 3—Days on which Planetary Magnetic Index K_p averaged a value of 5 or more in any 3-hour period in 24 hours

January	4, 5, 29, 31
February	2, 3, 4, 10, 11, 13, 14, 15, 27
March	1, 2, 3, 6, 13, 18, 28, 29, 31

Table 4—Comparison of Aurora Nights at Station 'Lima' with other Auroral Data

Year	Aurora Nights per annum at 'Lima'	Days per annum with Magnetic Index $K_p \geq 5$	Nights per annum with Auroral Activity south of Geomagnetic Latitude 62	Days per annum on which Radio Auroral Activity was reported in Europe
1976	33	46	10	13
1977	10	51	28	64
1978	3	81	61	119
1979	10	74	88	82
1980	7	44	59	30
1981	16	67	54	57
1982	19	123	50	68
1983	19	100	40	65

Note. Data based on reports received and are therefore subjective.

ICE CONDITIONS IN AREAS ADJACENT TO THE NORTH ATLANTIC OCEAN IN JUNE AND JULY 1984*

The charts on pages 44 and 45 display the actual normal ice edges (4/10 cover), sea-surface and air temperature and surface-pressure anomalis (departures from the mean) so that the abnormality of any month may be readily observed. (The wind anomaly bears the same relationship to lines of equal pressure anomaly as wind does to isobars. Buys Ballot's law can therefore be applied to determine the direction of the wind anomaly.) Southern and eastern iceberg limits will be displayed during the iceberg season (roughly February to July). In any month when sightings have been abnormally frequent (or infrequent) this will be discussed briefly in the text.

The periods used for the normals are as follows. Ice: 1966–75 (Meteorological Office). Surface pressure: 1951–70 (Meteorological Office). Air temperature: 1951–60 (US Department of Commerce, 1965). Sea-surface temperature: area north of 68°N, 1854–1914 and 1920–50 (Meteorological Office, 1966), area south of 68°N, 1854–1958 (US Navy, 1967).

June

In the vicinity of ice fields, pressure and temperature anomalies were much weaker than during recent months. Ice conditions west of Greenland were rather variable. Although clearance of ice was earlier than normal in Hudson Bay, Foxe Basin and Baffin Bay, the ice edge remained further east than usual over the Labrador Sea and through Davis Strait. Air and sea temperatures continued to be lower than normal around southern Greenland so that disintegration of the old polar ice was slower than usual, resulting in hazards to navigation becoming more severe than usual. Over the East Greenland, Barents and Kara seas the previous tendency for deficits of ice continued. There was marked recession over the Barents Sea, where, by the end of the month, the ice edge was some 200 n. mile further north than normal, reaching a position which is not normally expected until the end of August.

July

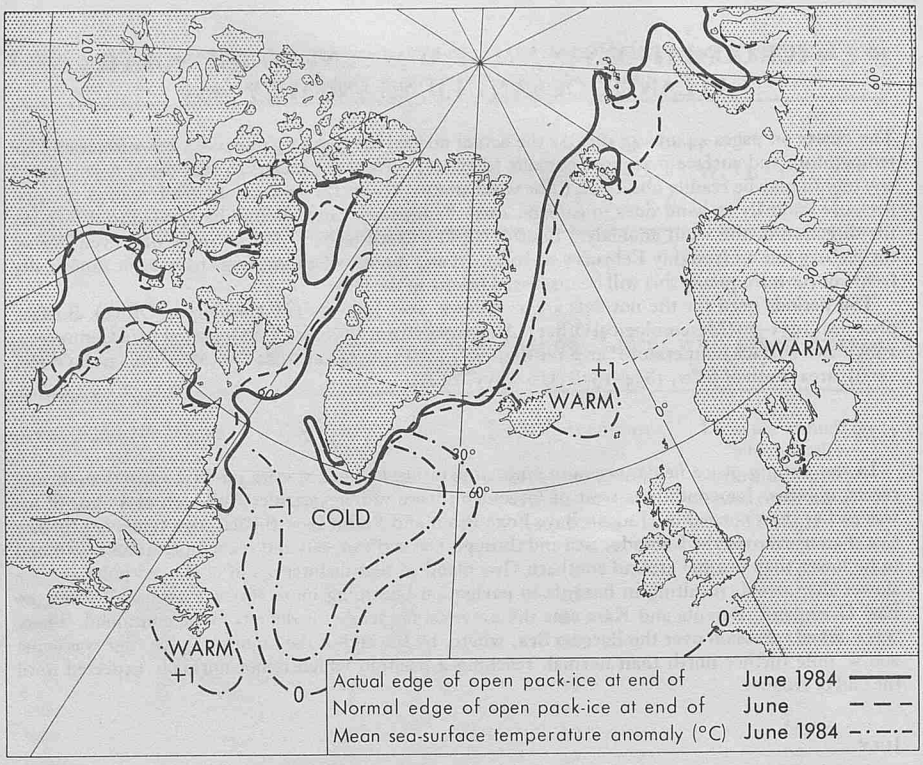
Pressure anomalies were small. Air temperature was much higher than normal over north-west Russia and there was also a tendency for warmer weather than usual over Hudson Bay. West of Greenland ice conditions reverted to near normal, where previously some excess of ice had been reported. Over the East Greenland Sea the ice edge was further east than usual, although much of the inner pack ice was well broken, reflecting the deficits of ice during recent months. East of Scoresby Sound and through Denmark Strait there was less ice than usual, but some very open, old polar ice persisted north of Iceland and around southern Greenland. Ice remained well to the north of its usual position over the Barents Sea and rapid clearance of ice over the Kara Sea resulted in a marked deficit of ice by the end of the month.

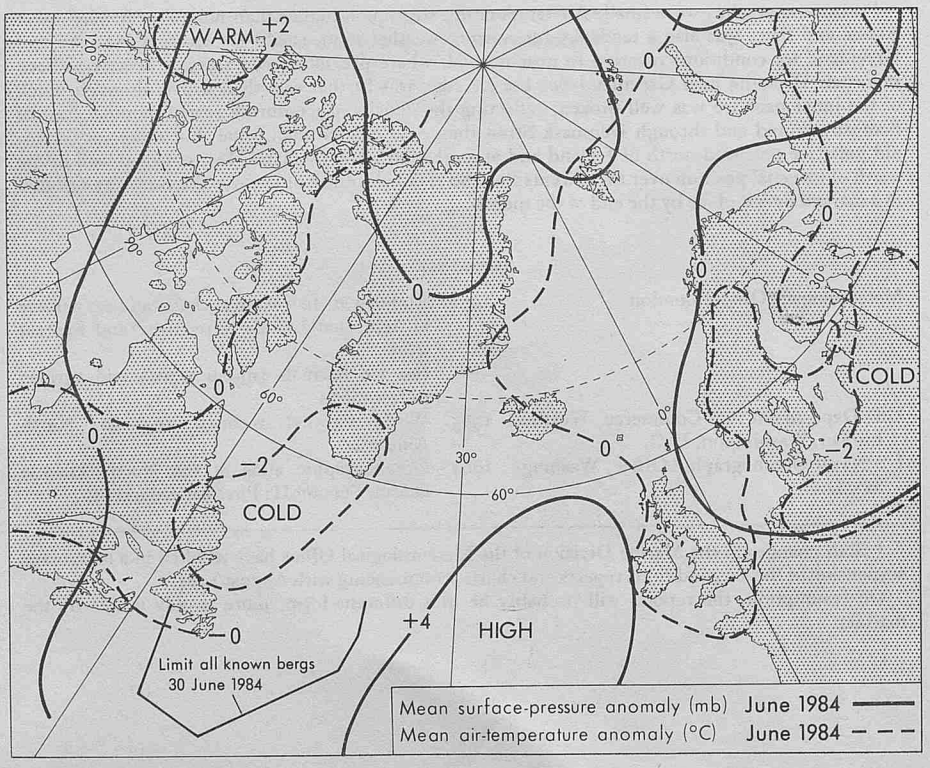
REFERENCES

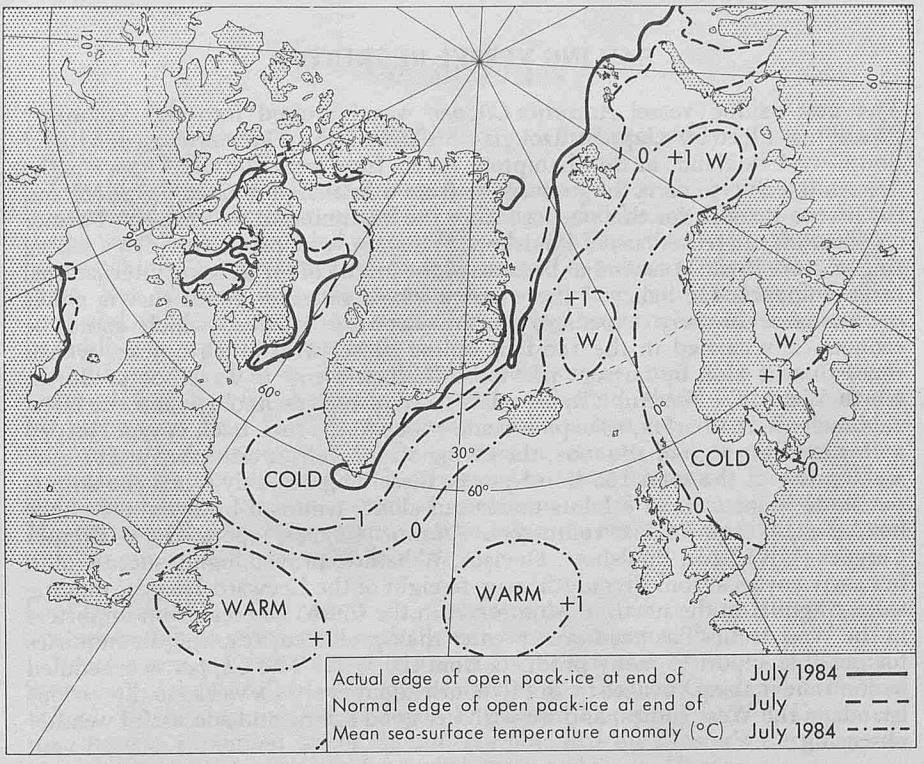
Meteorological Office, London	1966	Monthly meteorological charts and sea surface current charts of the Greenland and Barents Seas.
	—	Sea ice normals (unpublished) and various publications.
US Department of Commerce Weather Bureau, Washington, D.C.	1965	World weather records, 1951–60. North America.
US Naval Oceanographic Office, Washington, D.C.	1967	Oceanographic atlas of the North Atlantic Ocean, Section II: Physical properties.

* Staff changes in the Marine Division of the Meteorological Office have resulted in a temporary suspension of the ice conditions reports and charts, commencing with August 1984.

On resumption, the reports will probably be in a different form, more readily usable by the mariner.


120°
60°
30°
60°
WARM
+1
WARM
0
0
−1
COLD
WARM
+1
0
Actual edge of open pack-ice at end of June 1984
Normal edge of open pack-ice at end of June
Mean sea-surface temperature anomaly (°C) June 1984


WARM
+2
120°
0
0
0
0
0
0
0
0
COLD
−2
−2
30°
60°
COLD
+4
HIGH
Limit all known bergs
30 June 1984
Mean surface-pressure anomaly (mb) June 1984
Mean air-temperature anomaly (°C) June 1984


120°
90°
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WARM
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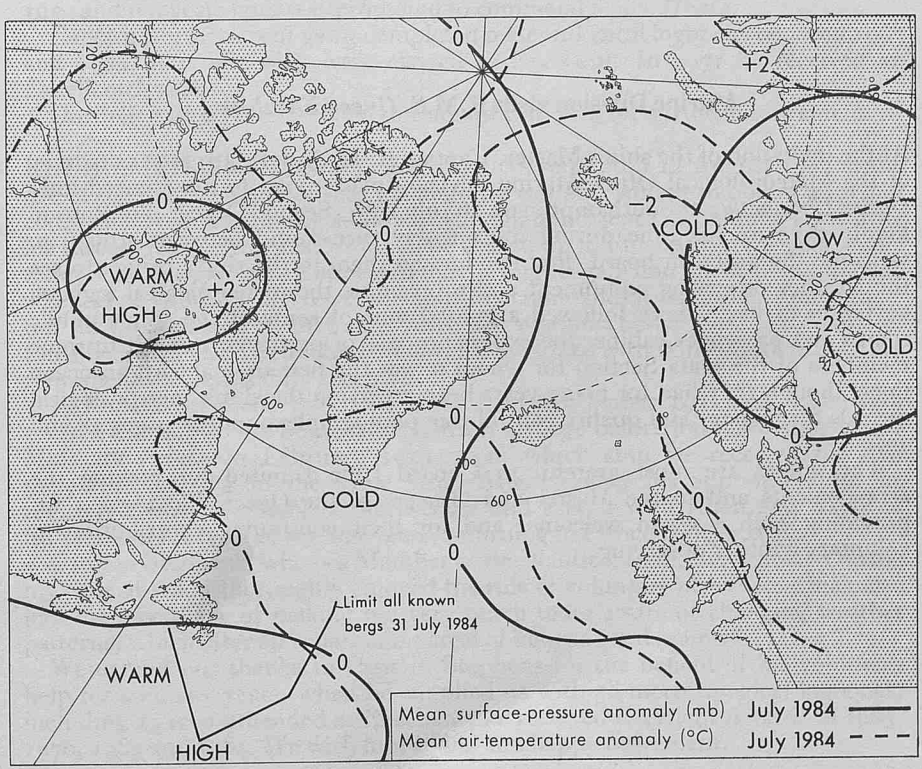
Actual edge of open pack-ice at end of July 1984
Normal edge of open pack-ice at end of July
Mean sea-surface temperature anomaly (°C) July 1984


120°
90°
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+2
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−2
COLD
LOW
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WARM
+2
HIGH
−2
COLD
0
0
COLD
0
0
0
0
Limit all known bergs 31 July 1984
WARM
HIGH
Mean surface-pressure anomaly (mb) July 1984
Mean air-temperature anomaly (°C) July 1984

SAILING VESSEL RECRUITED

The new sailing vessel *Atlantic Clipper* was recruited into the Voluntary Observing Fleet by Captain Douglas McWhan, Port Meteorological Officer South-west England, at Southampton, on 22 June last. *Atlantic Clipper* is the first sailing ship to carry cargo overseas from a British port since the 1940s and the first to be built for this purpose since the beginning of the century. Former engineer officer Jeff Allan, of Poulshott, Wiltshire, was inspired to plan a sailing ship venture to the West Indies because of the inertia of the existing international cargo shippers. He believed there was a whole range of goods that is either unobtainable or very expensive in the Leeward Islands, which could be economically carried in the 100-foot sailing vessel with much quicker transit times than it took by current methods. Built at a cost of £250 000 at Borth, North Wales, the *Atlantic Clipper* makes use of new technology and the latest aids such as Weatherfax, to exploit trade winds to the full. Each voyage, loaded with a modest cargo of 100 tons, the saving on fuel bills is estimated at £11 000, making use of the twin 100 horse-power diesel engines only when the ship is unable to make at least 8 knots under sail alone, trimmed by members of the hand-picked crew of six volunteers. *Atlantic Clipper,* operated by Clipper Cargoes (UK) Ltd., Poulshott, Devizes, Wiltshire, proved highly successful in her early voyages from Plymouth to up to eight of the Leeward Islands, ranging from Anguilla in the north to Montserrat in the south. Interest from importers in the West Indies has been even greater than predicted, resulting in enquiries for possible export of many products from the U.K. The *Clipper* is scheduled to continue making voyages from Plymouth about every six weeks to the various islands in the West Indies, and we wish her good sailing and successful weather observing.

Marine Division visits R.M.S. *Queen Elizabeth 2*

At the invitation of the ship's Master, Captain R. H. Arnott, RD, RNR, personnel of the Meteorological Office Marine Division paid a visit to the Cunard liner *Queen Elizabeth 2* at Southampton on 26 July 1984. Second Officer Phil Robson kindly gave up his time during the one-day turn-round between cruises to welcome the party on board, first conducting them to the ship's bridge to see the weather observing equipment and to examine the meteorological logbook currently in use. There followed a guided tour of some of the ship's public rooms and passenger cabins; the experience was of particular interest to some members of the Data Section for whom it was the first time aboard an ocean liner, though they had for many years been receiving the ship's meteorological records for registry and quality control (*see* photographs opposite pages 48 and 49).

The guests are most grateful to Cunard Line Limited for making the arrangements and to the Master and Officers of the *Queen Elizabeth 2* for providing such a warm welcome, and for their continuing contribution to voluntary weather observing.

Personalities

OBITUARY.—Captain G. S. Tuck, DSO, RN, died peacefully on 24 July 1984 aged 82, after a long illness.

Gerald Seymour Tuck was known to seafarers on British ships for the many hundreds of identifications of seabird sightings published in this journal during the 30 years he corresponded with us. He was also Chairman of the Royal Naval birdwatching Society from 1951 to 1980, as well as Editor of the Society's news sheet, *Sea Swallow*. His two guidebooks to seabirds, published by Collins in 1978 and 1980, are the prime works for marine birdwatchers today and must be familiar to many people at sea.

Captain Tuck had a distinguished naval career, and was awarded the Distinguished Service Order for his part in a Second World War battle in the Mediterranean Sea. H.M.S. *Illustrious* was attacked by Luftwaffe bombers following the destruction of the Italian fleet at Otranto, but despite sustaining severe damage, the ship was safely navigated to Malta for repairs. Captain Tuck later commanded cruisers escorting merchant ships on convoys bound for Murmansk in Russia. He was buried on 30 July 1984 near his home in Chichester; we offer our condolences to his family.

RETIREMENT.—Captain J. G. Cormack retired on 31 January 1984 after a career lasting 36 years spent entirely with Shell Tankers (UK) Ltd.

James George Cormack was born in July 1931 and educated at Kemnay Secondary School, followed by pre-sea training at Robert Gordon's Technical School. On joining the Anglo Saxon Petroleum Company Ltd. in December 1947 he was appointed to the *Alexia*. He obtained his Master's Certificate in 1959 and ten years later was promoted to command of s.s. *Hyala*.

Captain Cormack sent us 13 completed meteorological logbooks between 1967 and 1984, four of which were classed as Excellent. In 1971 he received an Excellent Award.

Our felicitations are extended to Captain Cormack for a fruitful retirement.

RETIREMENT.—Captain J. R. Stephens retired on 12 August 1983 at the age of 61 after 44 years at sea, although he was still willing to obtain a further command despite suffering an abnormally high incidence of redundancy during his career. He had the misfortune to be caught up in Furness Group's personnel reductions in 1976; later it appeared that he might again find himself unemployed when Hall Brothers of Newcastle sold his command at the time, *Embassage*, but he was retained in that ship when she was purchased by C. M. Willie of Cardiff and renamed *Celtic Endeavour*. He remained with Willies until premature retirement was reluctantly accepted.

J. Ronald Stephens was born in Hull in September 1922 and underwent pre-sea training at the Boulevard Nautical College before joining Prince Line's *Malayan Prince* in February 1939, from which ship we received his first meteorological log in the same year. After serving his apprenticeship, he registered with the M.N. Officers Pool and served with Allen and Black of Sunderland for most of the war years, returning to Prince Line in 1946.

Captain Stephens, who is a Member of the Nautical Institute, writes: 'During my time at sea, I thoroughly enjoyed the role of voluntary observer, which also had the advantage of making me very much more aware of changing weather patterns, which after all is part and parcel of being a good seaman'.

We extend our thanks to Captain Stephens for the benefit of his voluntary help for so many years, when he supplied us with 38 meteorological logbooks, including 13 recommended as Excellent; he received Excellent Awards in 1965, 1970, 1983 and 1984. We wish him a long and happy retirement.

Notices to Marine Observers

CHANGES TO BBC RADIO SHIPPING FORECAST TIMES

Changes to BBC radio shipping forecast times have been made as follows on account of radio programme re-scheduling: BBC Radio 4 shipping forecast has been broadcast at 0033, 0555, 1355 and 1750, clock times, as from 29 September 1984. From the same date, the inshore waters forecast on BBC Radio 3 was broadcast at 0655 each day of the week, with no change in times at the weekend.

INTRODUCTION OF MARINELINE–CHANNEL

A new weather forecast service for mariners, yachtsmen and fishermen, called Marineline–Channel, was introduced on 27 July 1984. The new service is provided by the Meteorological Office, operated by British Telecom and sponsored by *Practical Boat Owner* magazine.

Callers will hear a recorded forecast for inshore waters from Lyme Regis to Ramsgate followed by a general indication of the expected weather in the open waters of the English Channel and the inshore waters on the other side from St Malo to Calais. An outlook for up to five days ahead is also included. The forecasts are updated every 12 hours, at 0800 and 2000 and are available on the following telephone numbers: Bournemouth (0202) 295588, Portsmouth (0705) 861144 and Southampton (0703) 336161. This new service, along with the Marineline already established for coastal waters of Devon and Cornwall, gives mariners easy access to detailed weather forecasts for most of the English Channel and the coastal waters of North Cornwall and Devon. For further information on this service, contact the Meteorological Office on 0344 420242 Extension 2711.

INVITATION TO READERS TO WRITE TO THE EDITOR

Letters to the Editor on subjects relevant to items published in *The Marine Observer,* or concerning marine meteorology or marine phenomena, are welcomed and should be addressed to the Editor, The Marine Observer, Meteorological Office, Eastern Road, Bracknell RG12 2UR. The Editor reserves the right to publish letters received as desired and any replies made.

Meteorological Office Marine Division party visiting the R.M.S. *Queen Elizabeth 2* on 26 July 1984. From left to right: Captain J. F. Houghton, Nautical Officer, Captain M. L. McN. Coombs, Nautical Officer, Mr J. T. Tunstall, Marine Enquiries, Captain G. V. Mackie, Marine Superintendent, Mr P. M. Robson, 2nd Officer, Miss J. Mitchell, Data Section, Mrs D. J. Chiverton, Data Section, Mr G. F. D. Cooper, Sub-editor, *The Marine Observer,* Miss P. J. Reader, Publications Assistant, Mr J. C. Vickers, Head of Data Section, Captain D. R. McWhan, Port Meteorological Officer, South-west England, Miss E. Pearce, Data Section, Mr J. D. Lankester, Ocean Currents, Mrs O. R. Lewis, Data Section (retired). (*See* page 46.)

Opposite page 48

Opposite page 49

Part of the chartroom of R.M.S. *Queen Elizabeth 2* (*see* page 46).

Fleet Lists

Corrections to the list published in the July 1984 edition of *The Marine Observer*.

Information regarding these corrections is required by 30 September each year. Information for the July lists is required by 31 March each year.

GREAT BRITAIN (Information dated 12.9.84)

The following coasting vessels ('Marid' ships) have been recruited:

Name of Vessel	Master	Owner/Manager
La Colina	B. Burwood	Buries Markes (Ship Management) Ltd
Marinestone	G. B. Farmer	ARC (Marine) Ltd
Shell Craftsman ..	R. M. Astridge	Shell U.K. Ltd
Shell Trader	D. MacLindon	Shell U.K. Ltd

GREAT BRITAIN (*contd*)

The following ships have been recruited as Selected or Supplementary Ships:

Name of Vessel	Date of Recruitment	Master	Observing Officers	Senior Radio Officer	Owner/Manager
Atlantic Clipper	22.6.84	A. N. Whinton	A. D. Betteridge		Clipper Cargoes (U.K.) Ltd
Atlantic Universal	13.4.84	C. Ramsden	I. C. Ligertwood, J. M. Collis, B. P. Giles	D. T. Pyatt	Gateway Shipping Ltd
Bencruachan					Ben Line Steamers Ltd
Celtic Marine	31.5.84	E. Gannon	N. Voss, C. J. Slade		C. M. Willie & Co. (Shipping) Ltd
Donovania	25.6.84	A. Parkes	D. Russel, J. Smith, K. Stephenson	A. Gilmour	Shell Tankers (U.K.) Ltd
Europa Point	20.3.84	I. C. Dorse	Z. Islam, P. Achter, S. N. Bokhari	M. U. Ahmed	Acomart Maritime Services (U.K.) Ltd
Fort Dufferin	22.8.84	A. Williams	M. R. Dacombe, T. Fisher, A. D. W. Rugg	P. M. Sharp	Canadian Pacific Steamships Ltd
Fort Fraser	15.6.84	A. McGrail	P. C. Faulkner, R. L. Smith, A. Edwards	B. Davies	Canadian Pacific Steamships Ltd
Halia	23.3.84	D. L. Davidson	K. Arnold, R. J. Roberts, G. P. Akehurst, E. Southworth	W. C. Carty	Shell Tankers (U.K.) Ltd
Hoegh Duke	31.5.84	A. J. Cheshire	M. Haines, W. R. Houghton-Boreham		Blue Star Ship Management Ltd
ITM Venturer	18.5.84	G. R. Christian	P. Argent, G. Ticehurst, K. Mair	P. Wilson	ITM (Offshore) Ltd
Isle of Arran	26.4.84	A. Ferrier	N. L. Smith		Caledonian MacBrayne Ltd
Kildare	1.6.84	R. O. M. Wilson	A. C. Pearce, R. Flemington, N. Adams, D. C. Price	M. Smith	P. & O. Lines Ltd
Lakenes	6.4.84	P. Davis	K. Mackay, J. S. Jaanus, P. Neville	B. Hansen	Jebsen Ship Management Ltd
Leslie Gault	8.5.84	R. Williams	M. Henderson, C. Hamson		Denholm Ship Management Ltd
Profiler	29.3.84				Gardline Shipping Ltd
Richfield	23.5.84	M. D. Cummins	M. Manekshaw, S. Singh, N. Vaswani	D. X. Sabastian	Buries Marks (Ship Management) Ltd
Scamper Universal	5.7.84	M. I. Turner	I. V. Hughes, D. Neaves, A. MacPherson	I. Johnston	Gateway Shipping Ltd

GREAT BRITAIN (*contd*)

The following ships have been recruited as Selected or Supplementary Ships:

Name of Vessel	Date of Recruitment	Master	Observing Officers	Senior Radio Officer	Owner/Manager
Seaboard Illustrious	4.4.84	P. Kenny	C. Thompson, J. Purvis		Seaboard Offshore Ltd
Seaboard Invincible	3.4.84	J. Gillies	P. Crawford		Seaboard Offshore Ltd.
South View	30.5.84	D. Robinson	J. Clamp, S. Furness, C. Pursey	H. Segrane	Salen U.K. Ship Management Ltd
Stena Carrier	19.3.84	R. Barrett	P. Allison, P. Appleford, R. Corfield	L. Allen	Swedish Caledonian Management
Trinidad and Tobago	26.5.84	J. S. Gavin	D. MacNicol	W. Ormrod	Bibby Line Ltd
Viking Trader	6.6.84	W. J. C. Clarke	K. Rowley, M. McDowell	C. Bull	Townsend Car Ferries Ltd

The following Selected Ships have been deleted:

Acavus, Balder London, Bay Fisher, Benalbanach, Benvorlich, British Voyager, Cape Rodney, Contender Bezant, Esso Dalriada, Ethel Everard, Explorer, Fenbank, Kildrummy, Killin, Kindrence, Lycaon, Mandama, Norman Lady, Oropesa, Qarouh, Sapphire Bounty, Sivand, Spey Bridge, Strathettrick, Suavity, Tantalus, Texaco Ghent.

BRITISH COMMONWEALTH

AUSTRALIA (Information dated 4.9.84)

The following Selected Ships have been recruited since the list published in the July 1984 edition of *The Marine Observer*:

Allunga, Anna Bakke, Elizabeth Bakke, Irene Greenwood, Mukairish Alawal, Neptune Seginus, Norleb, Uniceb.

The following ships have been deleted:

Khalij Express, Kimberley, Lake Eildon, Persia, Raslan, Townsville Trader, Tropic Dawn, Tropic Star.

NEW ZEALAND (Information dated 1.8.84)

The following Selected Ships have been deleted since the list published in the July 1984 edition of *The Marine Observer*:

Benreoch, Capitaine Cook, Gulf Explorer, John Wilson, Lake Eyre.

The following Supplementary Ship has been recruited:

Ile de Lumiere (Sofrana–Unilines).

The following Supplementary Ship has been deleted:

Aranui.

There are now 11 Auxiliary Ships currently reporting.

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