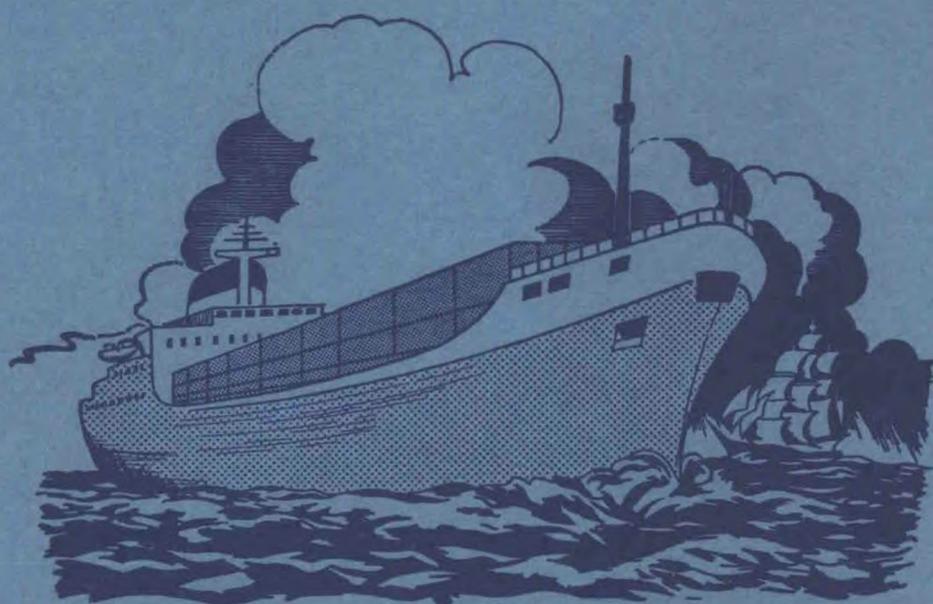


Met. O. 953

The Marine Observer

*A quarterly journal of Maritime
Meteorology*



Volume LII No. 275

January 1982

£2.00 net

THE
MARINE OBSERVER

A Quarterly Journal of Maritime Meteorology
prepared by the Marine Division of the
Meteorological Office

Vol. LII

1982

Met. O. 953

THE MARINE OBSERVER

A QUARTERLY JOURNAL OF MARITIME
METEOROLOGY PREPARED BY THE MARINE
DIVISION OF THE METEOROLOGICAL OFFICE

VOL. LII

No. 275

JANUARY 1982

CONTENTS

	<i>Page</i>
Editorial	4
The Marine Observers' Log—January, February, March	6
Southern Right Whale Dolphins off the South West Africa Coast. By S. G. BROWN	33
Changes to the Manning of the North Atlantic Ocean Stations ..	34
Special Long-service Awards	37
Australian Excellence Awards	37
Aurora Notes, January to March 1981. By R. J. LIVESEY	39
Ice Conditions in Areas adjacent to the North Atlantic Ocean from June to August 1981	42
Personalities	46
Notices to Marine Observers	47
Fleet Lists	48

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

Published for the Meteorological Office by
HER MAJESTY'S STATIONERY OFFICE

© Crown copyright 1982

To be purchased direct from HMSO at any of the following addresses: 49 High Holborn, LONDON WC1V 6HB; 13a Castle Street, EDINBURGH EH2 3AR; 41 The Hayes, CARDIFF CF1 1JW; Brazenose Street, MANCHESTER M60 8AS; Southey House, Wine Street, BRISTOL BS1 2BQ; 258 Broad Street, BIRMINGHAM B1 2HE; 80 Chichester Street, BELFAST BT1 4JY, or from booksellers.

PRICE £2.00 NET or £8.80 per annum (including postage)

Editorial

The birth of a new year has always been the traditional time for taking stock and for making changes. Thirty years ago, at 0001 on 1 January 1952, navigating officers were having their first taste in practice of a new style of *Nautical Almanac*. At that time, the writer was a 'green' Cadet who had just completed his first voyage to sea and, having spent two years in a training ship endeavouring to master the intricacies of 'E' (a quantity which, when applied to the GMT, gave the Greenwich Hour Angle of the Sun), suddenly found that he need not have bothered for from henceforth the Astronomer Royal would calculate it for him. The *Abridged Nautical Almanac* for 1952 was reviewed in the January 1952 edition of this journal and opinions of the new style Almanac by the nautical press differed widely ranging from 'logical, inevitable and long overdue' to 'will continue to use dear old "E" even if it means buying a Greek or Japanese Almanac!'. Apparently, however, the storm engendered by the change was as nothing compared to the hurricane which preceded the introduction of the 'new' helm orders in 1933. What horrific confusion would have developed in the Dover Strait if it had been decreed that from midnight on 31 December 1981, the helm order 'Port' would be changed to 'Starboard'. In modern jargon—the mind boggles!

However, the first day of January 1982 has seen its changes, for, as all voluntary marine meteorological observers know, the new Common Surface Meteorological Code has been introduced. At the time of writing, the new Code has raised not so much as a breath of protest let alone a storm and we can only assume that observers think that the change has been 'logical and long overdue'. Lest there be protesters, we hasten to add that no satisfaction is to be gained by demanding a transfer to the Greek, Japanese or any other Voluntary Observing Fleet! The new Code is common to all nations—hence its title. As the revised publications and stationery for the new Code were being distributed during the latter half of last year one or two points of constructive criticism were raised but we welcome these as they often help to remove errors and anomalies which otherwise might go unnoticed. Inevitably, there was one ship—who shall remain nameless—who, having received the revised instructions, immediately commenced transmitting her weather reports in the new Code three months before the change-over date and thus utterly confused the computer here in Bracknell. Even this was a source of some gratification to us for closer inspection revealed that the reports had been encoded in absolutely the correct manner. Prior to this event there had been some slight misgivings as to what would happen when the change-over to the new Code took place. Land meteorological observing stations and even the ocean weather ships had the opportunity to practise reporting in the new Code on one day last October. The organization of such a practice day for the Voluntary Observing Fleet presented overwhelming difficulties and the idea was discarded. However, the over-eagerness of one ship has demonstrated that our initial qualms should be groundless.

Another important change which is now taking place is the reorganization of the ocean weather ships in the North Atlantic. Sadly, this includes the withdrawal from service of the two British ocean weather ships *Admiral FitzRoy* and *Admiral Beaufort* as the expense of maintaining these in a seaworthy condition has become prohibitive. Elsewhere in this issue is an article outlining the changes and the reasons behind them. However, it is perhaps worthy of note here that the North Atlantic Ocean Station Board, which administers the Stations under the auspices of the World Meteorological Organization, was required to look into alternative methods of obtaining the data supplied by the ocean weather ships but concluded that no alternative observing systems were likely to become operational that could adequately replace the ships. The new British ocean weather ship *Starella*, which has been chartered for the purpose, will commence

her duties on Ocean Station 'Lima' in February and we extend our best wishes to all who sail in her.

A change which occurred recently, on 1 October 1981, was the introduction of an internationally agreed standard set of symbols for use on sea ice charts which are broadcast by radio-facsimile. Debate on the standardization of these symbols has been going on internationally for some years and it is pleasing that a set has at last been agreed and adopted. Observers serving in ships which are likely to encounter ice during their voyages are advised that copies of the Ice Symbology are available free from Port Meteorological Offices in the UK.

Further changes which have occurred are the relocation of the Port Meteorological Offices in Cardiff and London. When the new Weather Centre in Cardiff opened it was logical that the Port Meteorological Officer should have his office in that building. For some years the Port Meteorological Office in the Victoria Dock in London was not conveniently sited. The closure of many of the London docks and the shift of shipping down the river to Tilbury and Sheerness rather isolated the Port Meteorological Officer. The new office in Grays is much more conveniently situated and will allow the Port Meteorological Officer relatively easy access to ships berthed either north or south of the river. The new address and telephone number of the Port Meteorological Officer in London are given in 'Notices to Marine Observers' on page 47. The new address and telephone number of the Cardiff Port Meteorological Officer were promulgated in the last October edition of this journal.

As all voluntary observers and radio officers know, all radio weather messages are transmitted free of charge to the ship provided that they are correctly addressed and the paid service indicator 'OBS' is inserted. The meteorological centres which receive the weather message then pay for the cost of the radio transmission. Over the last few years the cost to this office for these all-important messages has risen alarmingly. The charge for a message is calculated at so much per word or group and in the past weather messages have consisted of so many 5-figure groups each of which was charged as one word. At a recent meeting with British Telecom International it was determined that weather messages in 10-figure groups would be acceptable at Portishead and other UK coast radio stations and obviously this has radically reduced costs. Observing ships were advised of this change by radio some time ago but, in view of its importance, we offer no apology in reiterating it here and also in the 'Notices to Marine Observers' on page 47. However, we hope that this change is presenting no difficulties or problems to Radio Officers.

We live in an era of change—some good and some otherwise. One change we all wish to see is in the fortunes of British merchant shipping. Perhaps the next few months will show that the depths of the recession are now past and soon we shall see world trade climb out of the doldrums where it has languished for so long. We hope so, and with this hope go our best wishes for 1982 to all our readers.

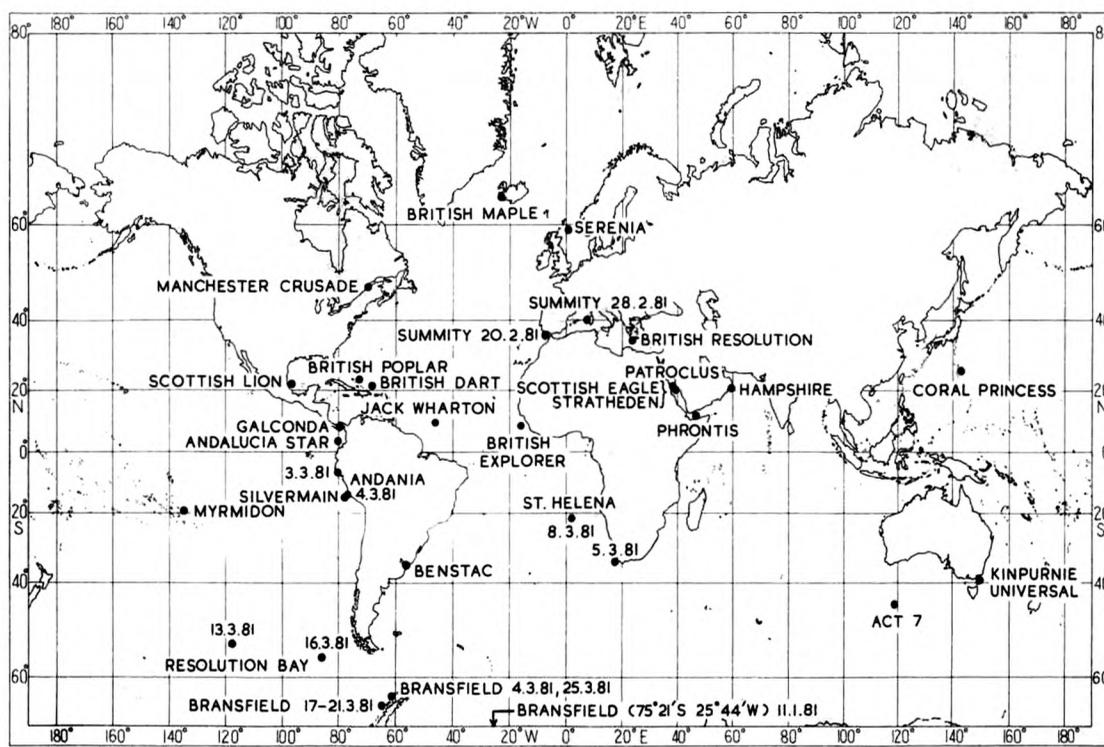
C. R. D.



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 bottles, preservative and instructions on request.



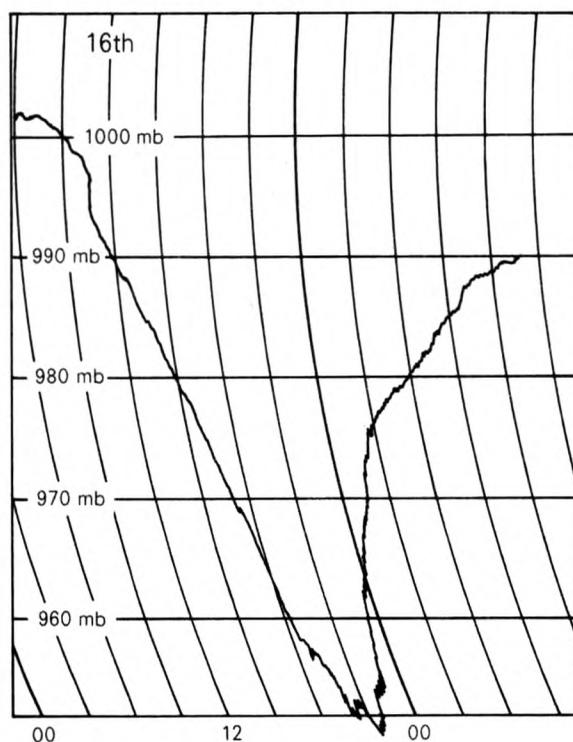
Position of ships whose reports appear in '*The Marine Observers' Log*'

SEVERE STORM

North Atlantic Ocean

m.v. *British Maple*. Captain M. M. Graham. Stigsnaes (Denmark) to Reykjavik: Observers, Mr P. A. Cook, 2nd Officer and Mr S. Warburton and Mr N. Rothney, 3rd Officers.

16-17 February 1981. During the night the vessel encountered a very severe depression whilst off the Icelandic coast near Reykjavik. The vessel was hove to 10 n. mile NW of Gadsdagi Lighthouse, on half speed and just maintaining station. At the height of the storm the barometer reached its lowest reading of



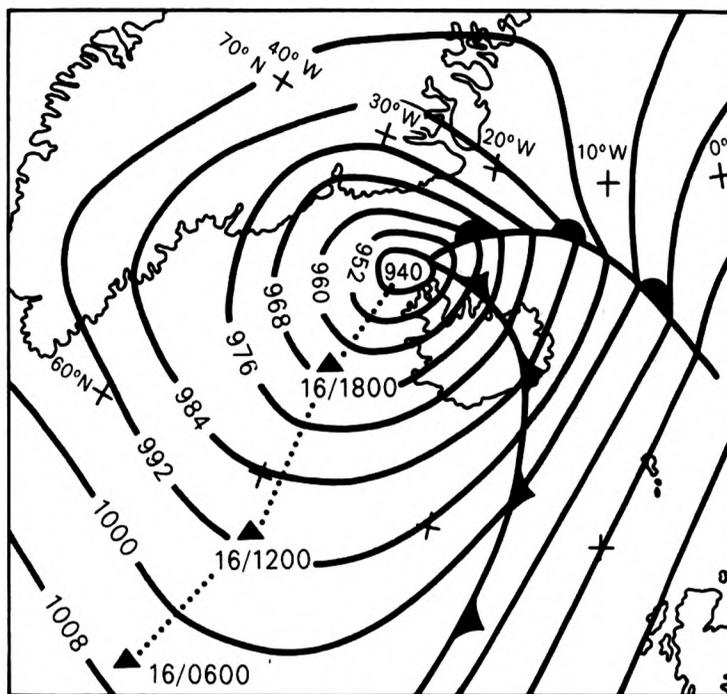
950 mb. This occurred at 2130 GMT on the 16th. The following extracts are taken from the Meteorological Logbook and the Deck Logbook:

GMT	Wind	Seas	Barometric pressure
16th 1200	s'ly, force 8	Very rough seas	993 mb
1600	SE'ly, force 8	Very rough seas	980.5 mb
1800	SE'ly, force 9	Very rough to heavy seas	960 mb
2000	SE'ly, force 11	Very heavy seas	956 mb
2130	s'ly, force 12++	Very heavy seas	950 mb
17th 0000	s'w, force 12+	Very heavy seas	955 mb
0400	w's, force 9	Very rough seas, heavy swell	978 mb
0600	w'ly, force 8	Rough seas	980.6 mb
0800	w'ly, force 7	Rough to moderate seas	983 mb
1200	sw'w, force 5	Moderate seas	996 mb

At the height of the depression, visibility was reduced to nil by spray. From 2130 GMT to 0000 GMT when the storm was at its height, the vessel became totally unmanœuvrable, and it was not possible to turn with maximum rudder and emergency full speed. The vessel did in fact swing the opposite way to the rudder. Wave height at this time was estimated to be in excess of 20 metres. Inshore at Reykjavik, wind was recorded at 102 knots, and at Hvalfjordhur, 10 miles to the north, 120 knots was recorded before the anemometer went off the

scale and broke. A small vessel which passed through the eye of the storm recorded a barometric pressure of 937 mb and no wind, but a heavy swell.

Position of ship at 2130 GMT on 16 February: $64^{\circ} 12' N$, $22^{\circ} 54' W$.



Synoptic situation at 00 GMT on 17 February 1981

Note. The position and intensity of the storm encountered by the *British Maple* are shown on the synoptic chart for 0000 GMT on 17 February 1981. It was at about this time that the central pressure reached its lowest value and, on this analysis, the depression has been drawn with the centre at 940 mb.

During the previous 24 hours the low had been steadily deepening as it moved NNE and, later, N. On the 17th it moved NE over the Greenland Sea and started to fill.

SEVERE DEPRESSION

South Pacific Ocean

m.v. *Resolution Bay*. Captain J. Welch. Wellington to Zeebrugge. Observers, the Master, Mr D. R. Lewis, 2nd Officer, and Mr R. D. Anderson and Mr M. J. Chapman, 3rd Officers.

13–16 March 1981. A severe depression was experienced approximately 1500 n. mile west of Cape Horn and the following are extracts from the logbook:

13 March, 2000 GMT. Barometric pressure 991.5 mb, wind s'w, force 5, dry bulb $7.0^{\circ} C$, weather cloudy and fine, moderate sea and moderate confused swell.

14 March, 0400 GMT. Barometric pressure 985.3 mb (falling), wind backed to s'E, force 6, dry bulb $7.3^{\circ} C$, weather overcast with continuous rain during preceding 2 hours, rough s'e'ly seas and moderate confused swell.

14 March, 0730 GMT. Barometric pressure 979.4 mb (falling), wind backed to SSE, force 6, dry bulb 8.9 °C, weather overcast with continuous rain, rough seas and moderate confused swell; vessel shipping spray forward and on windward side.

14 March, 1130 GMT. Barometric pressure 964.0 mb (falling rapidly), wind backed to ESE, force 7, dry bulb 9.0 °C, weather overcast with continuous rain, very rough ESE'ly seas and short, heavy SE'ly swell; vessel shipping water forward. Barometer had fallen 13.5 mb during preceding 3 hours. Reduced speed to 9 knots.

14 March, 1310 GMT. Weather remaining overcast. Rain ceased, although squally showers remained in the area. Swell and wind now on port bow. Vessel hove to. Very rough seas with crests breaking and tumbling over; some waves estimated at over 6 metres in height. Dangerous, steep, fast-moving swell.

14 March, 1730 GMT. Barometric pressure 961.0 mb (rising slowly), wind backed to NE'E, force 9, dry bulb 9.4 °C, very rough, dangerous seas and short, very heavy ENE'ly swell.

14 March, 1930 GMT. Barometric pressure 961.4 mb (steady), wind NE'E force 10, dry bulb 9.7 °C, weather overcast with slight rain. Very rough, dangerous seas and short, very heavy ENE'ly swell.

14 March, 2330 GMT. Barometric pressure 961.5 mb (rising slowly), wind backed to NE, force 9, dry bulb 9.5 °C, weather cloudy but no precipitation. Very rough, dangerous seas and very heavy NE'ly swell.

15 March, 0130 GMT. Barometric pressure 964.1 mb (rising slowly), wind backed to NE'N, force 9, dry bulb 9.4 °C, weather overcast. Very rough, dangerous seas and heavy NE'ly swell.

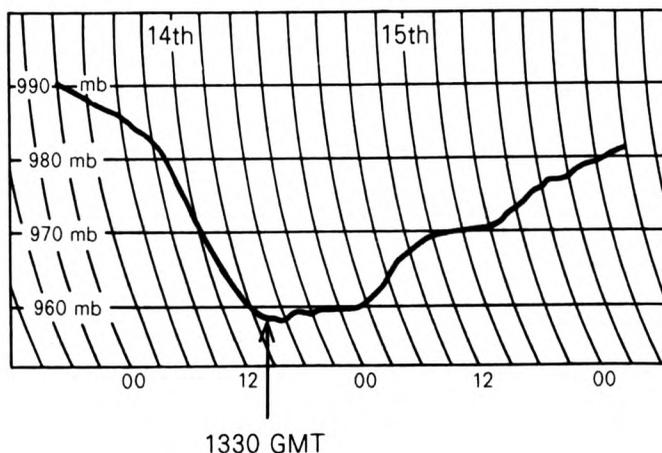
15 March, 0220 GMT. The steep, dangerous seas abating. Increased speed to 10 knots.

15 March, 0300 GMT. Barometric pressure 966.3 mb (rising slowly), wind NE'N, force 8, dry bulb 9.0 °C, weather overcast with showers, very rough sea and heavy NE'ly swell. Speed increased to 14 knots.

15 March, 0700 GMT. Barometric pressure 970.0 mb (rising slowly), wind NE'N, force 8-9, dry bulb 8.3 °C, weather fine with few clouds remaining. Very rough seas and heavy NE'ly swell.

16 March, 0600 GMT. Barometric pressure 983.1 mb (rising slowly), wind backed to N'E, force 7, dry bulb 7.8 °C, weather cloudy and fine, very rough seas and heavy confused swell.

16 March, 1000 GMT. Barometric pressure 986.0 mb (rising slowly), wind backed to N, force 5, dry bulb 7.5 °C, weather cloudy and fine, moderate seas and short, heavy NE'ly swell; speed increased to 21 knots.



According to the climatological data for this area, a storm with prolonged and predominant winds from the easterly sector is unusual, the prevailing storm winds being almost invariably westerly.

We reached the conclusion that the ship was probably situated for a considerable time in the warm sector and was slowly overtaken by the centre of the low passing close to the vessel. Although the swell was sometimes confused, it was predominantly NE'ly and did not seem to have any westerly component at any time, which is also unusual. It was also thought that the depression's fronts were perhaps further clockwise orientated than usual.

Position of ship at 2000 GMT on 13 March 1981, $53^{\circ} 09'S$, $117^{\circ} 43'W$.

Position of ship at 1800 GMT on 16 March 1981, $56^{\circ} 37'S$, $85^{\circ} 39'W$.

Note. The westerlies on the polar side of the oceanic anticyclones in both the northern and southern hemispheres are greatly disturbed by the continual formation and movement of depressions. Over the southern oceans where there is little land mass to intercept the general westerly flow the winds can be particularly strong—the Roaring Forties. Although the predominant direction of the winds at these latitudes is from the west they can, and do, blow from any quarter in the circulation of a depression.

There is no synoptic chart available to illustrate the situation during the period of these reports. It would seem, however, that shortly after 1200 GMT on the 14th the centre of an intense depression crossed from north-west to south-east across the track of, and very close to, the *Resolution Bay*. Thereafter, apparently, the relative movement between ship and centre was small for some 12–18 hours and the vessel remained close to, and in the north-east quadrant of, the low. In consequence she experienced a sustained period of wind and swell with an easterly component.

NORTHER

Gulf of Mexico

m.v. *Scottish Lion*. Captain A. Terras. At anchor off Tampico, Mexico. Observer, Mr G. A. McEwan, 3rd Officer.

11 February 1981. During the preceding days to 11 February the barometric pressure had been falling steadily from about 1014.0 mb at 1600 GMT on the 9th until 0800 GMT on the 10th, when a minimum of about 1001.4 mb was reached. The barometer reading then remained steady at this pressure until 1100 GMT on the 10th, when it started to rise, reaching a maximum of 1004.5 mb at 1600 GMT on the 10th. From then on it resumed a downward trend which continued until 2000 GMT on the 10th, when the barometric pressure was 1004.2 mb, at which value it remained steady until 0000 GMT on the 11th. During this period the wind had been variable and steadily strengthening—see Abstract from Log. The dry bulb had been recording temperatures in the region of 22° – 24° °C, with relative humidity in the high 80s and low 90s *per centum*; the sea temperature was 23° °C throughout.

There was a feeling during the day, experienced by watch officers and the Master, that all was not well, and this had been remarked upon by the Master at times during the day.

Between the hours of 0000 and 0300 GMT on the 11th the barometric pressure rose sharply by 4.5 mb; it then continued to rise, but less sharply, until 0900 GMT on the 11th when the rapid rise was resumed. The wind remained N'ly, force 4 during this time but at 1100 on the 11th it suddenly increased in strength from the north. By 1115 GMT on the 11th it had attained a strength of force 6 and was gusting to force 7. By 1230 GMT on the 11th the wind speed had increased to force 9 and the seas, which until 1200 GMT had been moderate to rough, had increased to very rough. The vessel was in a ballast condition and experienced the tops of waves being blown over the fore deck while beam on to the sea while attempting to weigh anchor. The waves at this time were estimated to be about 5–7 metres high.

The barometer continued to rise until about 1600 GMT when it levelled off at a pressure of 1032.0 mb, and at about this time the wind reached its fiercest at N'ly, force 10-11, gusting to force 12. Visibility was very severely reduced owing to blowing spray and the seas had increased to about 8 metres.

During the afternoon and evening of the 11th the wind dropped but it remained northerly for the next two days. The sea and swell began to die away on the 12th but it took until the 14th before the sea and swell had died away sufficiently to permit the vessel to re-anchor.

Weather forecasts received by the vessel had been predicting a northerly blow, but the suddenness and severity of the blow were totally unexpected by the persons on board.

Position of ship: 22° 15' N, 97° 51' W.

Abstract from Meteorological Logbook

	Time GMT	Wind	Force	Barometric pressure	Dry bulb °C	Wet bulb °C	R.H. %	Remarks
11th	0000	NNW	4-5	1012.8	21.0	20.5	95	Few clouds and fine
	0400	N	4	1014.0	21.0	19.3	84	Cloudy and fine
	0500	N	5-6					Wind increasing quickly and barometer rising rapidly
	0515	N	6-7					
	0630	N	9					
	0800	N	10	1023.3	13.0	12.5	94	Heavily overcast with blowing spray severely reducing visibility
	0900	N	10-11					Gusting force 12. Blowing spray severely reducing visibility
	1200	N	8					
	1600	N	7	1032.6	12.7	11.8	88	Overcast with drizzle
	2000	N	6	1033.6	12.7	11.8	88	Overcast
12th	0000	N	5-6	1033.5	14.0	13.0	88	Overcast with drizzle

Note. The *East Coasts of Central America and Gulf of Mexico Pilot* (N.P.69A) states:

'A "Norther" at sea in the region covered by this volume is a rather cold dry wind. It occurs when an anticyclone over the area bordering the eastern slopes of the Rocky Mountains extends southwards across the Gulf.

'This cold blast from the continent becomes very unstable as it spreads south over the warmer sea. Squally conditions develop and may cause considerable havoc, with winds reaching 50 knots or more.

'During most years a "Norther" capable of causing considerable damage to shipping will occur once or twice during the winter months.

'The season for true "Northers" is from October to April.'

SANDSTORM

Eastern Mediterranean Sea

m.v. British Resolution. Captain M. Boyd. Isle of Grain to Port Said. Observer, Mr M. P. Fawke, 3rd Officer.

22 January 1981, 1000 GMT. At this time a reduction of visibility due to suspension of dust or sand in the atmosphere was experienced. The wind was s'ly, force 7; by 1800 GMT the wind was backed to SSE and decreased to force 4, and the visibility was 5 n. mile. On the 23rd the wind increased to force 8 and the visibility was reduced to 1.5 n. mile. The whole accommodation was covered with fine reddish sand of a very fine texture like talcum powder. Again, by 1800 GMT the wind decreased to force 3 or 4, direction s'E and visibility increased to 4 n. mile. The sky was clear above an altitude of 45°, but below that was still obscured by sand. The vessel arrived at Port Said anchorage at

0600 GMT on 24 January. The wind was light, about force 3, and visibility was 5 n. mile. The sky was completely visible, showing only high light cirrus over 2 oktas, but the horizon was still obscured by the sand haze.

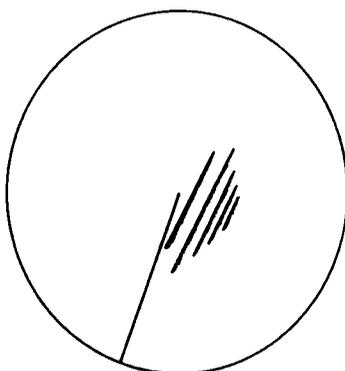
Position of ship at 1000 GMT on 22 January: $34^{\circ} 25' N$, $23^{\circ} 40' E$.

CURRENT RIP

Gulf of Panama

m.v. *Galconda*. Captain R. Reid. Balboa to Stockton (Calif.). Observers, Mr J. B. Moulds, 3rd Officer and Mr R. Philips, Radio Officer.

12 March 1981. At 0320 GMT distinct lines of SW-NE direction appeared on both 10 cm and 3 cm radars. These lines extended to a range of approximately 6 n. mile, the nearest bearing being $110^{\circ} (T)$, distance 3.0 n. mile. The distance between lines was approximately 0.5 n. mile, reducing with distance from the ship. At 0340 GMT the lines appeared to be at the ship, although no noticeable reaction was felt at the ship and the helm was not affected. Accurate visual observations were not possible owing to darkness but faint lines of light and shadow were observed by weak moonlight. At 0430 GMT the lines had disappeared from the radar screen. The chart states that current rips have been observed



Radar picture at 0320 GMT

in this area, and the observation seemed to have much in common with that made by the *British Avon* and reported in *The Marine Observer* of January 1981.

Weather conditions at time of observation: dry bulb $26.0^{\circ} C$, wet bulb 23.8 , barometric pressure 1008.7 mb, wind N'E, force 3.

Position of ship: $7^{\circ} 45' N$, $79^{\circ} 45' W$.

Note. The movement of surface water in the Gulf of Panama resulting from wind, currents and tidal flow is complex and subject to large variations. There is generally a southerly flow near the western shore of the Gulf which is strongest in the months December-February. Flows counter to this current, and consequent rips, are most often found off Chamé Point and, also, Cape Mala at the entrance to the Gulf. At this latter location the rips are most likely to be found in the months June-November. This is when the east-going equatorial countercurrent penetrates eastwards to add to and widen the northerly flow of the Peru current into the eastern side of the Gulf.

HOT SPRINGS

South Atlantic Ocean

R.R.S. *Bransfield*. Captain M. J. Cole. Signy Island to Punta Arenas via Antarctic Peninsula. Observers, the Master and ship's company.

4 March 1981. The vessel was at anchor in Pendulum Cove, Deception Island, whilst supporting a Biology Field Party. Steam was to be seen rising from the head of the cove and a boat crew reported that the water in places was very hot, but they did not investigate further as they were in inflatable boats. The sea temperature recorded at the ship at 1800 GMT was $+1.5^{\circ}\text{C}$, that is to say 1.4°C higher than at 1200 GMT, when the vessel was approaching Deception Island.

25 March 1981. The vessel was at anchor in Whaler's Bay, close to the old British base on Deception Island. Again steam was seen rising from the water-line at low tide. During the day some British Antarctic Survey personnel were swimming in Pendulum Cove, the water being hot enough for this.

On neither visit to Deception Island were thermometers taken ashore as the volcanic activity and the effect on the water temperature are fairly well recorded. The *Antarctic Pilot* (N.P. 9), fourth edition, 1974, Chapter 4, pages 169-172 gives details of the more unusual incidents at Deception Island, including such as the water boiling and taking all the paint off ships' hulls!

Position of ship: 4 March, $62^{\circ}56'S$, $60^{\circ}37'W$
25 March, $63^{\circ}06'S$, $60^{\circ}06'W$.

DISCOLOURED WATER

South Pacific Ocean

m.v. *Silvermain*. Captain D. Allen. Los Angeles to Valparaiso, Chile. Observers, the Master, Mr J. Millar, Chief Officer, Mr J. Marten-Hale, 2nd Officer, Mr J. Hammond, 3rd Officer and Mr L. J. Cleall-Harding.

3 February 1981, 1600 GMT. Whilst the vessel was steaming approximately 105 n. mile off the Peruvian coast, a very unusual sight was observed by the above-mentioned people. The sea was a reddish-brown colour, and at first this was thought to be due to tank-washings, but as there was no smell of oil it was obvious that it was a rare phenomenon. The *Marine Observer's Handbook*, 1977 edition, Chapter 12, p. 115, paras (b) and (c) indicated plankton as the probable cause of the discoloration. The area covered was approximately 16 square n. mile.

The 3rd Officer took a sample of the water which still looked clear when put into a glass. After having been left to stand for 8 hours, the contents settled and were seen to be green at the bottom of the glass and clear at the top.

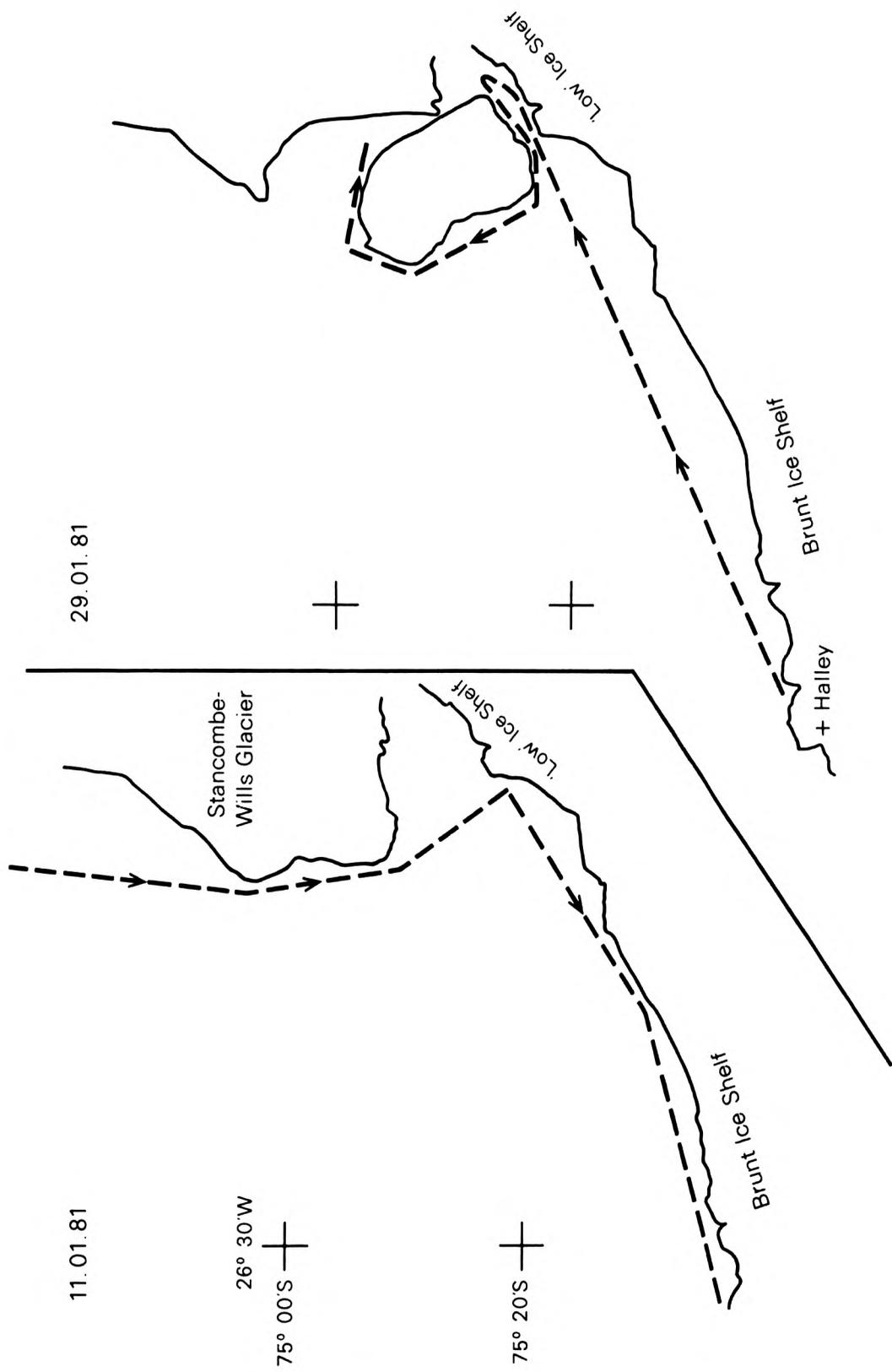
Weather conditions at time of observation: dry bulb 25.0°C , sea temperature 23.0 , barometric pressure 1015.0 mb, wind SE, force 2-3.

Position of ship: $14^{\circ}22'S$, $78^{\circ}06'W$.

Note. The following extracts are from the *South American Pilot*, Vol. III, Fifth edition, 1968, p. 25.

Aguaje. The phenomenon, mentioned above, with the resulting discoloration of the sea, is known by the Peruvian name of 'aguaje' and by the English name of 'the Painter', because of the darkening effect of the hydrogen sulphide on the paintwork of ships, there lying at anchor. . . .

When the current extends far to the southward, as described above, it is probably due to changes in the atmospheric circulation causing the north-east trade wind of the northern hemisphere to blow across, and southward of, the Equator in this region. The disappearance of the warm current is rapid with a change of wind to the normal south-east direction; upwelling of cool water starts again and the sea conditions revert to normal. . . .



The normal colour of the coastal water is greenish, due to the richness of its plankton content, while that of the open ocean is blue or indigo. Aguaje may colour the water yellow, red or grey, to black; sometimes it is very red along the beaches and is said to leave the water frothy after its disappearance. The R.R.S. *William Scoresby* made the following observations in 1931. Off Bahia Pisco, the sea was coloured ochraceous-salmon; off Bahia del Callao, it was tawny olive and russet, with patches of rusty brown foam; and off Islas Guanape, it was khaki colour. It was considered probable that these were due to forms of aguaje and did not represent normal colours of the plankton.

ICEBERG

Weddell Sea

R.R.S. *Bransfield*. Captain S. J. Lawrence. Halley Bay to Grytviken. Observers, the Master and ship's company.

29 January 1981, 1800 GMT. Whilst proceeding along the front of the Brunt ice shelf it was noticed that the gap between the 'low' ice shelf area and the Stancombe-Wills Glacier had closed from about 12 n. mile to, in one place, a little over 2 n. mile. This was obviously a large iceberg, and as nothing of this size had been passed in this area three weeks previously, it must have been a piece of the glacier. The vessel proceeded as far along the southern edge of the iceberg as possible and then headed north along the western edge until it was possible to head east again. The iceberg measured approximately 11 n. mile by 6 n. mile and had broken away from the glacier between 11 January and 29 January, most probably in the week preceding the 29th, when there had been strong winds in the area; see facing map.

Position of ship: $75^{\circ} 18' S$, $25^{\circ} 00' W$.

RADAR ECHOES OF SWELL PHENOMENA

North Pacific Ocean

m.v. *Andalucia Star*. Captain J. Rowe. Panama to Puerto Bolivar. Observers, Mr B. T. Cox, 3rd Officer and Mr A. Slater, Radio Officer.

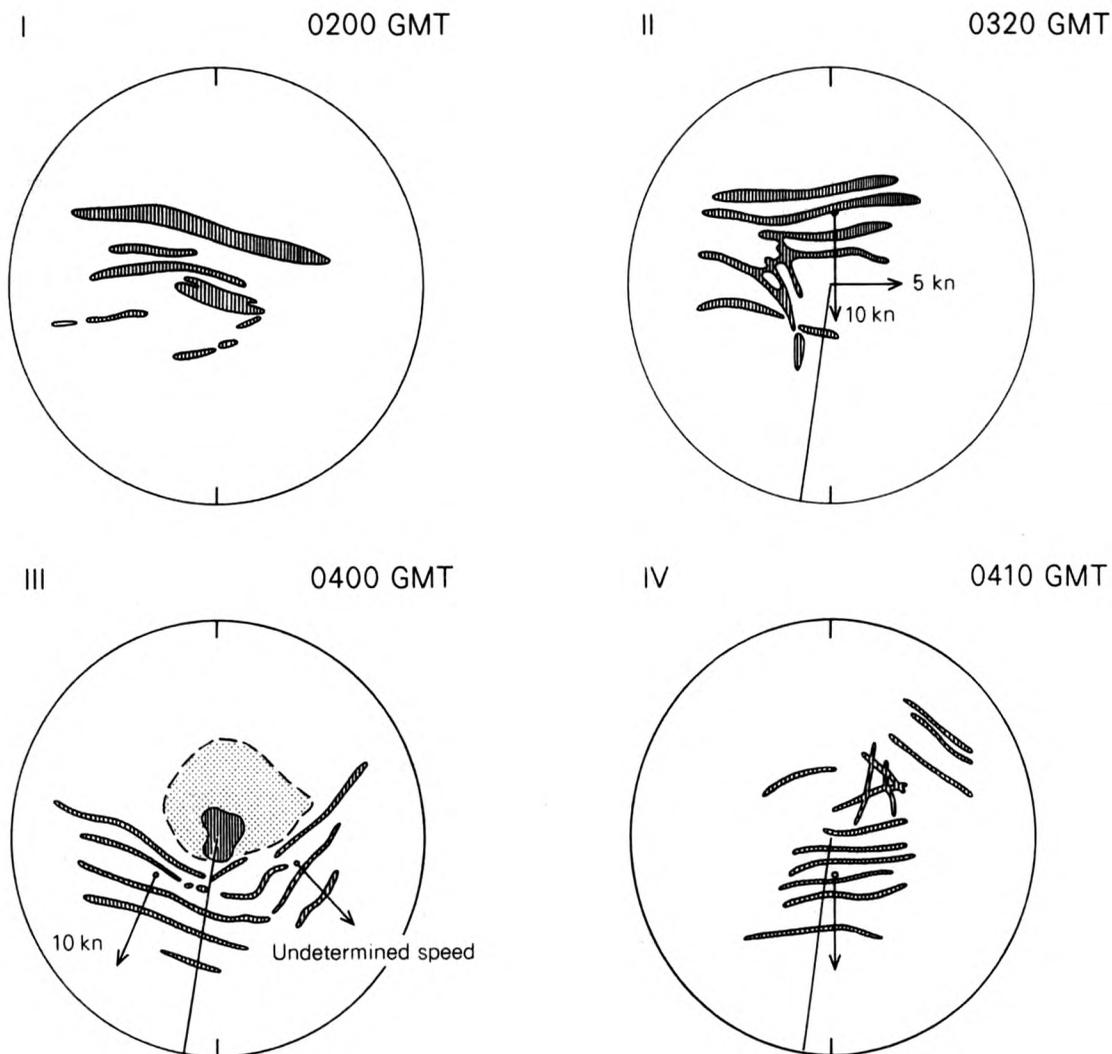
16 February 1981, 0200-0500 GMT. Course $190^{\circ}(T)$, speed 20 knots ± 0.2 knot. Echo-sounder depth >50 metres. Sea state rippled, no crests. Radar data: Decca 3 cm, TM 1226, short pulse, range 3 n. mile, rain clutter nil, sea clutter nil.

At around 0200 GMT while the radar was set on the 12 n. mile range the central sea clutter showed some unusual features. The range was decreased to 3 n. mile and short pulse selected. The peculiar swell configuration shown in diagram I was observed. The definition was exceptionally clear. Further observations showed this swell to be travelling from due north at a true speed of around 10 knots. This northerly swell was observed continuously for about an hour and then some of its characteristics changed.

Diagram II shows a record of the echoes at 0320 GMT, when we observed two distinct swells, once again the northerly one but also a set of echoes which travelled from the west at a speed of around 5 knots.

Diagram III at 0400 GMT shows once again two distinct swells but this time running SE and SSW.

Diagram IV was taken shortly afterwards at 0410 GMT. The swell had re-established its N-S direction, but another fringe pattern was observed on a bearing of $045^{\circ}(T)$; we were unable to determine its direction. During the last observation bands of light and dark could be seen ahead of the vessel by the light of the full moon.



Peculiarities of the observation were the wavelength, which was 0.2–0.5 n. mile, and the height of the swell, which was less than 0.5 metre throughout the observations. The vessel, despite being light-ship, was steady throughout and did not respond to any swell.

At around 0430 GMT the wind increased to WNW, force 3 and the echoes were lost in clutter. All the diagrams were copied directly from plots on the radar reflection plotter.

Similar conditions were observed when the vessel was northbound on a reciprocal course at 2335–2400 GMT on 21 February in position $0^{\circ} 12' N$, $80^{\circ} 51' W$ but they were not so pronounced, and we were unable to make any recordings; meteorological conditions were similar.

Weather conditions at 0200 GMT on 16 February: dry bulb $25.4^{\circ} C$, wet bulb 24.2 , sea temperature 25.4 , barometric pressure 1009.9 mb, wind NNW, force 2, cloud cover 8 oktas semi-transparent altocumulus, clearing towards the end of the observation.

Position of ship at 0200 GMT: $4^{\circ} 09' N$, $80^{\circ} 24' W$.

CETACEA

Western North Atlantic

m.v. *British Dart*. Captain J. A. M. Taylor. Curaçao to New Haven. Observers, Mr G. Carr-Smith, 3rd Officer and Cadet J. Cunane.

16 March 1981, 0815 GMT. A disturbance on the surface approximately 5 n. mile ahead fine on the starboard bow was observed; closer examination revealed this to be spouts from whales close to the surface, a total of four being observed. As the vessel approached closer one particular whale rose out of the water to about half its length and then fell backwards. This continued regularly until the whales were well astern, but the other three only broke the surface, showing a small pronounced dorsal fin and tail fin. The whales passed within 1 n. mile on the starboard side, and it was determined that there were two adults and two calves. The adults were approximately 6–8 metres in length and the calves 2–4 metres. The acrobatic whale was still clearing the surface at this stage; its top sides were a dull grey-green colour with a whitish underbelly, and the leading edges of the tail fins were also a whitish colour. The whales were heading in a N'ly direction at about 3 knots.

Weather conditions at time of observation: wind ENE, force 2, sea calm.

Position of ship 21° 05' N, 68° 46' W.

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

'There seems little doubt that these are humpback whales (*Megaptera novaeangliae*). The general description, behaviour pattern and swimming speed are typical of the species.'

m.v. *British Poplar*. Captain T. V. Watkins. Cristobal to New York. Observers, Mr J. Stribblehill, Chief Officer, Mr D. J. Williamson, 2nd Officer, and Cadet J. McNicholas.

31 March 1981. The vessel was followed, close to starboard, by what appeared to be a whale, for about 5 (observed) minutes. It was approximately 10 metres in length and appeared to be a shade of brown when observed through the water, but darker when it broke the surface. At first it was thought to have white patches behind its mouth/beak but on closer inspection this was probably air expelled prior to breaking the surface. It 'surfed' on the vessel's wake and had a turn of speed in excess of 20 knots. It did not appear to blow off like some whales but surfaced to draw air through its 'beak'. Unfortunately, as in most cases, it was difficult to identify it completely, but it resembled a Cuvier's beaked whale, if this can be accepted as an Atlantic species.

Position of ship: 23° 20' N, 73° 20' W.

Southern Ocean

R.R.S. *Bransfield*. Captain M. J. Cole. Antarctic Peninsula to Punta Arenas. Observers, the Master, ship's company and scientific staff.

17 March 1981. Whilst the vessel was approaching the Argentine Islands, a humpback whale surfaced directly ahead of the vessel about 15 metres from the bows; it remained on the surface until, when it was only 3 to 5 metres from the bows, it obviously realized the danger and dived quickly, luckily in time.

An hour later as the vessel approached the anchorage position off the British Base, Faraday Island, two humpback whales were observed swimming on the surface among the islands.

On both occasions the very long flippers, with lumps on the leading edges, were plainly visible; in the second sighting the whales sometimes dived, throwing their tails well clear of the water.

19 March 1981. Two of the vessel's inflatable boats were returning to the ship from the Penola Strait when up to five whales were observed about 100 metres away. The boat's outboard motors were stopped and the boats allowed to drift. The whales were identified as humpbacks and were mainly on the surface. One or two were observed to roll while on the surface, the long flippers being brought clear of the water. When diving the back would be brought high out of the water and as the whale's body went below the surface the tail would come clear of the water before sliding down almost without disturbing the water. White patches were visible on the under edge of the tail flukes. The whales began to move slowly away from the boats, and although the motors were started it was impossible to get any closer without upsetting them. One boat attempted to get closer but the whales dived, to surface even further away.

21 March 1981. The vessel anchored in the Errera channel, off Danco Island. Up to five humpback whales were sighted, swimming slowly round the vessel for about 20 minutes before making off to the north.

It is likely that all these sightings were of the same group of whales, as the area covered was not very great.

Position of ship: 17 March, 65° 14' S, 64° 14' W
19 March, 65° 16' S, 64° 07' W
21 March, 64° 44' S, 62° 37' W.

Note. Mr McBrearty comments:

'This and other reports I have heard recently do suggest to me that in some areas the humpback whale is making a numerical recovery from the rather desperate position it was in some time ago. Whilst there may never again be the numbers of humpbacks in the oceans that were present at the turn of the century, they appear not to be in any danger.'

Arabian Sea

m.v. Hampshire. Captain M. R. Nisbet. Suez to Ra's Tannūrah. Observers, the Master and ship's company.

17 February 1981, 0810 GMT. A large area of rippled water was observed approximately 1½ n. mile ahead of the ship off Masirah Island. The rippled water stretched for about 1 n. mile in an east-west direction, and the rest of the sea in the vicinity was smooth. As the vessel approached, a large number of porpoises (approximately 400-600) were observed surfacing and leaping clear of the water throughout the whole of the rippled area. The porpoises were of various sizes ranging from 60 to 220 cm, and were only active inside the rippled patch of water. Numerous sea birds were also active in the vicinity, swooping to the water, presumably for fry, then climbing to a height of 5 to 7 metres. No fish were observed breaking the surface. The vessel passed through the centre of the school and had little or no effect on its activities.

Position of ship: 21° 07' N, 59° 26' E.

SQUID AND FLYING FISH

North Atlantic Ocean

m.v. Jack Wharton. Captain A. J. A. Richards. Trinidad to Monrovia, Liberia. Observers, the Master, Mr P. L. G. Wolledge, Chief Officer, Mr P. F. Bayliss, 2nd Officer, and ship's company.

6 January 1981, 0030 GMT. Observations were made over several hours while the vessel was stopped. A number of squid were observed close to the surface pursuing other fish. The squid were approximately 30 to 45 cm in length. When

an Aldis lamp was shone on to the water it was possible to see the squid pursuing one particular type of fish, which, in the bright light, gave off a high-intensity glow similar to that of a cigarette end. A noticeable feature of the squid was their bright orange trunk, and the rapidity with which they could move in either direction, catching small fish with ease by enveloping them with their tentacles. Their bodies remained streamlined whether going backwards or forwards, and they spread their tentacles only at the last split second, giving the impression of almost sucking their victims in. Small flying fish were also observed a few centimetres below the surface, immobile and with their wings open—stunned, perhaps, after flying into the ship's side. There was evidence of marine life in abundance, the surface of the sea being a hive of activity. The squid appeared to be shy of the bright lights, and dived deep if held in the beam. Seeing the squid was all the more fascinating after seeing a video documentary the previous evening in which reference was made to squid tens of metres in length!

Position of ship: $9^{\circ} 42' N$, $47^{\circ} 18' W$.

Note. Dr F. Evans, of the Dove Marine Laboratory, Newcastle upon Tyne, comments:

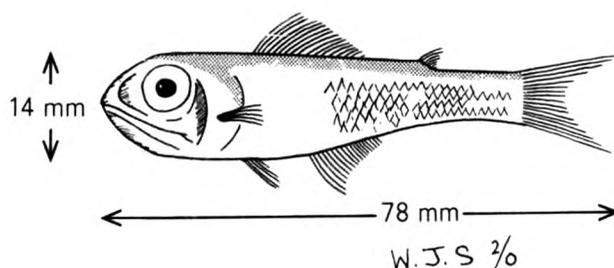
'There is not sufficient information to identify these orange-bodied squid but the fish they were eating were myctophids. These are small, high-oceanic, mostly warm-water forms which spend their days in the deeps and their nights near the surface. They have rows of luminescent organs along their sides which flash bright orange, very different from the usual blue luminescence. I know of no vernacular name for myctophids and yet they are among the commonest fish in the sea. The reason is probably that, being so small, they are rarely caught.'

FISH

North Atlantic Ocean

m.v. *Summity*. Captain I. Anderson. Ceuta to Salerno. Observer, Mr W. J. Strafford, 2nd Officer.

20 February 1981. Eight small fish (see sketch) were found dead on the fore



deck. It is believed that they were probably washed onboard somewhere off Cape St Vincent.

All the fish were black and silver. The silver shone with various shades of blue, green and purple, and the fish were very colourful to look at.

Position of ship: $36^{\circ} 30' N$, $7^{\circ} 40' W$.

Note. Dr Evans comments:

'I have tried hard to find out what these fish might be and have consulted with Mr P. P. Davis of the Hancock Museum, Newcastle upon Tyne and with Dr A. Wheeler of the British Museum (Natural History), South Kensington, London, both eminent ichthyologists. We have all concluded that they must have been myctophids; the trouble is that the illustration does not show any of the photophores (luminescent organs) that run like portholes down the sides of these fish. In every other way the drawing agrees with the appearance of the fish. Myctophids are among the commonest fish

of the sea. They live at depth during the day and swim up towards the surface at night. They have patterns of flashing photophores on the snout and on the flanks and these photophores often produce orange light, unlike the blue so common among invertebrates. They are small fish, only a few inches long, and are largely confined to low latitudes.'

CRUSTACEA

Gulf of Aden

m.v. *Phrontis*. Captain P. J. Broomfield. Suez to Singapore. Observers, Mr P. J. Barratt, Chief Officer and Cadet D. C. Roberts.

3 February 1981. When steaming on a course of 093 °(T) the vessel encountered innumerable orange crabs 10–20 cm in length swimming in a w'ly direction. The numbers were greatest around sunrise and seemed to decrease towards noon. Finally by sunset in a position 12 n. mile north of Cape Elefante no more were observed. At sunrise the sea was smooth and the crabs were at a density of 2 per square metre, but towards midday the wind freshened to 6 knots and the density of crabs decreased to 1 per 5 square metres.

Position of ship: 12° 20' N, 47° 00' E.

Note. Dr Evans comments:

'This report parallels that of m.v. *Clan Macgillivray* on 1 November 1978 in position 12° 15' N, 50° 43' E. I then wrote:

'An interesting note of portunid crabs. Without a specimen I am unable to name them exactly, but a crab called *Charydis* which is red has been observed to swim in the Indian Ocean and it may well have been this one. Portunids have the last pair of legs flattened into a paddle shape and some of them have been observed to swim at two knots".'

MARINE LIFE

South Pacific Ocean

m.v. *Myrmidon*. Captain H. K. Timbrell. Observers, the Master and ship's company.

30 January 1981, 2100 GMT. On this date the vessel was drifting awaiting orders. We commenced drifting on 28 January at 1700 GMT and resumed our passage on 1 February at 2230 GMT. During this period we observed a considerable amount of marine life but the most noticeable was a group of 5 or 6 sharks who stayed close to the ship during most of this period. On 30 January at 2100 GMT a crew member hooked and brought on board one of these sharks. It was of a greenish-grey colour with distinctive white tips on its lateral fins and measured 120 cm in length and weighed 27 kg. The name of the species was not known to anyone on board. Also observed during this period was another type of shark, more aggressive than the first, silver grey in colour and with a port beagle type nose. We also saw pilot fish, a blue-coloured fish, and what was believed to be a sea snake.

Position of ship: 19° 16' S, 134° 58' W.

Note. Dr Evans comments:

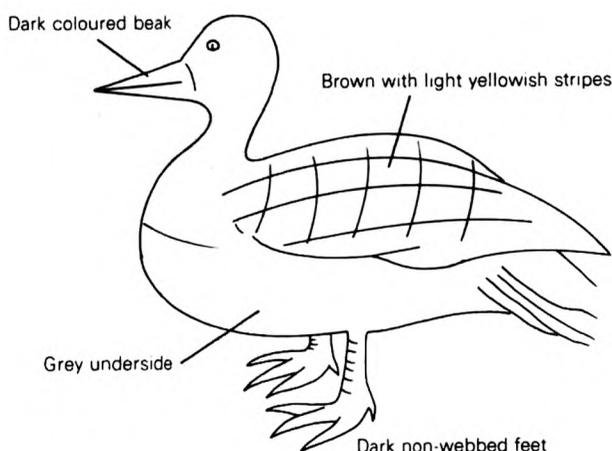
'The captured shark with the white tips to its lateral, that is to say pectoral fins was a small specimen of the species indeed known as the white-tipped shark, *Carcharinus longimanus*. It is a near-surface, high-oceanic shark, often accompanied by pilot fish, and its picture may be seen in Thor Heyerdahl's book "Kon-Tiki". They are found in all tropical oceans.'

BIRDS

North Sea

s.s. *Serenia*. Captain K. Bramley. Teesport to Brent Oilfield. Observers, Mr D. P. Heath, 3rd Officer and ship's company.

31 March 1981, 1000 GMT. A bird was seen on deck which we were unable to identify in either the *Observer's Book of Birds* or *A Guide to Coastal and Sea Birds*. Its general colour was light brown, with lighter-coloured stripes of a yellowish hue criss-crossing its back in a squared pattern. It had a long, pointed,



dark coloured beak and a grey underside. The tail was short and stubby. The feet were not webbed. When the bird moved it walked with an exaggerated bouncing gait which elicited some amusement among the observers.

Wind: SE'ly, force 4.

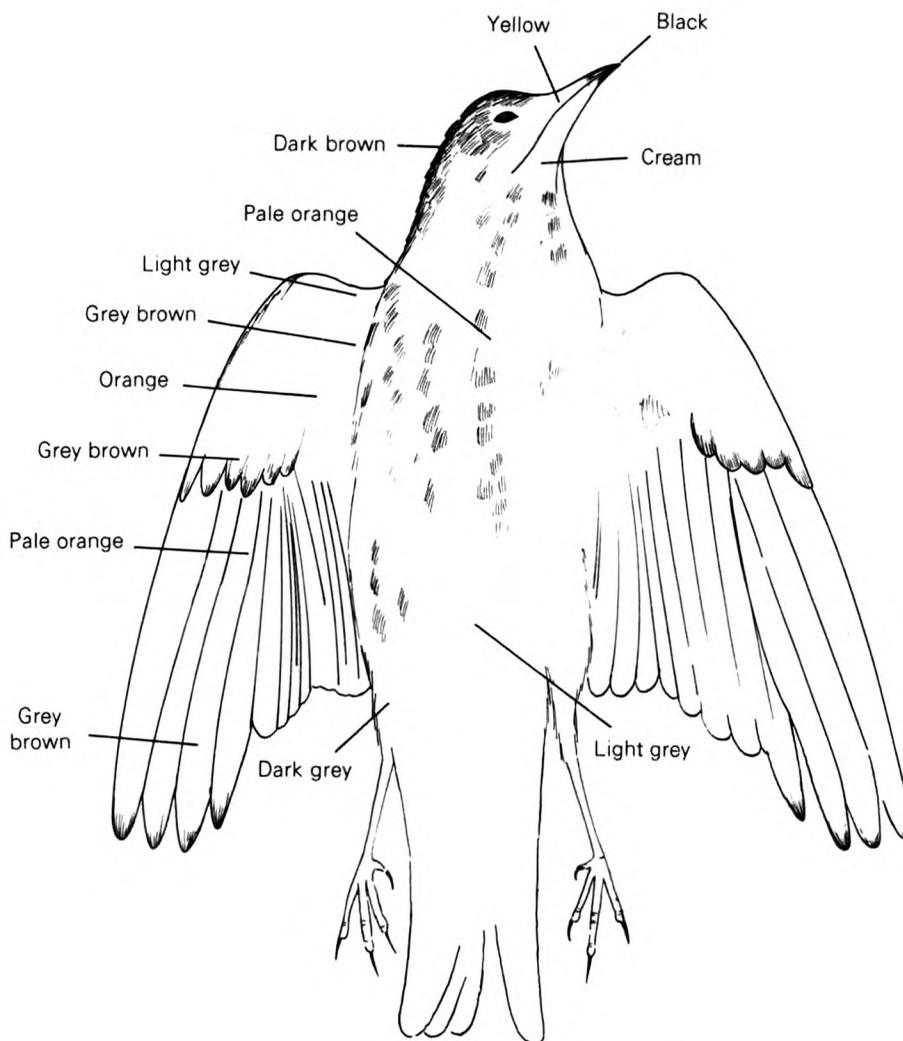
Position of ship: $58^{\circ} 08' N$, $0^{\circ} 23' E$.

Mediterranean Sea

m.v. *Summit*. Captain I. Anderson. Salerno to San Antioco Island (Sardinia). Observers, the Master, Mr W. J. Strafford, 2nd Officer and Cadet A. Smith.

28 February 1981. A thrush (see sketch) was found dead on the monkey island on the morning of the 28th. It was thought to have flown into the mast or aerials, as it had suffered a broken neck. Several of these birds were observed, through the night, flying around the ship, but were not seen to land on board.

Position of ship: $40^{\circ} 00' N$, $13^{\circ} 00' E$.



W.J.S 2/0

Central Red Sea

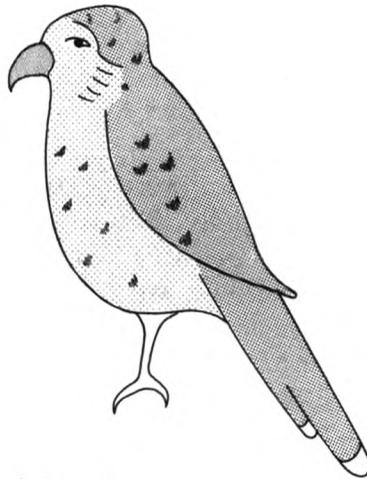
m.v. *Scottish Eagle*. Captain J. B. Caley. Suez to Lavan Island (Iran). Observer, Cadet N. Langdon.

10 March 1981, 0800 GMT. The bird of prey illustrated was believed to be a type of kestrel. It had yellow legs, dark grey beak and a brown tail with white tips. The wings were heavily speckled and dark in colour, the breast being lightly speckled and light in colour. It was estimated to be 30 cm in length and remained onboard the vessel, perched on top of a samson post, for several hours.

Position of ship: 20° 04' N, 38° 51' E.

Note. Captain G. S. Tuck, Chairman of the Royal Naval Birdwatching Society, comments as follows:

'From the description and size quoted in the narrative it could equally well have been either a *Falco tinnunculus* (Kestrel) or a *Falco naumanni* (Lesser Kestrel) and certainly in either case an adult female, owing to the brown speckling on the crown. Both birds are quite frequently seen in the Red Sea.'

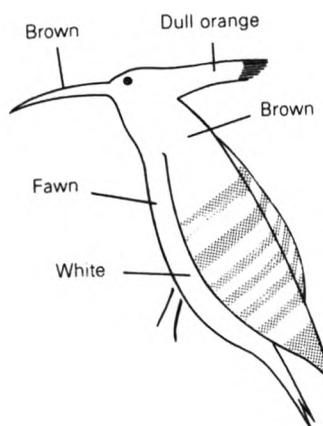


N. L. D/C

Red Sea

m.v. *Patroclus*. Captain D. S. Walker. Antwerp to Port Said. Observer, Mr A. R. Porter, 3rd Officer.

12 March 1981, 0600 GMT. On passage down the Red Sea, a bird was seen to be resting on a crane on the fore deck. When it flew off it did so with darting,



jerky movements. Its wingspan was about 40 cm, with sharply contrasting black and white stripes along the wings. The bird's tail had a shallow white 'V' across it. After several hours the bird disappeared.

Position of ship: 21° 11' N, 38° 06' E.

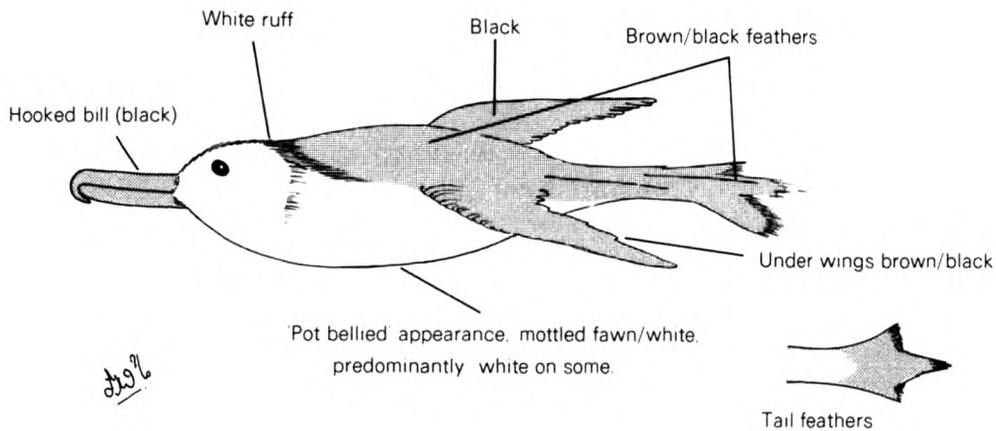
Note. Captain Tuck comments:

'The bird quoted in the narrative and easily supported in the sketch was clearly a hoopoe. These are frequently seen perched on the ship's rigging during migration over the Red Sea.'

North Atlantic Ocean

s.s. *British Explorer*. Captain J. C. Wilson. Mina Al Fahul to Lavera. Observer, Mr I. Wake, 2nd Officer.

6 February 1981. A group of six birds appeared near the ship, which was on a NW'ly course, in mid-morning. They were gliding round the vessel using the relative winds and eddies. Occasionally they would group together but for the most part they flew in two groups of three. The flight pattern appeared to be 'fly downwind to the stern, then slowly work forward and repeat the process'. This continued until the galley slops were ditched, whereupon all the birds descended on these, landing on the sea and not returning. A brief description of the birds is as follows: All the birds were at different stages of colouring. They were predominantly black or brown-black, changing to white. Dark fawn and white feathers were on the belly and underwing, giving a mottled appearance.



The upper wings appeared to be remaining black. On three birds there was an incipient white collar round the neck. Beaks were hooked and black, seagull-shaped, but with hooked upper bill. The birds were thought to be albatross fledglings.

Weather conditions at time of observation: wind N'ly, force 3, sky overcast, visibility 4 n. mile.

Position of ship: 9° 10' N, 16° 32' W.

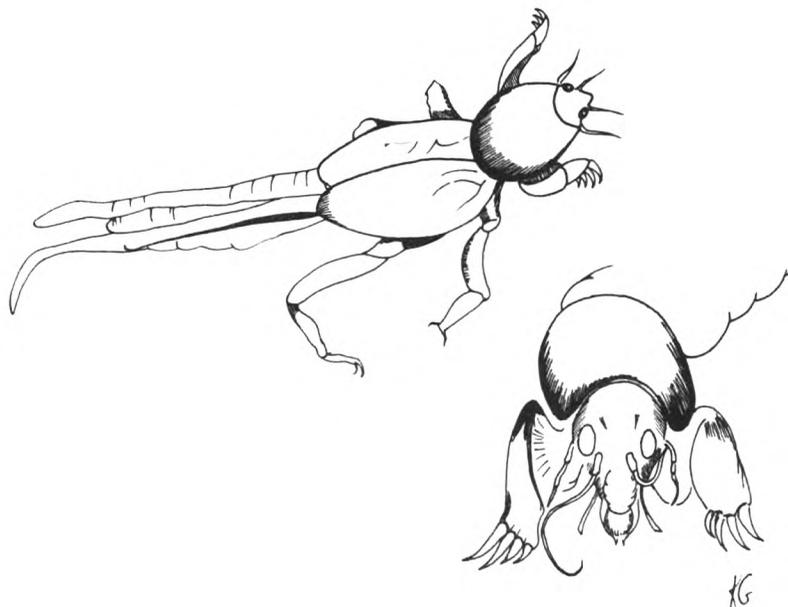
Note. Captain Tuck comments that, although considerable detail was included in the narrative, no positive identification is possible.

INSECTS

River Plate Estuary

s.s. *Benstac*. Captain J. S. Schofield. Observers, the Master and ship's company.

11 January 1981. Whilst the vessel was lying at anchor in the River Plate Estuary, a large insect entered the wheelhouse. Initially we considered it to be a cricket. Closer inspection, however, revealed strange facial and upper thoracical features. Referring to a previous edition of *The Marine Observer* we concluded that it could possibly be a type of 'mole cricket'. Dimensions: length 2.8 cm, wingspan 3.2 cm.



12 January 1981. Although the vessel was anchored 33 n. mile from the nearest land we found ourselves plagued by a large swarm of housefly, possibly an overnight flight attracted by our floodlights and assisted by a strong offshore breeze.

Position of ship: 35° 00's, 57° 00'w.

BIOLUMINESCENCE

North Pacific Ocean

m.v. *Coral Princess*. Captain M. T. Anderson. Yokohama to Saipan. Observers, Mr R. J. Scilcek, Joint 2nd Officer and Mr R. N. Prosser, 3rd Officer.

7 March 1981, 1430 GMT. At this time bioluminescence in the form of intermittent points of white light was observed. Under the light of the Aldis lamp the points became a constant orange/amber colour, and were visible over the entire range of the lamp for a period of approximately 1 hour. Movement was erratic, individual points being visible for 4-5 seconds and apparently just below the surface. The lights were evenly scattered and showed no signs of grouping or moving in regular paths.

Weather conditions at time of observation: dry bulb 17.9 °C, sea temperature 21.5, wind SE'ly, force 3, fine.

Position of ship: 26° 53'N, 142° 38'E.

Note 1. The *Coral Princess* is a Hong Kong Selected Ship.

Note 2. Dr P. J. Herring, of the Institute of Oceanographic Sciences, comments:

'The account suggests that lanternfishes were responsible, the orange-amber colour being due to reflection from their eyes.'

BIOLUMINESCENCE AND SUB-SURFACE DISCOLOURED WATER

South Pacific Ocean

m.v. *Andania*. Captain P. P. R. Ramsay. Puerto Bolivar to Magellan's Straits. Observers, the Master, Mr G. J. H. Peaston, Chief Officer, Mr J. A. Richardson, 2nd Officer and Mr I. K. Bourne, 3rd Officer.

3-4 March 1981. On the nights of the 3rd and 4th of March, as the vessel was steaming southward along the Ecuadorian and Peruvian coasts, large amounts and different forms of bioluminescence were observed. The bioluminescence seemed to have been caused by two factors viz. fish and upwelling.

(a) Fish. Where large shoals of fish were feeding on the surface and particularly where the ship's wake disturbed these shoals, areas of white bioluminescence were made visible by the fish's movements. The bioluminescence was vivid and bright with a slight bluish tint; it was unaffected by an Aldis lamp being shone on the surface.

The bioluminescence was also made visible when larger fish broke the surface, leaving a clear trail that continued to glow for 3-4 seconds.

(b) Upwelling. At the same time as the bioluminescence made visible by fish disturbances was being observed, large areas of luminescence up to 50 metres across were observed. These patches frequently started smaller and expanded as though pockets of water were rising to the surface and spreading out. Again, no effect was observed when the Aldis lamp was shone on the surface.

There were no abnormal traces on the echo sounder, which also had no effect on the luminescence. The luminescence was again white in colour with a bluish tint that was often bright enough to illuminate the ship's side. Throughout the day of 4 March the ship's wake was discoloured in the centre-line area. Presumably the discoloration, which was dark brown and very clearly visible at times, was brought to the surface by the vessel's propeller. The discoloration could still be seen lying in the water for a distance of at least 2 n. mile. Throughout these observations the depth of water was greater than 100 fathoms, and the ship was steaming at 21 knots.

Position of ship at Noon, local time on 3 March: $7^{\circ} 09'S$, $80^{\circ} 21'W$.

Position of ship at Noon, local time on 4 March: $13^{\circ} 58'S$, $76^{\circ} 36'W$.

Note. Dr P. J. Herring comments:

'The observers were undoubtedly correct in attributing the large luminous patches to local shoals of fish and this is emphasized by the spectacular trails caused by the larger fish or dolphins. It is likely that 'blooms' of dinoflagellates were the source of the luminescence and these could cause the water discoloration observed during the day. The expanding patches might also have been produced by the spreading out of tight shoals of fish but it is difficult to ascribe such phenomena to a particular cause with any certainty.'

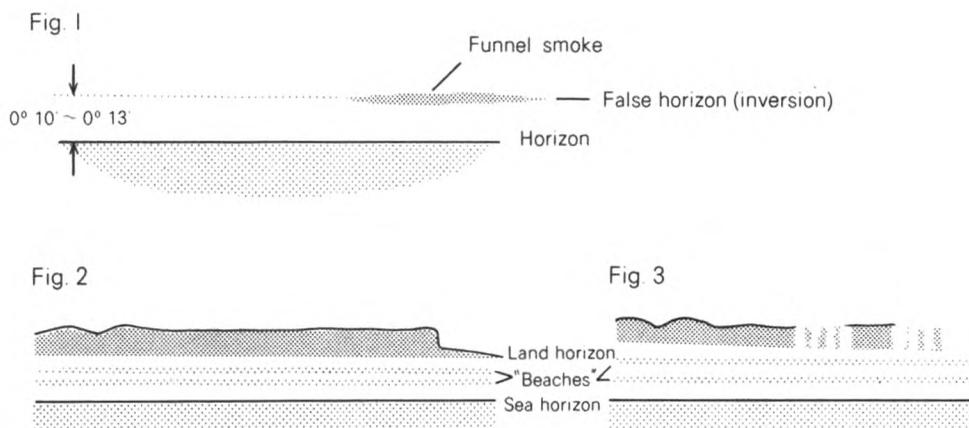
ABNORMAL REFRACTION

Tasman Sea

m.v. *Kinburnie Universal*. Captain R. R. Cawder. Durban to Sydney. Observers, Captain P. Day, Mr P. C. Dyer, 2nd Officer, Mr R. P. Swinney, 3rd Officer, and ship's company.

1 January 1981. Initially an apparent line of haze or mist was observed, extending from the horizon to an altitude of $0^{\circ} 10'$ - $0^{\circ} 13'$ and presenting a false horizon. The ship's funnel smoke was then observed trapped on a level with this, indicating an inversion (see Figure 1) and extending as far behind the ship as could be seen. Visibility was exceptionally good. As the vessel closed with the coast the land was noticed to be apparently sitting on top of the inversion level, with the line of the beach repeated two or three times in the shimmering

air below (Figure 2). Sometimes water could be seen between the layers of the beach, and it was not possible to determine whether this was refraction of the sea or some lakes behind the coast that were shown on the chart. The top layer did not remain solid-looking. At intervals sections would dissolve into narrow vertical blocks that resembled single trees before disappearing altogether (see Figure 3); this resembled a wave-like motion, with the top layer gradually



View of the coast between Gabo Is. and Point Hicks, Victoria, Australia

RBS 1/2

dissolving from right to left, then re-forming from left to right with waves of varying thickness forming in the top layer, and ripples moving along the top. The effect lasted all morning and gradually disappeared at about 1400 local time, having lasted about 6 hours in all.

Weather conditions at 0001 GMT: dry bulb 21.0 °C, wet bulb 19.1, sea temperature 19.5, wind NE'N, force 2.

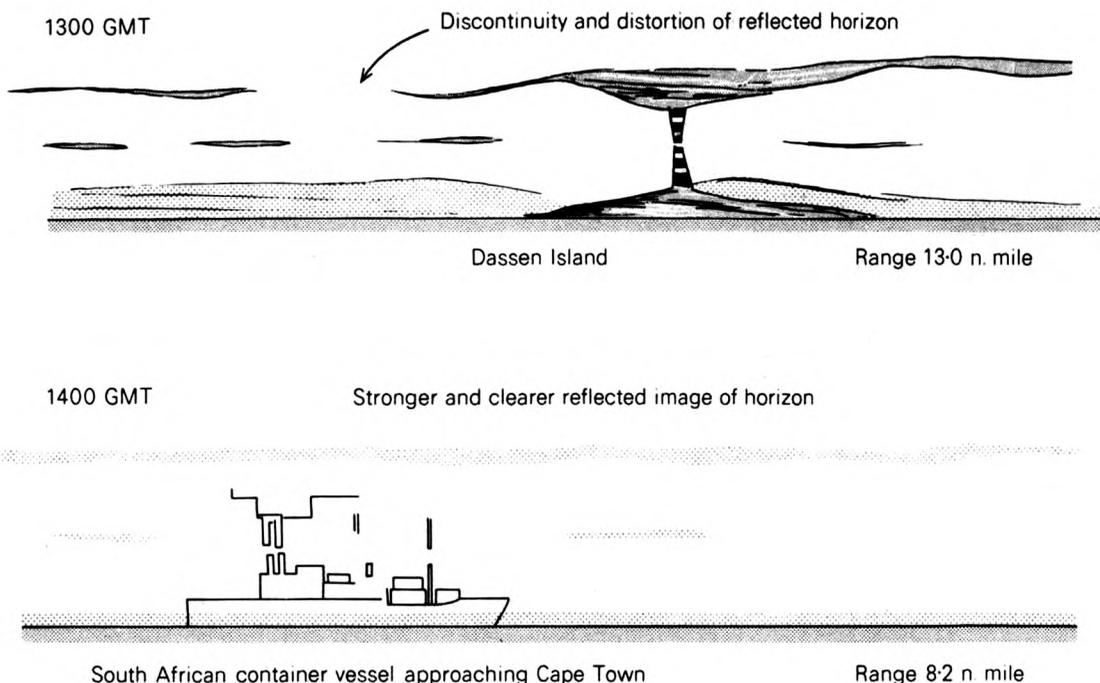
Position of ship: 38° 06'S, 149° 20'E.

ABNORMAL REFRACTION AND MIRAGE

South Atlantic Ocean

m.v. *St Helena*. Captain T. P. Dodkins. Cape Town to Jamestown. Observers, Mr D. N. Roberts, 2nd Officer and Mr J. G. Pearce, 3rd Officer.

5 March 1981. Shortly after departure from Cape Town a superior mirage was observed to extend around two-thirds of the visible horizon. Throughout the following 2½ hours very vivid inverted images could be seen. It was noted at 1300 GMT and again at 1630 that there were quite marked discontinuities of the reflected horizon. The two most distant images were observed at 1309 and 1400 GMT, the first being of Dassen Island, which at the time of observation lay 13 n. mile to the north (the visible horizon being 7.85 n. mile distant); the height of Dassen Island is 19 metres. The second image was of a South African container ship which passed 8.2 n. mile off on the starboard beam.



Weather conditions at time of observation: dry bulb 22.9°C , wet bulb 20.7 , sea temperature 18.1 , wind ssw, force 3 increasing to 4.
 Position of ship at 1300 GMT: $33^{\circ} 40' \text{S}$, $18^{\circ} 08' \text{E}$.

GREEN FLASH

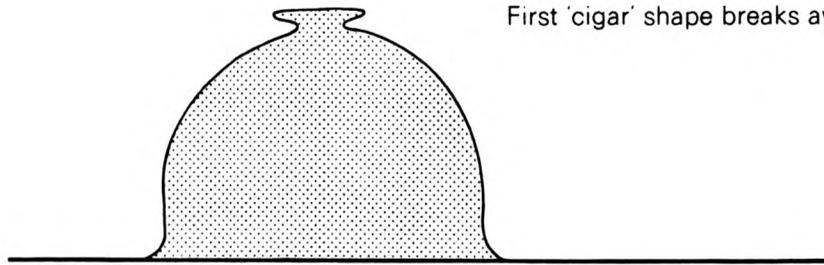
South Atlantic Ocean

m.v. *St Helena*. Captain T. P. Dodkins. St Helena to Cape Town. Observers, Mr C. J. Hughes, Chief Officer and Mr J. G. Pearce, 3rd Officer.

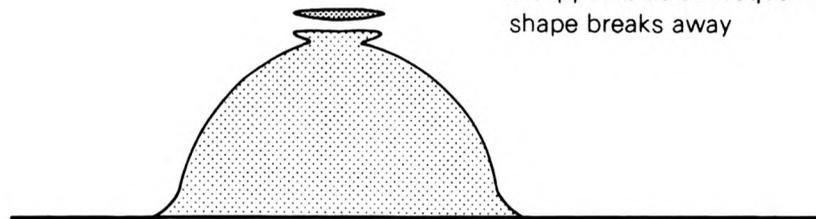
8 March 1981. At sunset the atmosphere was clear, with no clouds on the horizon, and it appeared to be a good day on which to observe a green flash, as indeed was the case. The sun, as it began to dip below the horizon, was large and orange and very distinct. During the 28 seconds or so that it took the sun to disappear totally below the horizon, five separate green flashes were observed. These occurred when the upper limb of the sun broke away from the main body of the sun and formed a cigar shape approximately one-sixth of the diameter of the sun in length. This cigar shape almost immediately disappeared, turning a faint and rather watery green as it did so. This occurred on five separate occasions as the sun set, each new cigar shape breaking away as the previous one disappeared. The duration of these flashes was a split second each. The final and sixth flash, observed as the sun sank below the horizon was very pronounced. It appeared very slightly above the horizon and lasted approximately two seconds. A feature which the observers had not witnessed before was that in the centre of the green colouring (which was a bright emerald green) was a small circular area of a much paler green colour; this only occurred, however, in about the last half-second of the duration of the flash.

Weather conditions at 1800 GMT: dry bulb 24.0°C , wet bulb 20.2 , sea temperature 23.0 , barometric pressure 1014.8 mb, wind SSE, force 2.

Position of ship: $21^{\circ} 05' \text{S}$, $1^{\circ} 37' \text{E}$.



First 'cigar' shape breaks away



'Cigar' shape turns green and disappears as subsequent shape breaks away

Alpha 6



Final green flash - duration approx. 2 sec. with lighter circular area at centre

This is as far as possible to scale compared to the apparent size of the sun

AURORA BOREALIS

St Lawrence River

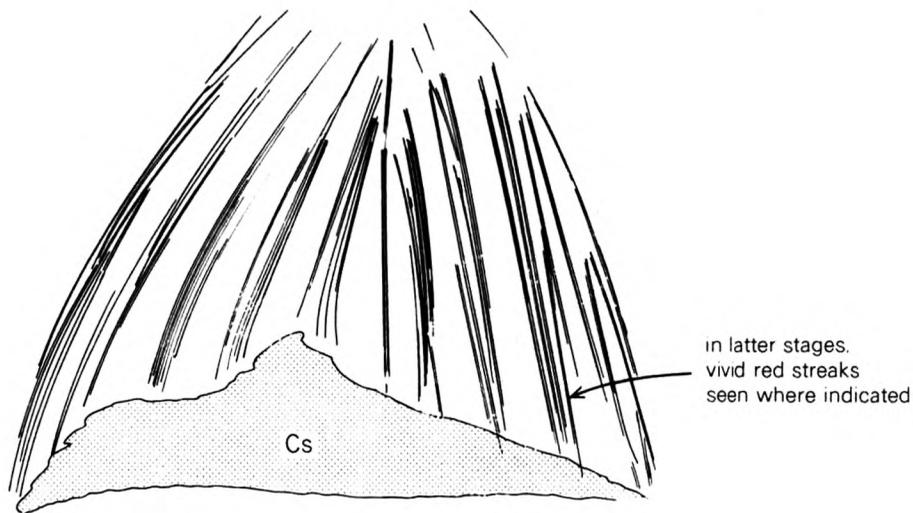
m.v. *Manchester Crusade*. Captain D. Smith. Montreal to Liverpool. Observers, the Master, Pilots, and ship's company.

26 March 1981. At 0000 GMT, whilst the vessel was under pilotage in St Lawrence River between Quebec and Escoumins, the whole northern horizon above the hills was lit up by a splendid display of brilliant white streaks emanating from a large mass of cirrostratus at a low angle of elevation.

The streaks reached a crown at the zenith and lasted for a good 4 hours. At about 0400 GMT two separate and very vivid red streaks were observed. Shortly afterwards the aurora subsided.

Weather conditions at 0000 GMT: dry bulb 0.2 °C, wet bulb -1.3, wind light airs.

Position of ship at 0000 GMT: 47° 45' N, 69° 54' W.

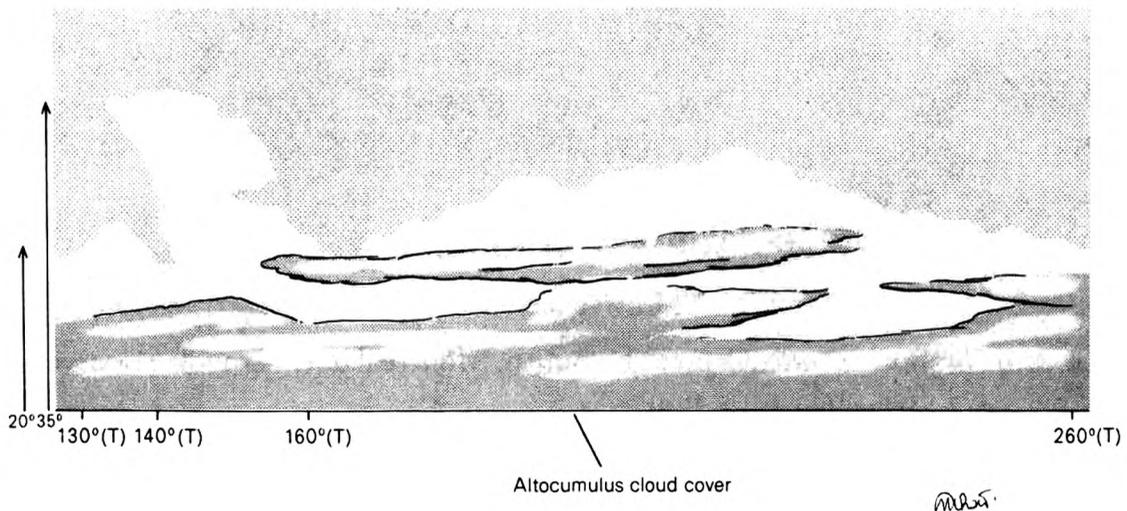


AURORA AUSTRALIS

Southern Ocean

m.v. *Act 7*. Captain J. G. Reeve. Tilbury to Botany Bay (Australia). Observers, the Master and Mr S. Scott, 3rd Officer.

7 March 1981. At 1430 GMT Aurora Australis was observed. At about this time an unusual lightening of the sky was observed to the south of the vessel, there being a single patch at an altitude of about 20° and on a bearing of approximately $130^\circ(\text{T})$. The patch then grew steadily larger and after a few minutes it was visible between the bearings of $130^\circ(\text{T})$ and $260^\circ(\text{T})$, at an altitude of $20\text{--}35^\circ$.



The area of most intense activity was between $140^\circ(\text{T})$ and $160^\circ(\text{T})$, altitude 35° , where it appeared to be pulsating slowly as it drew itself 'away' from a point somewhere farther south in the sky. The brightness of the aurora was approximately equivalent to Nautical Twilight at sea.

The phenomenon was still present at 1900 GMT.

Weather conditions at time of observation: dry bulb 7.7 °C, wet bulb 6.0, barometric pressure 1010.6 mb, wind SW's, force 7-8.

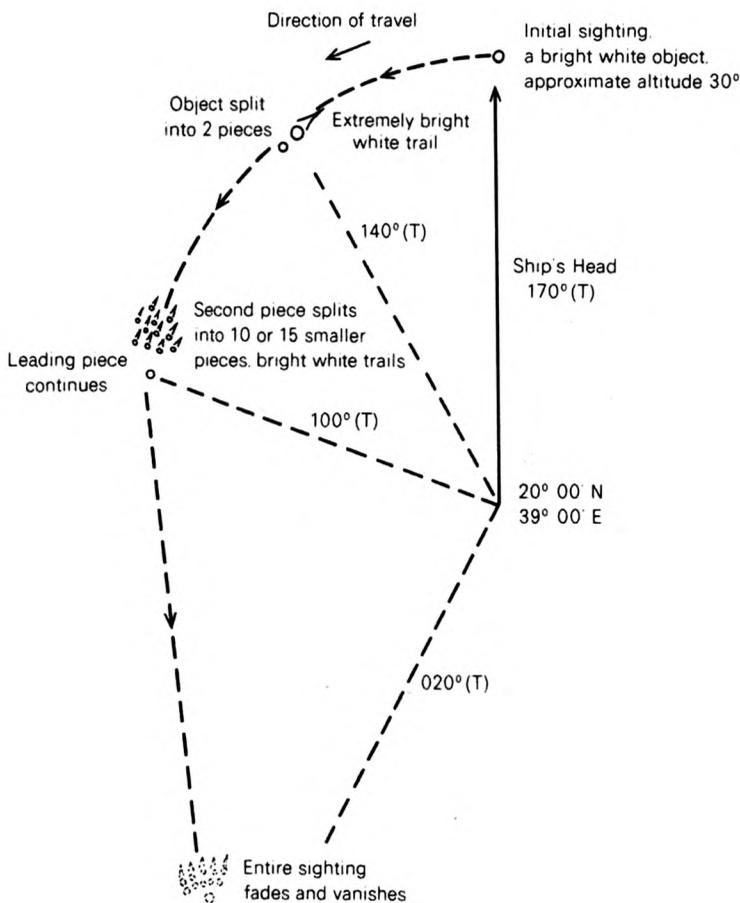
Position of ship: 45° 00'S, 119° 12'E.

UNIDENTIFIED PHENOMENON

Red Sea

m.v. *Stratheden*. Captain S. T. S. Household. Jeddah to Muscat. Observers, Mr N. J. Jeffery, 3rd Officer and Mr J. Evans.

6 February 1981, 2030 GMT. A bright white object appeared in the sky at an approximate altitude of 30°; it was travelling very rapidly in a north-easterly direction and was ahead of the vessel, which was on a course of 170° (T). When bearing 30° off the port bow (140° (T)) and still at an altitude of 30°, the object appeared to split into two pieces. The leading piece continued, dimmer than previously, in the same direction at the same speed and altitude, and the second piece, much brighter, followed exactly the same path, giving off an extremely bright white trail. When both pieces reached a position approximately 20° before the port beam (100° (T)), the second piece began breaking up into 10 or 15 smaller pieces, all giving off a bright white trail. The leading piece and all the smaller pieces continued at the same rate and altitude until bearing approximately 020° (T), when all faded and vanished from sight. The entire sighting lasted 15 to 20 seconds.



Weather conditions: dry bulb 24.5 °C, wet bulb 22.8, barometric pressure 1014.3 mb, wind N'E, force 3, visibility very good.

Position of ship: 20° 00' N, 39° 00' E.

Note. This is possibly an observation of the re-entry of an artificial satellite. In an article entitled 'Reports of Artificial Satellites, Research Rockets and Allied Phenomena' written in November 1977 by P. Neirinck of the Science Research Council's Appleton Laboratory and published in the April 1978 edition of this journal, the author outlines the difficulties experienced in identifying these phenomena as follows:

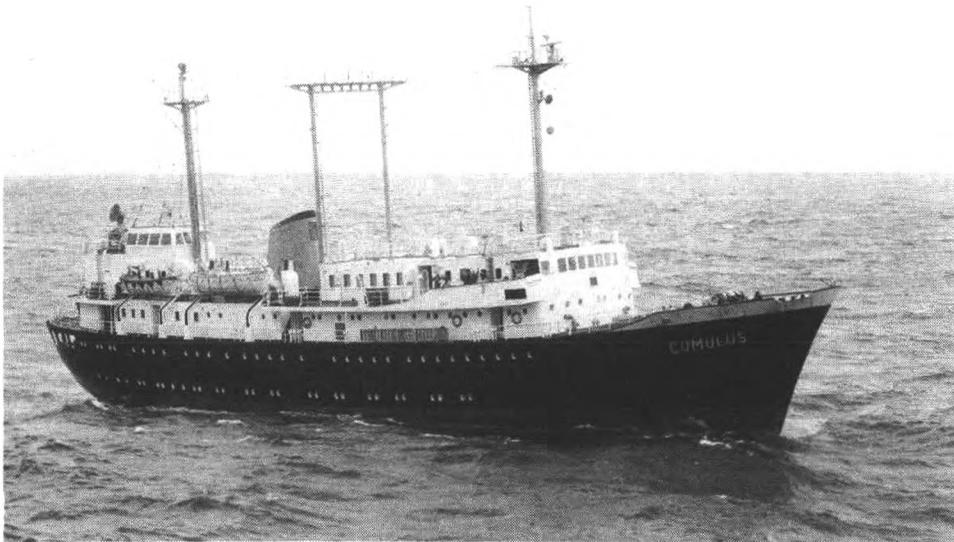
'Many of the reports received from the Voluntary Observing Fleet at the Appleton Laboratory are sufficiently scientific and comprehensive to allow identification but, despite long searches lasting up to 60 hours, the end achievement is a minority of positive identifications and a majority of speculative ones. When the nature of the phenomenon can be assumed—satellite, aircraft, atmospheric sounding rocket, meteor, balloon etc.—and some questions answered—for example, is the satellite orbiting, decaying or re-fired?—the problem is still not solved. The following is a complementary list of difficulties:

- (a) So far, 10 492 orbiting artificial satellites have been catalogued. The population of 4500 satellites still in orbit is complicated by the 950 births and 900 decays which take place annually.
- (b) Often, official decay times are inaccurate.
- (c) Some satellites are repeatedly re-fired at unknown times.
- (d) Spacetrack orbital elements are not received on every object.
- (e) The Laboratory receives a yearly flow of 600 000 sets of elements which are not in sequence and therefore require sorting.

However, these difficulties do not prevent us from being very grateful for the supply of data received from the Voluntary Observing Fleet. Very few satellite decays are observed and aircraft and ships' personnel are often the only witnesses. Without these reports such rare information would be lost for ever.'

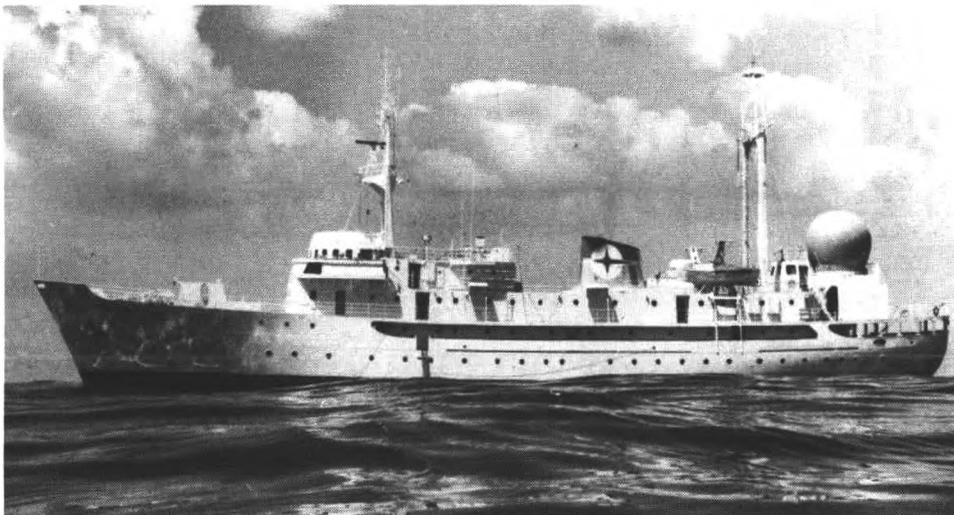


Southern Right Whale Dolphins in the waters of the Benguela Current photographed by Captain A. Struthers of m.v. *Bulwark* in January 1976 (see page 33)



Photograph by Royal Netherlands Navy Audio-visual Services

Cumulus (Netherlands)



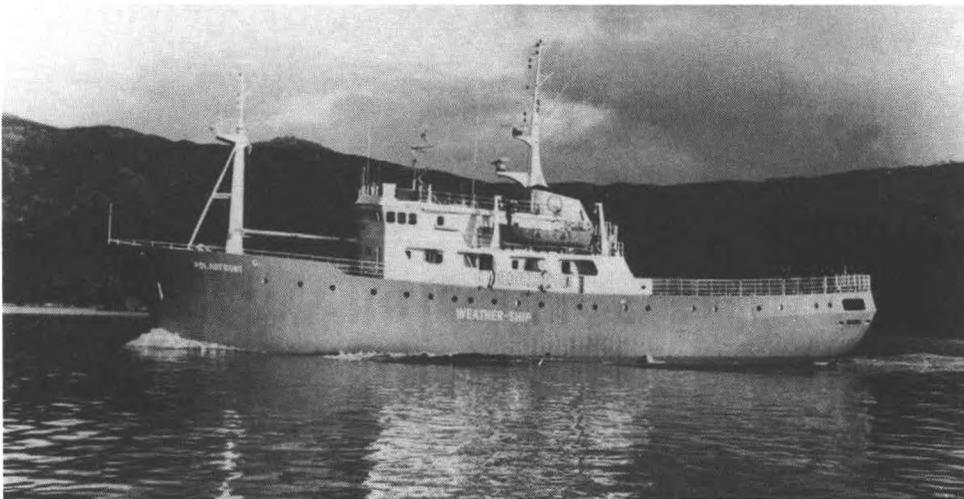
Photograph by La Météorologie Nationale

France II (France)



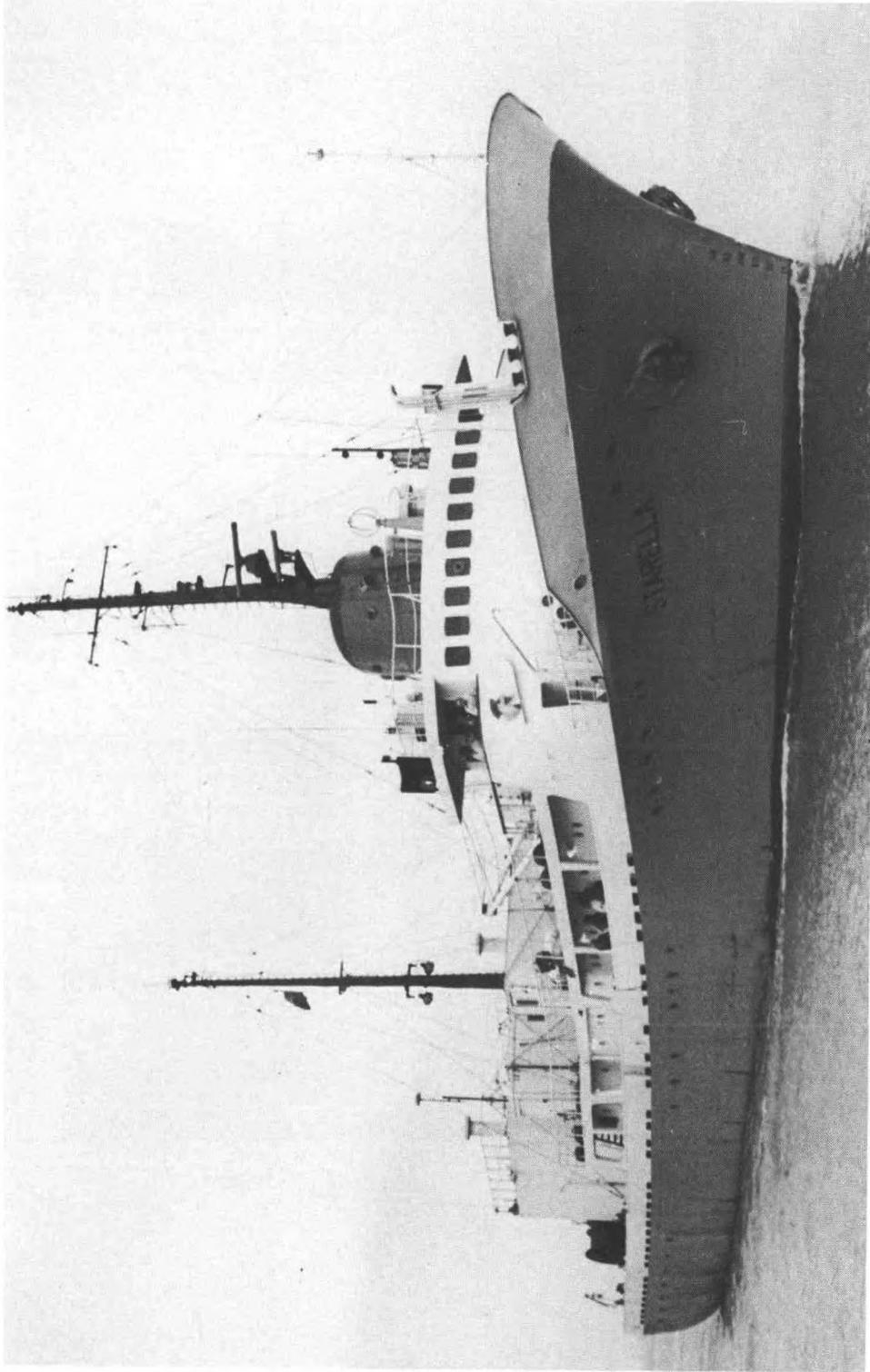
Photograph by USSR State Oceanographic Institute, Odessa Branch

Ernst Krenkel (USSR)



Photograph by K. Misje & Co., Bergen

Polarfront (Norway)



Photograph by Walter Pussey & Son

Starella (United Kingdom) (see page 36)

Southern Right Whale Dolphins off the South West Africa Coast

By S. G. BROWN

(Sea Mammal Research Unit, Natural Environment Research Council)

Sightings of the Southern Right Whale Dolphin (*Lissodelphis peronii*) have been noted in *The Marine Observer* on several occasions since photographs of the dolphin were published with a note by Boswall and Dobson in 1969.¹ The species occurs in the southern hemisphere circumpolar zone between the Subtropical Convergence and the Antarctic Convergence and most sightings have been recorded within this zone or close to the northern boundary. However, Brown in 1973² gave details of two records from the Peru Coastal Current in waters with a surface temperature of about 18 °C. They were in January 1970 in position 29° 35'S, 71° 45'W and in September 1970 in 18° 53'S, 71° 43'W. He suggested that the species 'may possibly occur in other regions of the southern hemisphere, similar to the Peru Coastal Current, where relatively cold water occurs well to the north of the Subtropical Convergence as, for example, in the Benguela Current off the South West African Coast'. There were, however, no definite records of the dolphin off this coast at that time.

The occurrence of the Southern Right Whale Dolphin in the waters of the Benguela Current has now been confirmed. The research ship *Benguela* of the Sea Fisheries Institute of the Republic of South Africa carried out surveys off the coast of Namibia/South West Africa between October 1978 and April 1979, and again in 1979/80. During these periods six sightings of the species were made in the area 26° 00'S/26° 40'S, 13° 45'E/14° 49'E in December 1978, January and February 1979, and in April 1980. Another sighting was recorded from the Institute's patrol vessel *Custos* in April 1980 at 27° 15'S, 14° 18'E. The recorded sea surface temperatures ranged from 15.7 °C to 20.1 °C. Detailed notes of these sightings, including numbers, behaviour of the animals and variations in colour patterns, are reported in a paper by Cruickshank and Brown.³

An earlier record from the Benguela Current has recently been reported to the author by Captain A. Struthers of Glasgow. This predates the above mentioned records by almost three years and is described here since the detailed distribution of this dolphin is still little known and all reliably identified sightings are important. Captain Struthers writes that in looking through past issues of *The Marine Observer* he noticed the two articles mentioned above, identified the dolphins which he had photographed, and noted that there had been no reports of their presence off South West Africa. In late January 1976 on a voyage from Pointe Noire (Congo) to Cape Town, he saw and photographed Southern Right Whale Dolphins alongside his ship, the Panamanian registered m.v. *Bulwark* (see photograph opposite page 32). He does not have the exact position of the sighting but is confident that it was north of Walvis Bay (22° 59'S, 14° 31'E) and he estimates that the ship was about 60 n. mile offshore at the time. His three photographs clearly identify the species and they show two, three and five animals respectively, leaping from the surface or re-entering the water. Captain Struthers believes there may perhaps have been another five animals in the school, giving a total of approximately 10 to 15. No other species was present. Assuming that the position is correct, this new record extends the range of the species within the Benguela Current northwards to at least 23 °S.

No sightings were made from the *Benguela* during research cruises in the same area of the current during the winters of 1979 and 1980. It may be therefore that the species does not occur there throughout the year but only during the summer and autumn months.

The author wishes to thank Captain Struthers for sending him this new sighting record and supporting photographs. He is much indebted to him for his interest in providing additional information and for allowing the record to be published.

REFERENCES

1. Boswall, J. and Dobson, R. A. Sighting of Southern Right Whale Dolphins. *Mar Obsr*, **39**, 1969, p. 128.
2. Recent sight records of Southern Right Whale Dolphins in the Pacific Ocean. *Mar Obsr*, **43**, 1973, pp. 78–80.
3. Cruickshank, R. A. and Brown, S. G. Recent observations and some historical records of southern right-whale dolphins (*Lissodelphis peronii*). *Fisheries Bulletin South Africa*, **15**, 1981, pp. 109–121.

CHANGES TO THE MANNING OF THE NORTH ATLANTIC OCEAN STATIONS

On 11 January 1982 the British ocean weather ship *Admiral FitzRoy* will be relieved on North Atlantic Ocean Station 'Lima' at 57° 00'N, 20° 00'W by the Dutch ocean weather ship *Cumulus*. On her arrival at the British Ocean Weather Ship Base at Greenock, the *Admiral FitzRoy* (ex *Weather Adviser*, ex H.M.S. *Amberley Castle*, will join her sister ship *Admiral Beaufort* (ex *Weather Monitor*, ex H.M.S. *Pevensey Castle*) on the 'For Sale' market and this will end the ocean weather service of the former 'Castle' class frigates after almost 24 years.

H.M.S. *Amberley Castle* and *Pevensey Castle* were both built in 1944, the former by S. P. Austin & Son of Sunderland and the latter by Harland and Wolff of Belfast. In November 1959 *Amberley Castle* was taken over by the Air Ministry for conversion to a weather ship at Blyth Dry Dock and Shipbuilding Company. She was commissioned and renamed *Weather Adviser* by Lady Sutton, wife of the then Director-General of the Meteorological Office, on 22 September 1960 at Greenock. *Pevensey Castle* was also converted to a weather ship by Blyth Dry Dock and Shipbuilding Company and she was commissioned and renamed *Weather Monitor* by Mrs A. C. Best, wife of the then Director of Services of the Meteorological Office, on 12 May 1961.

At that time, under the International Civil Aviation Organization (ICAO) Joint Financing Agreement on North Atlantic Ocean Stations (NAOS), the United Kingdom operated 4 ocean weather ships on two ocean stations named 'India' and 'Juliett'. This Agreement was terminated at the end of June 1975 and was replaced by a new Agreement under the auspices of the World Meteorological Organization (WMO). The United Kingdom then ceased to operate weather ships on stations 'India' and 'Juliett' and instead manned the new ocean weather station 'Lima'. The reduction in the UK operating commitment to the NAOS network from two stations to one reduced the UK requirement for weather ships from four to two vessels and the opportunity was taken to refurbish two of the ships to extend their service. The vessels chosen were *Weather Adviser* and *Weather Monitor* and in July 1976 they proceeded to Manchester Dry Docks Company. The refurbishment consisted of improvement to accommodation, provision of a new, fully equipped modern bridge structure, the fitting of a completely new galley, conversion of the ship's electrical power supply from d.c. to a.c., automation of the boiler controls, installation

of new upper-wind-finding equipment and the complete re-equipping of the communications installation, all of which led to a substantial crew reduction.

On 14 March 1977 *Weather Adviser* was recommissioned and named *Admiral FitzRoy* by Mrs J. Walsh, wife of the Provost of Greenock and, on 25 May 1977, *Weather Monitor* was recommissioned and named *Admiral Beaufort* by Mrs M. Fletcher, wife of the new Provost of Greenock.

Until 31 December 1981 when the Joint Financing Agreement was due to expire, four Ocean Stations were manned by nine ships from five operating countries according to the following dispositions:

Ocean Station	Location	Operated by
C	52° 45' N, 35° 30' W	USSR (with three ships)
L	57° 00' N, 20° 00' W	United Kingdom (with two ships)
M	66° 00' N, 02° 00' E	Norway and The Netherlands (each with one ship)
R	47° 00' N, 17° 00' W	France (with two ships)

The following 16 countries are contracting parties to the Agreement: Cuba, Denmark, Finland, France, Federal Republic of Germany, Iceland, Republic of Ireland, Italy, The Netherlands, Norway, Spain, Sweden, Tunisia, United Kingdom, USSR and Yugoslavia. A further five countries make voluntary annual contributions to the system.

At a meeting in 1980 of the Board which administers the Agreement, the main problem was to ensure the continuation of the Ocean Station network after 31 December 1981. It had already been agreed that the network was mainly needed for:

- (a) Provision of reference-level or calibration observations;
- (b) Use in short-range forecasting;
- (c) Use in numerical weather prediction for several days ahead;
- (d) Use in climatological studies for both atmospheric and marine purposes;
- (e) Use for marine meteorological and oceanographic services, including marine pollution monitoring programmes.

Among the many practical considerations that had to be taken into account were the cost of operating the network and the fact that both the British ocean weather ships would have to be withdrawn from service at the end of 1981 owing to their age and the resultant condition of their shell and weather-deck plating.

Earlier, the Board had considered a number of alternative ways of manning the stations but had agreed that in the next few years no alternative observing systems were likely to become operational that could adequately replace the primary services provided by the NAOS network. Therefore, it concluded that for meteorological reasons the present network of four ocean stations should be maintained at least until the end of 1985.

In order to do this and having regard to the withdrawal of the *Admiral FitzRoy* and *Admiral Beaufort* and the necessity to reduce overall costs, the Board agreed to a proposal whereby the United Kingdom would charter a ship for a period of up to four years commencing January 1982 and a reorganization of the manning of the NAOS network as follows:

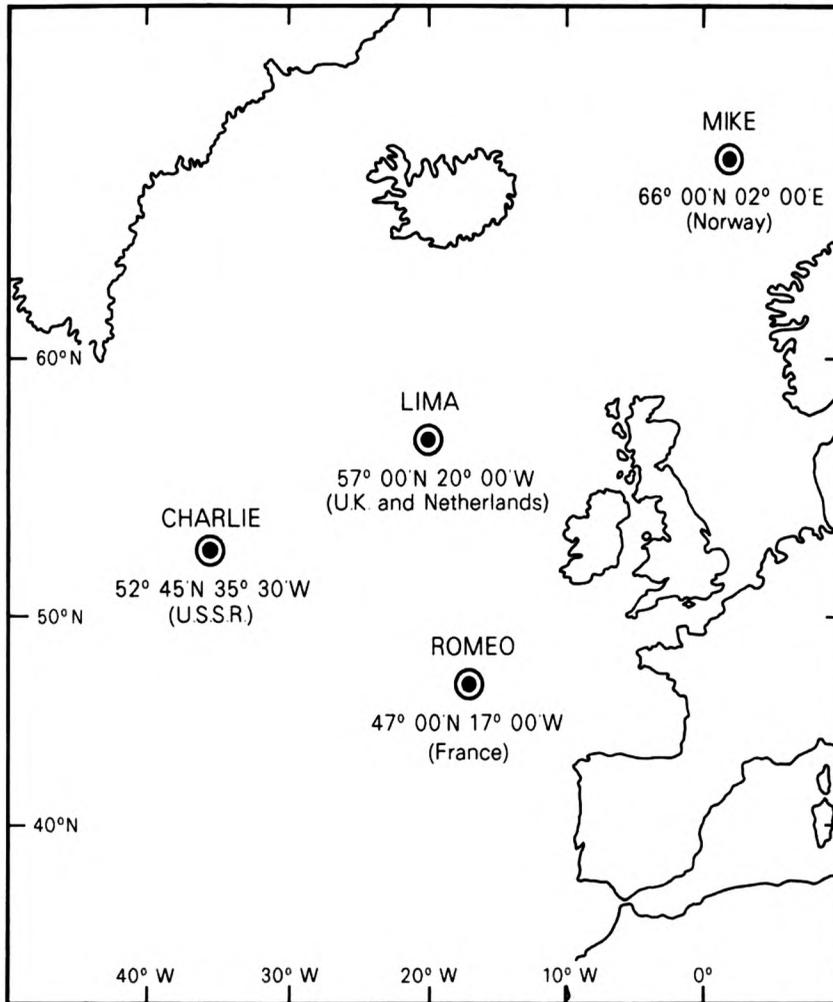
Ocean Station 'C' will continue to be operated by the USSR.

Ocean Station 'L' will be operated jointly by The Netherlands and the United Kingdom.

Ocean Station 'M' will be operated by Norway alone.

Ocean Station 'R' will continue to be operated by France.

(Photographs of some of the ships which man these stations are shown between pages 32 and 33).



Map showing the location of the four stations in the NAOS network

As a consequence of this Agreement, the Meteorological Office has made arrangements to charter the diesel-electric motor vessel *Starella* owned by J. Marr & Son Ltd of Fleetwood (see photograph opposite page 33). This ship was built in 1965 in Venice as a stern trawler but in 1969 she was converted to an offshore support vessel equipped to carry submersibles. Of 1161 gross tons, she is 73 metres in length, has a beam of 11.03 metres, and a draught of 4.6 metres. Her three diesel engines drive three alternators which are connected to two electric motors which, in turn, are connected by single-reduction gearing to a single shaft on which there is a controllable-pitch propeller. She is also fitted with a bow thrust propeller. She will be manned by owner's officers and crew supplemented by meteorological and communications officers employed by the Meteorological Office. Certain modifications are being made to the vessel to equip her as an ocean weather ship and they will include the installation of a telex-over-radio communication system with which the NAOS Board has agreed to replace Morse code transmissions on all weather ships in 1982.

The *Starella* will sail on her first voyage as an ocean weather ship from Hull on about 1 February and will take over on Station 'Lima' from the *Cumulus* on 6 February. Thereafter, the *Starella* will operate out of Fleetwood where a small ocean weather ship support office has been established. When the disposal of *Admiral FitzRoy* and *Admiral Beaufort* has been effected, the Ocean Weather Ship Base at Greenock will be disbanded.

C. R. D.

SPECIAL LONG-SERVICE AWARDS

In the January edition of this journal we follow our usual practice in announcing the names of the 4 masters who, through their length of service and the consistently high quality of their meteorological records, have reached the standard appropriate to nomination for these awards.

The qualification required to reach the special award zone is a minimum of 18 years of voluntary observing; the number of years together with the number and character of the meteorological observations received during these years determines the names of the officers to come within the award zone. The Special Long-service Award scheme was brought into being in 1948 and since then the Director-General of the Meteorological Office has presented an inscribed barograph to each of the 4 masters who have been selected. The period considered for the awards is taken up to the end of 1980 and from our records the Director-General is pleased to select the following shipmasters:

1. Captain F. G. Bevis, P. & O. Deep Sea Cargo Division, who sent in his first meteorological logbook from s.s. *Suffolk* (Federal Steam Navigation Company) in 1947. Since then Captain Bevis has provided us with 38 meteorological logbooks during his 21 observing years.
2. Captain B. Austen-Smith, P. & O. Deep Sea Cargo Division, whose first meteorological logbook was received here in 1953 from s.s. *Ruahine* (New Zealand Shipping Company), and who has subsequently supplied us with 36 meteorological logbooks in his 21 observing years.
3. Captain M. J. Cole, British Antarctic Survey, who sent us his first meteorological logbook in 1956 from m.v. *City of Johannesburg* (Ellerman Lines Limited), and since then has provided 33 meteorological logbooks over his 20 years of voluntary observing.
4. Captain W. G. Hunt, F. T. Everard & Sons, who supplied his first meteorological logbook in 1961 from m.v. *Ethel Everard*. Since then, over his 20 observing years, Captain Hunt has sent us 38 meteorological logbooks.

The masters have been notified of the awards and the arrangements made for their presentation. We congratulate the 4 shipmasters on their outstanding achievements over these lengthy periods on behalf of the Meteorological Office.

J. D. B.

AUSTRALIAN EXCELLENCE AWARDS

(From the Director of Meteorology, Australian Bureau of Meteorology)

After a lapse of several years, the Commonwealth Bureau of Meteorology, Australia, is to resume the presentation of Excellence Awards to ships of the Australian Voluntary Observing Fleet operating from the ports of Sydney, Brisbane and Fremantle.

Awards in these ports were discontinued six years ago, but are being re-instituted as an expression of the Bureau's appreciation of the weather observations provided by the officers of the Australian Voluntary Observing Fleet. Awards for 1980 are planned for Sydney and Fremantle, and in Brisbane an award will be made for 1981 when a Port Meteorological Agent has been appointed.

The Excellence Award scheme was begun by the Bureau of Meteorology in 1956. The Bureau receives observational data from some 90 ships which operate in Australian waters. About half of these are Australian ships, the remainder being registered in the United Kingdom, Norway, Sweden, New Zealand, Federal German Republic and Nauru. The awards to ships take the form of a framed, inscribed painting of an Australian scene, while copies of the *Guinness Book of Weather Facts and Feats* are given to winners of personal awards. Ships have to be members of the Voluntary Observing Fleet for a minimum of five years to qualify for the awards, which are made on the basis of high standards of accuracy and regularity of reporting over that period.

The Bureau has continued to present awards in Melbourne, and the following are details of awards made in recent years on the recommendation of the Port Meteorological Agent in Melbourne:

1976

m.v. *Ariake*, P. & O. Line, operating between Australia and Japan.

1977

m.v. *Australian Exporter*, Australian National Line, which operates between Australia, the east coast of USA and Europe.

Personal Award to:

Mr C. J. Langford, 3rd Officer, m.v. *Australian Exporter*, Australian National Line.

1978

m.v. *Strathmore*, P. & O. Line, operating between Australia and the Persian Gulf.

Personal Awards to:

Captain D. Raine, m.v. *Strathmore*, P. & O. Line.

Mr J. A. McCullough, 3rd Officer, m.v. *Strathmore*, P. & O. Line.

Mr B. T. Davis, Radio Officer, m.v. *Strathmore*, P. & O. Line.

1979

m.v. *Arafura*, Australia Japan Container Line, operating between Australia and Japan.

1980

m.v. *Australian Emblem*, Australian National Line, operating between Australia and Japan.

Personal Awards to:

Mr J. Calder, 4th Officer, m.v. *Australian Emblem*, Australian National Line.

Mr J. Muldoon, Radio Officer, m.v. *Australian Emblem*, Australian National Line.

AURORA NOTES JANUARY TO MARCH 1981

By R. J. LIVESEY

(Co-ordinator of Auroral Observing, the Solar Section of the British Astronomical Association)

The observations received from marine observers for the period are shown in the accompanying table. After a decline of visual, radio and magnetic activity related to the auroral phenomenon in 1980, observers have been pleased to report an increase in activity in 1981.

It is gratifying to find an increase in the number of southern hemisphere reports received during this period, thereby widening our world coverage of events. Auroral forms develop simultaneously at the same geomagnetic latitude and longitude in the northern and southern hemispheres. Thus, auroral forms reported from the south augment observations in the north and vice versa, both in respect of event dates and of activity. The observations of 5 March in the accompanying table show parity between a British weather ship and ships near New Zealand with regard to date of activity. Taking geomagnetic observations and European auroral observations into account it is found that the nights of 4 and 5 March were active.

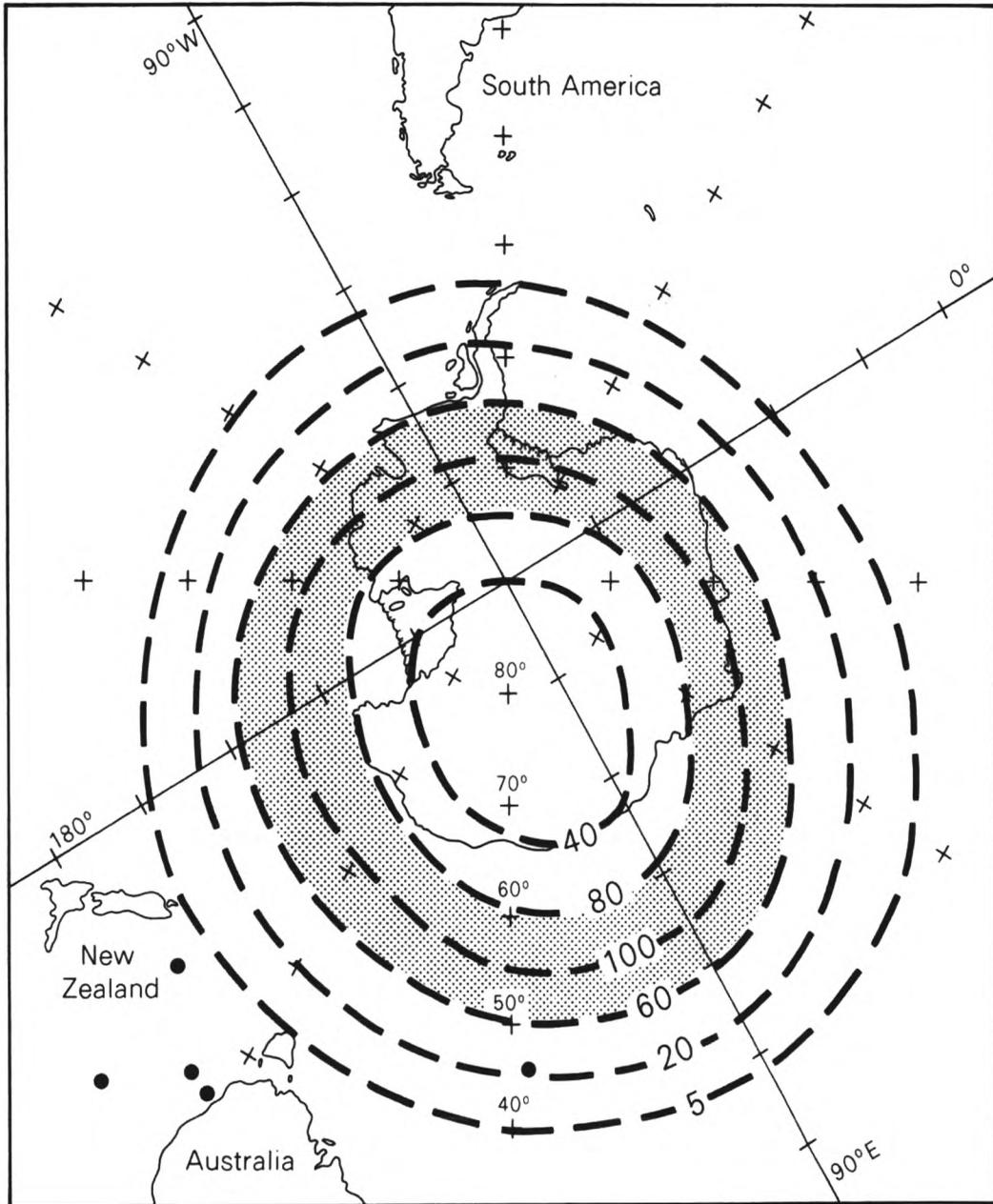
That similar aurorae take place at the magnetic conjugate points, where geomagnetic latitude and longitude are the same on both hemispheres, have been proved in the following manner. Two aircraft, one from Alaska and one from New Zealand, each flew at appropriate locations and took photographs of the aurora. When simultaneous photographs were compared the auroral forms and colours were the same except that the northern picture was the mirror image of the southern picture. The magnetic effects on the southern hemisphere are to the opposite hand of those found in the north, rather on the lines that the Coriolis force in meteorology acts in opposite directions in each hemisphere.

The night of 6/7 February was the most active storm event in the current period and it was pleasing to have shipborne observers confirming the activity in amplification of land observers in Scotland and in Norway. Keep up the good work!

Marine Aurora Observations January to March 1981

DATE 1981	SHIP	GEOGRAPHIC POSITION		TIME (GMT)	FORMS
6 Feb. ..	<i>W.A. Mather</i> ..	49° 04' N	12° 02' W	1940 ..	N, mR
6 ..	<i>Matco Avon</i> ..	55° 00' N	2° 36' E	2025-2105 ..	mR
9 ..	<i>Admiral Beaufort</i> ..	57° 00' N	20° 00' W	0100-0500 ..	qHA, aRB, qRB, qRA, qHA
14 ..	<i>British Maple</i> ..	61° 22' N	10° 25' W	0530 ..	N
2 Mar. ..	<i>Darwin Trader</i> ..	36° 15' S	150° 20' E	1200 ..	N, RB
5 ..	<i>Act 6</i> ..	36° 27' S	154° 05' E	1130-1313 ..	N, R, N, RA
5 ..	<i>Willowbank</i> ..	44° 40' S	161° 55' E	1030 ..	RB
5 ..	<i>Admiral FitzRoy</i> ..	56° 58' N	19° 28' W	2037-2116 ..	N
5 ..	<i>Act 2</i> ..	31° 29' S	160° 11' E	1530 ..	N
7 ..	<i>Act 7</i> ..	45° 00' S	119° 12' E	1430-1900 ..	P, aP
18 ..	<i>Starella</i> ..	65° 42' N	8° 40' E	2230 ..	HB
19 ..	<i>Starella</i> ..	68° 38' N	11° 10' E	2120 ..	R
26 ..	<i>Manchester Crusade</i> ..	47° 45' N	69° 54' W	0000-0400 ..	CR

KEY: A=arc, a=active movement, B=band, C=corona, H=homogeneous, m=multiple, N=unspecified form, P=patch, q=quiet, R=ray, RA=rayed arc, RB=rayed band, HA=homogeneous arc, HB=homogeneous band.



The southern auroral zone. Dashed lines indicate the mean number of aurorae seen per annum as percentage frequencies of maximum possible number. Dots indicate locations of observers

Another point of interest has been the report of red aurorae by ships in the southern hemisphere on 5 March. These are the high-altitude aurorae due to the interaction of the incoming lower-energy auroral particles with atmospheric oxygen. If the particle energy were greater, these would penetrate deeper into the atmosphere where the reaction with oxygen produces the familiar green auroral colour. If the bombardment were even stronger then there would be a red coloration to the base of the green aurora. In the auroral zone there is a daytime as well as a night-time aurora which can be observed during the long polar winter night, such as at Spitsbergen. The typical daytime aurora is red in colour and lies closer to the magnetic pole than the night-time aurora.

Reviewing the observed activity of the period in question, January was a quiet month with a few reports of visual aurorae on the 3rd to 6th followed by isolated reports of glows on the 23rd, 25th and 31st. Radio auroral effects were reported for the 6th, 9th, 10th and 26th. No major magnetic storms took place but the Earth's field tended to be more disturbed at the beginning and end of the month. A magnetic storm sudden commencement, that is to say an occasion when the intensity of the Earth's magnetic field in the atmosphere above and within the Earth itself, suddenly changes owing to auroral electrical activity was reported for the 30th but the resulting disturbance was low, relatively speaking.

February saw the start of renewed activity. Some glows were reported on the 3rd and 4th followed by an auroral storm which was widely observed on the 6th. Rayed arcs and glows were reported on the 8th in higher latitudes and some glows on the 9th, 10th and 13th but the latter were unconfirmed. Glows and rayed arcs were reported on the 24th to 27th around the geomagnetic latitude of Orkney. Radio effects were detected on the 4th, 5th, 14th to 16th and 24th to 27th inclusive. Magnetic storms related to the aurorae were recorded at higher intensities on the 6th, 9th and 26th. Storm sudden commencements were noted on the 6th, 8th and 23rd.

If data in series of 27 days are plotted one below the other to accord with the rotation of the Sun as seen from the Earth it is clear that in 1981 several active zones have developed on the Sun and in its surrounding atmosphere which sweep the Earth with outlying atomic particle clouds each time these zones return to the same position relative to the Earth. Consequently, disturbances in the Earth's magnetosphere leading to magnetic or auroral activity have formed the following series.

	Series 1	Series 2	Series 3
January		6th 28th	
February	5th-9th	23rd-27th	14th-16th
March	4th-7th 27th-28th	25th-26th	12th-17th
April	26th-27th	18th-22nd	11th-14th
May	24th-25th	13th-20th	8th-11th

Sequences such as the above may be used to predict the possibility of recurring auroral activity so that a watch may be kept on the appropriate dates. An inexperienced observer may find this distracting as he may then tend to watch more carefully at some times rather than at others, thereby biasing his results. The quieter repetitive aurorae not associated with sunspots tend to be found after sunspot maximum. This does not in any way preclude the onset at any time of a flare-type aurora generated by sudden changes in the solar atmosphere associated with a sunspot. Naturally, if the sunspot itself is very active and the region above it is prone to flare activity, there is a possibility that flare-generated aurorae may repeat themselves at about the 27-day interval.

ICE CONDITIONS IN AREAS ADJACENT TO THE NORTH ATLANTIC OCEAN FROM JUNE TO AUGUST 1981

The charts on pages 43 to 45 display the actual and normal ice edges (4/10 cover), sea-surface and air temperatures and surface-pressure anomalies (departures from the mean) so that the abnormality of any month may be readily observed. (The wind anomaly bears the same relationship of 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 normally 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

The anomalies of temperature and pressure were weak. Clearance of ice over Hudson Bay and Strait was mostly ahead of normal but there was an unusual persistence of ice in the eastern part of Hudson Bay. In Davis Strait, Baffin Bay and the Greenland Sea the disposition of ice was near to normal for the end of June. The previous excess of ice over the Barents Sea was reduced and the polynya south of Franz Josef Land became more extensive than usual.

JULY

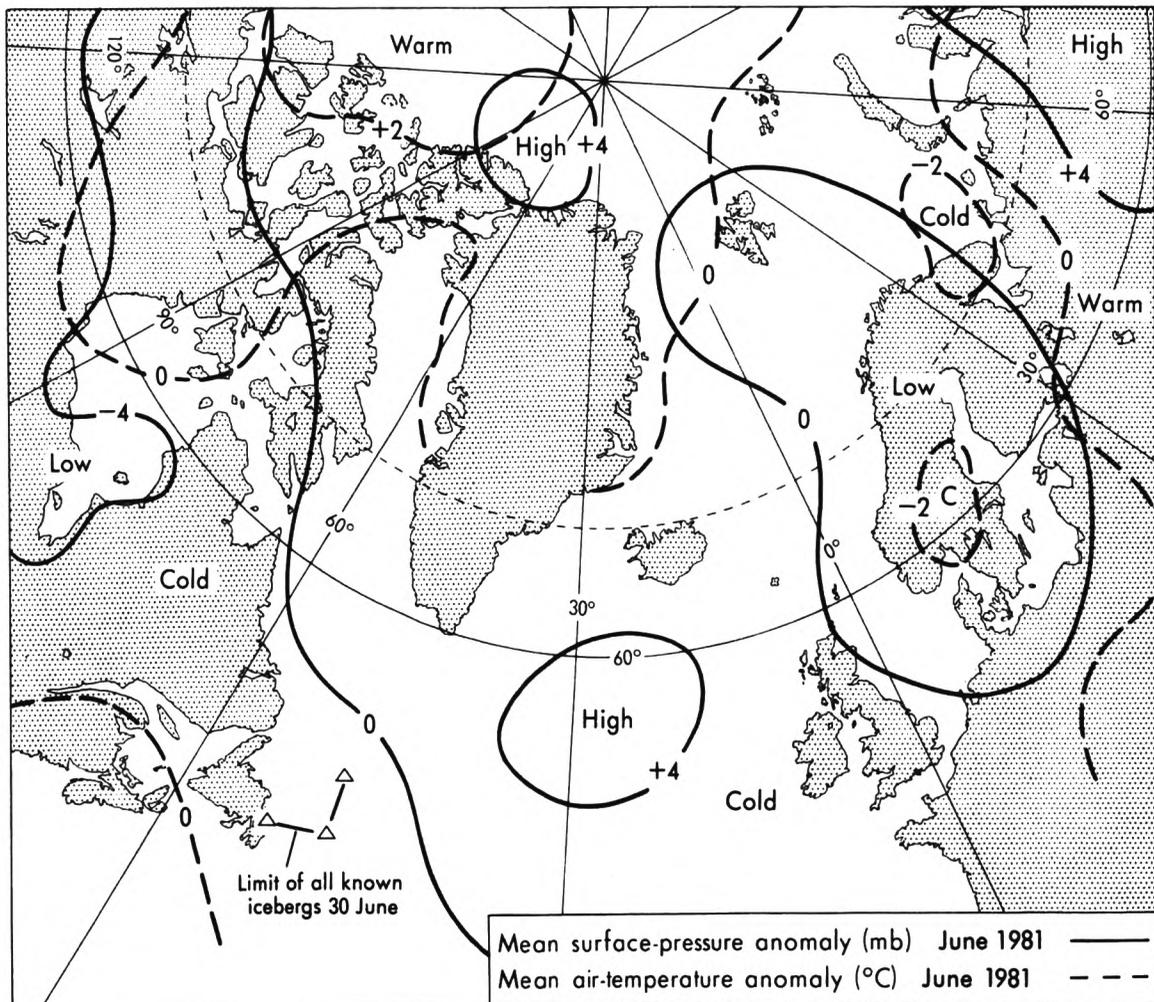
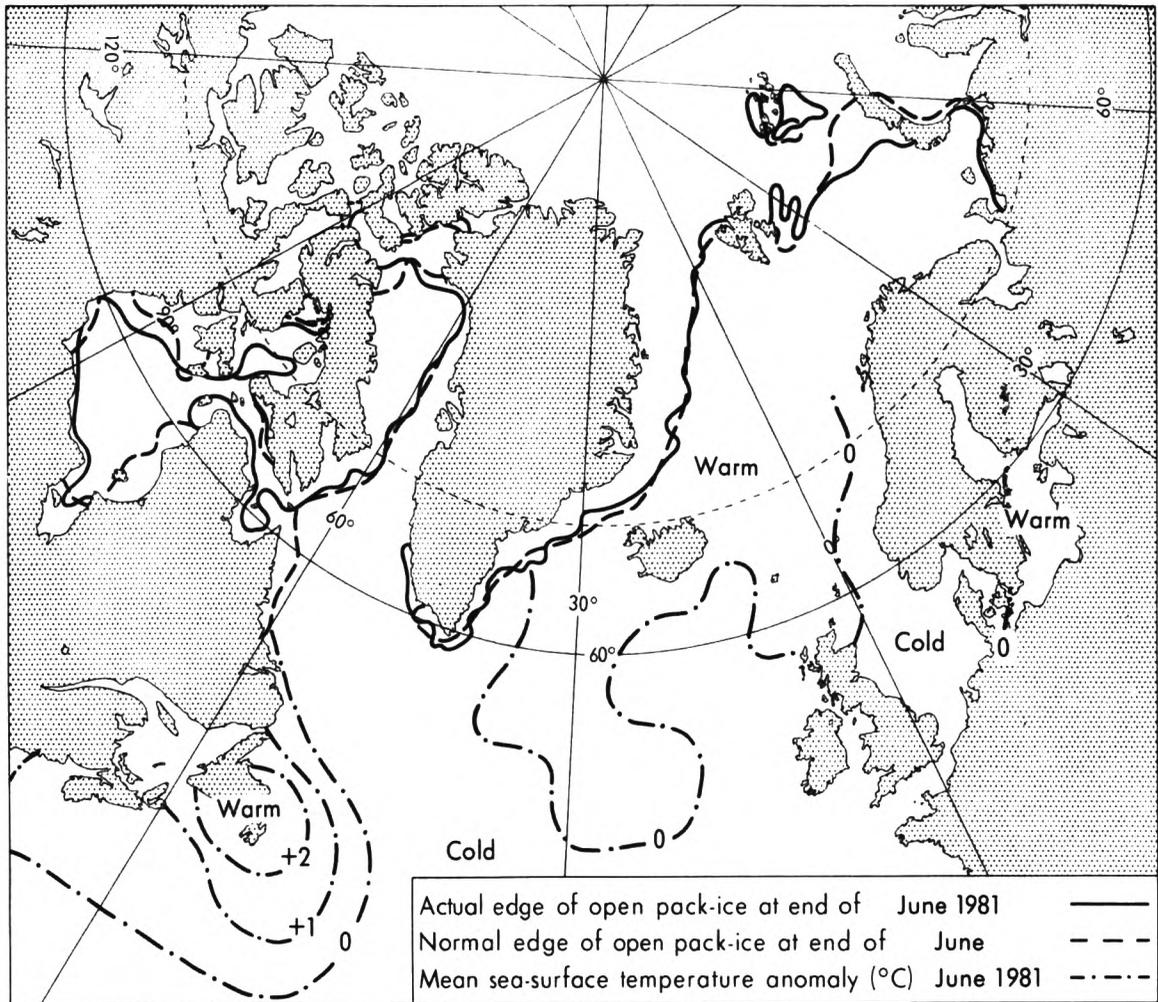
Pressure and temperature anomalies remained weak. However, ice broke up rather earlier than usual off north-east Canada. Also to the east of Greenland the ice disintegrated rapidly but this resulted in isolated ice fields with many vast floes breaking away from the polar pack ice and drifting in the current towards north Iceland. In the Barents Sea the previous excesses of ice were much reduced during the month so that conditions finished near to normal. Melting of ice over the Kara Sea was ahead of normal.

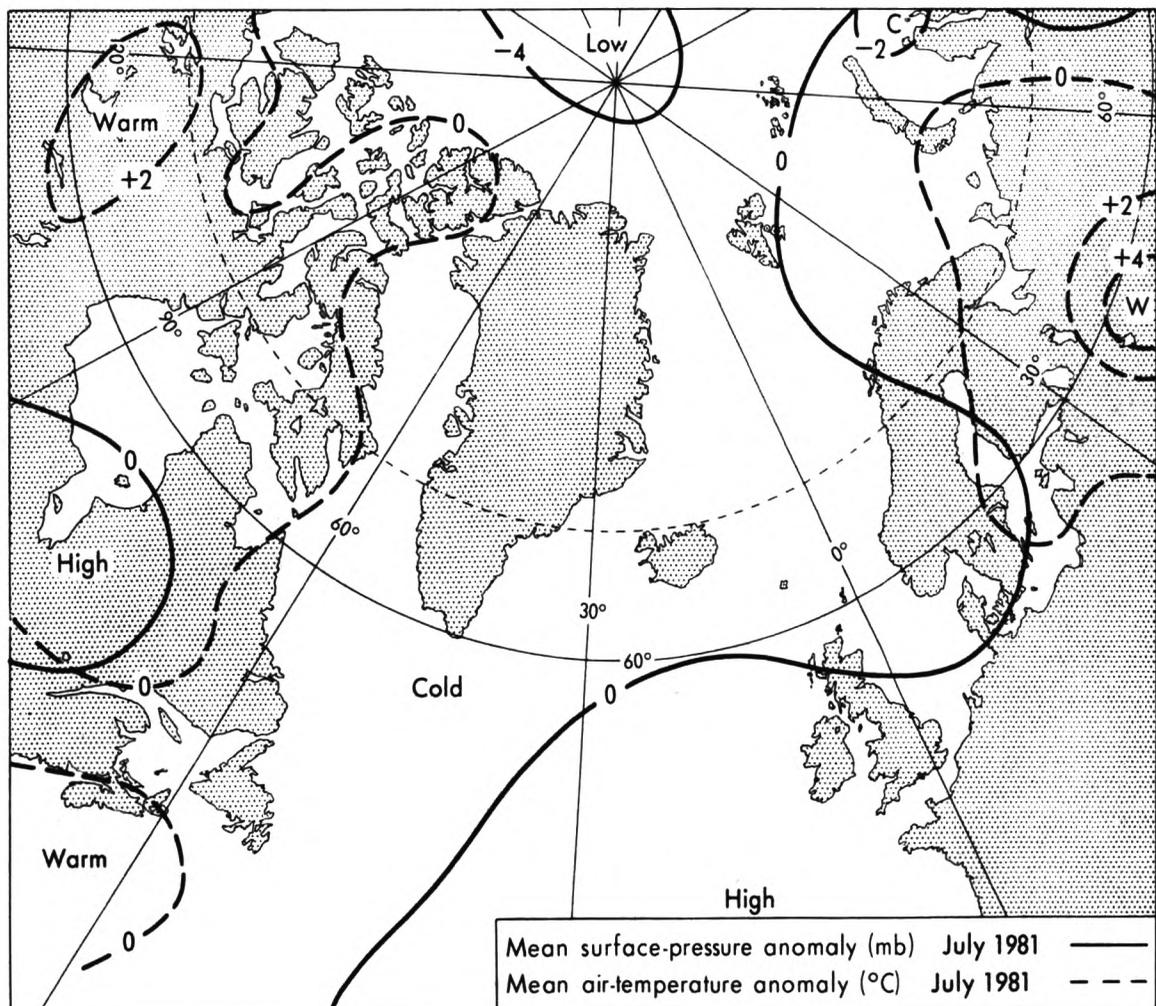
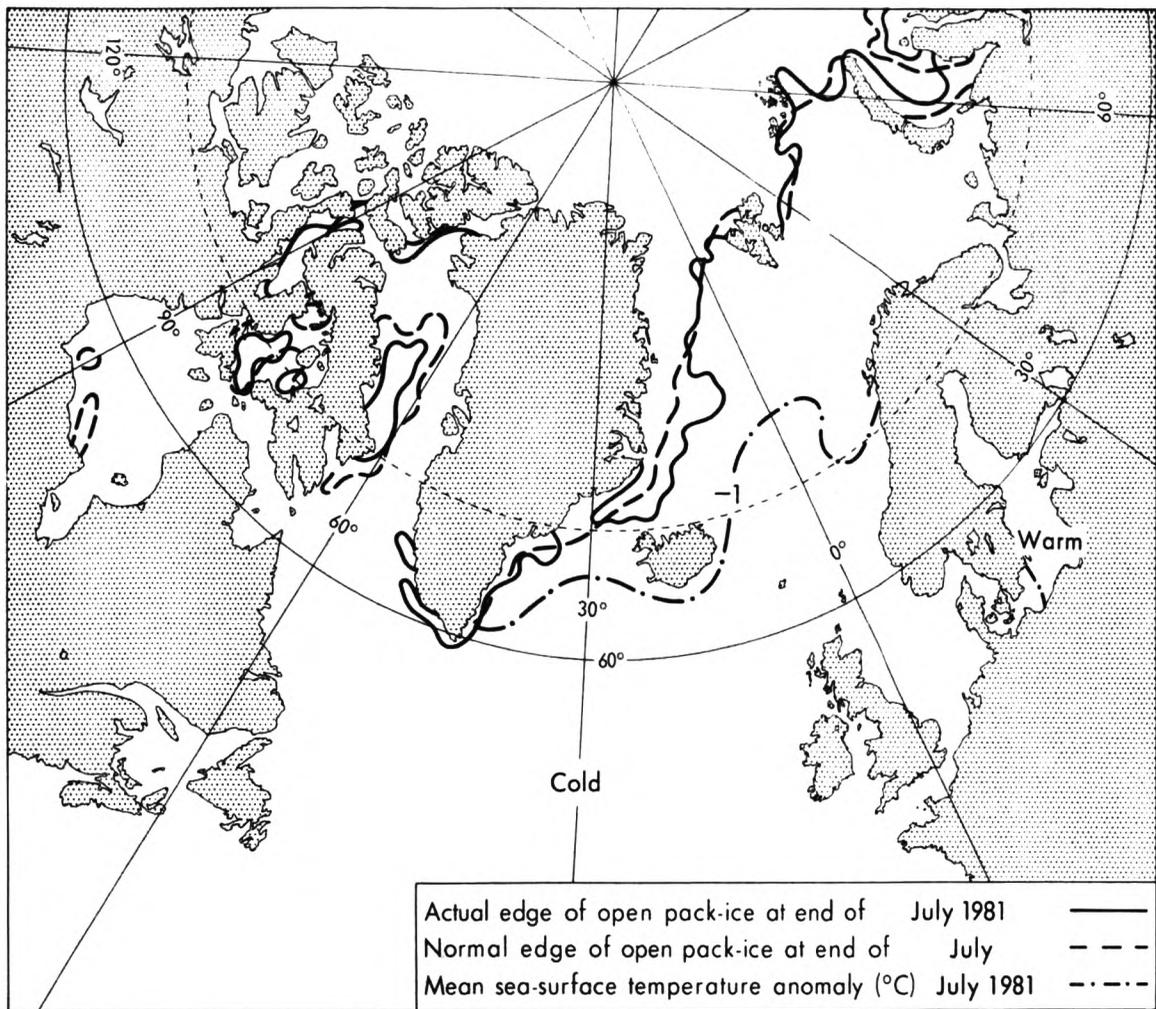
AUGUST

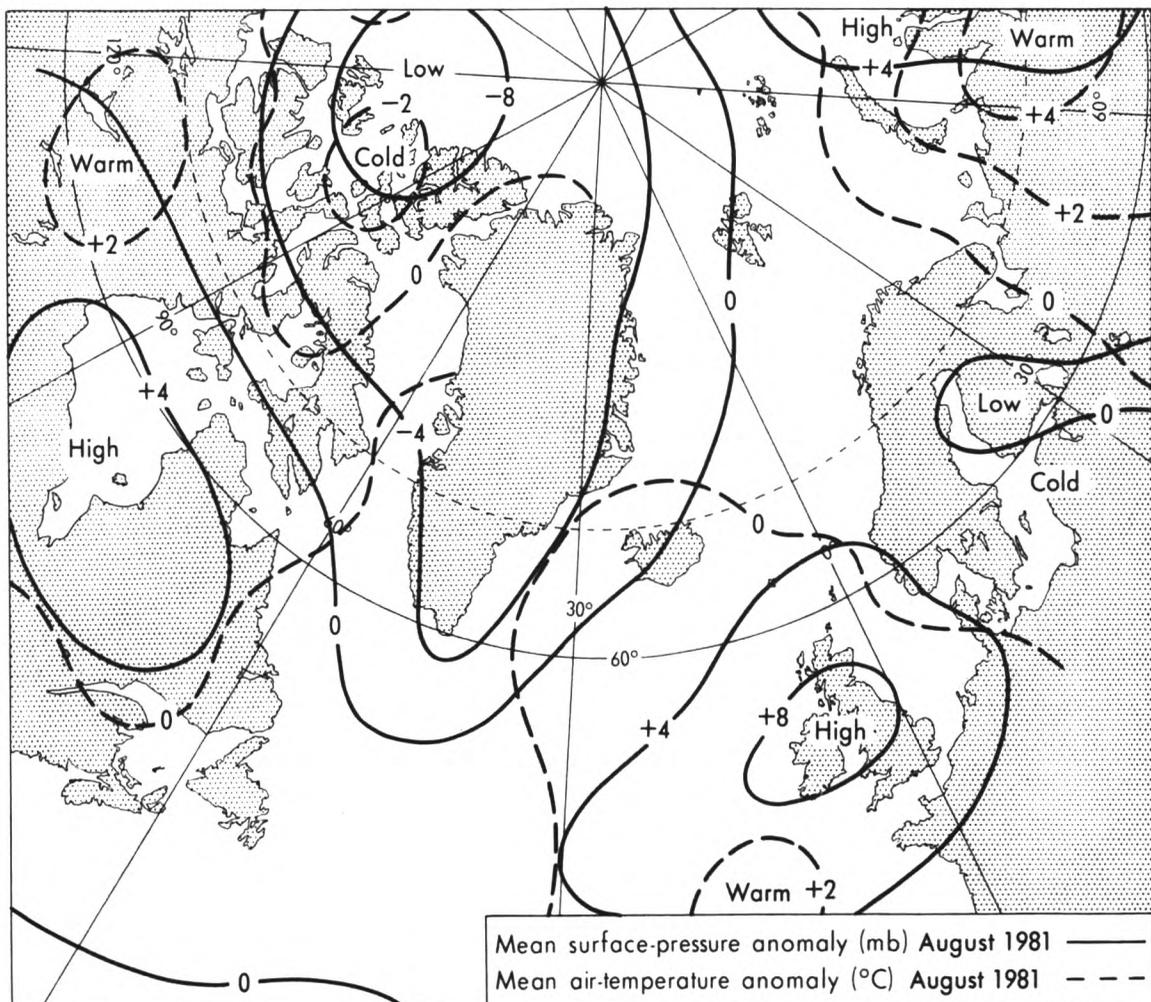
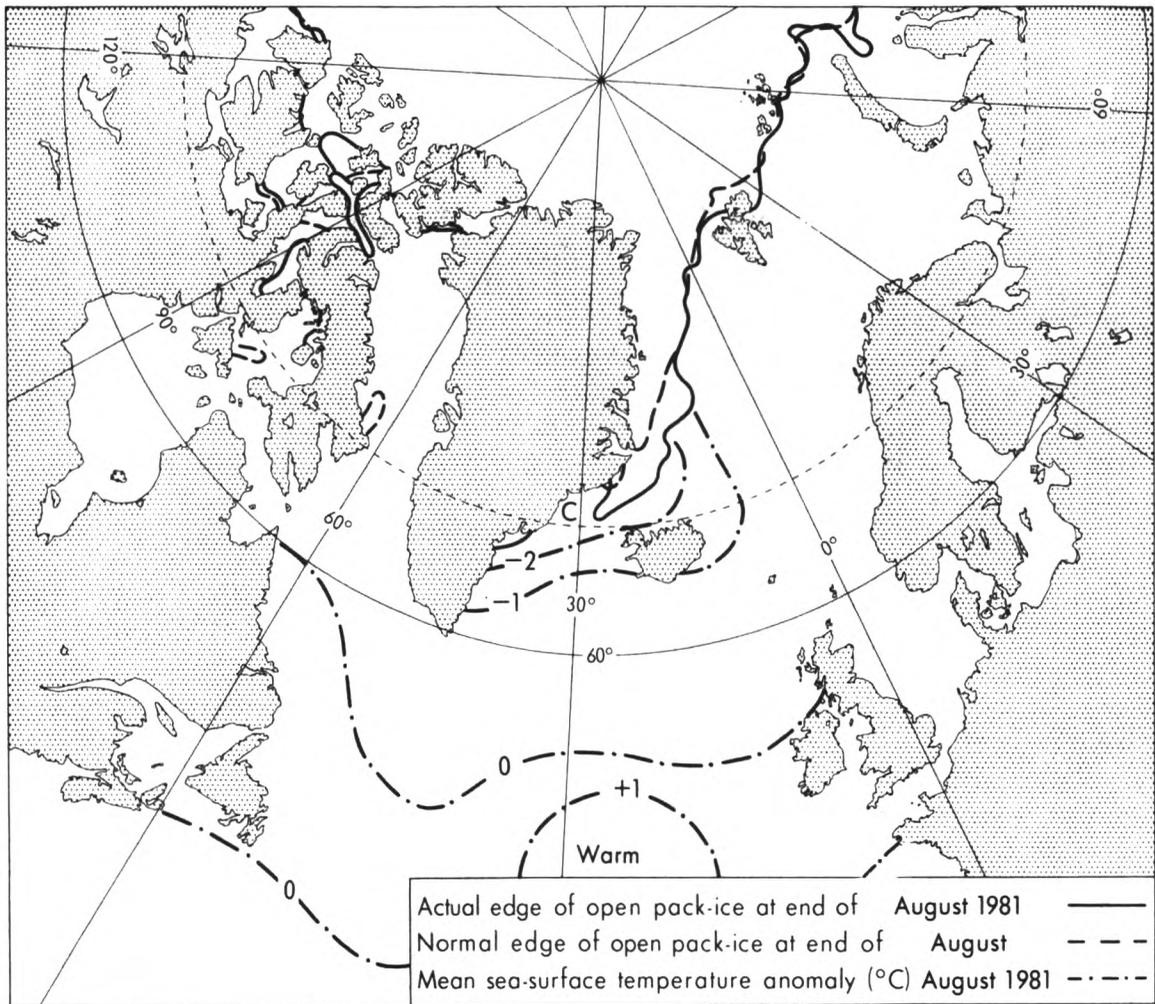
Pressure was well below average over the extreme north of Canada. Towards the end of the month a tendency for cold north-westerly winds brought some re-freezing in these northern areas where melting had been proceeding ahead of normal. The anomaly for south-westerly winds off eastern Greenland delayed the drift of open pack ice into warmer waters giving an appreciable excess of ice there by the end of the month. The ice was much as normal over the Barents and Kara Seas.

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. |







PERSONALITIES

OBITUARY.—It is with regret that we record the sudden, tragic death of Mr W. C. DOYLE, Radio Officer, on 24 July 1981.

William Clifford Doyle was born in Waterford in 1924 and joined the Marconi International Marine Company in December 1943. For long periods he served in such vessels as the *Cedric*, *Winga* and *Port Nicholson*. In more recent years he served in ships of the T. and J. Harrison Company. At the time of his tragic death he was attending a Radar Maintenance Course in London.

We received the first meteorological logbook bearing Mr Doyle's name from the *Levenbank* in 1948. Thereafter we received a further 40 books of which 11 were classed as Excellent. He received Excellent Awards in 1964, 1970, 1972 and 1973.

We extend our sincere condolences to his family.

RETIREMENT.—CAPTAIN A. T. CAMPBELL retired on 17 August 1981 after serving over 40 years at sea.

Alexander Tough Campbell was born in Greenock and was educated at the Greenock Academy. Whilst awaiting his first ship he spent 4 months in pre-sea training at the James Watt College.

On 6 January 1941 he joined the s.s. *Mulbera* belonging to the British India Steam Navigation Company as Cadet. He was serving on the s.s. *Nagina* when she was torpedoed and sunk off Freetown in April 1943.

Subsequently, Captain Campbell transferred to Cayzer Irvine Shipping Company and remained with them for the rest of his career at sea. He was serving as Chief Officer on the m.v. *Ayrshire* when the ship struck an uncharted underwater obstruction off the island of Abd-al-Kuri in March 1965. The vessel was beached, eventually refloated, beached again and eventually abandoned.

He obtained his Master's Certificate in January 1951 and was promoted to command of the m.v. *Constance Bowater* in April 1967 at Corner Brook, Newfoundland. In recent years he has commanded the m.v. *King William*.

Captain Campbell sent us his first meteorological logbook from the *Clan MacNair* in 1946. Since then we have received a further 38 books bearing his name of which 14 were classed as Excellent. He received Excellent Awards in 1980 and 1981.

We wish him a long, healthy and happy retirement.

RETIREMENT.—MR G. A. FERRAND, Radio Officer, retired on 30 September 1981 after serving 41 years at sea.

George Arthur Ferrand joined the Marconi International Marine Company in December 1940 as Radio Officer. He served at sea throughout the war without mishap as a result of enemy action but whilst he was serving onboard the *Warkworth* in 1941 the ship was sunk after a collision with another ship.

For most of his service since 1962 Mr Ferrand has served in vessels owned by the T. and J. Harrison Company including 10 years in the m.v. *Discoverer*. His last ship was the m.v. *City of Durban*. We received the first meteorological logbook bearing Mr Ferrand's name from the *Brittany* in 1948. Thereafter he sent us a further 22 books and he received Excellent Awards in 1977 and 1981.

We wish him a healthy and very happy retirement.

Notices to Marine Observers

WEATHER MESSAGES

All ships sending weather messages through British Telecom International Coast Radio Stations, including Portishead Radio, should transmit their observations in groups of 10 characters instead of 5 as formerly.

INTERNATIONAL SYSTEM OF SEA ICE SYMBOLS

On 1 October 1981 the World Meteorological Organization adopted an International System of Sea Ice Symbols for use on ice charts issued by radio-facsimile or mail for marine activities. Copies of the System are available from Port Meteorological Offices.

THAMES PORT METEOROLOGICAL OFFICER

The new address and telephone number of the Port Meteorological Officer for the Thames area are: Captain R. C. Cameron, Port Meteorological Officer, Daneholes House, Hogg Lane, Grays, Essex RM17 5QH. (Telephone: 0375-78369).

Fleet Lists

Corrections to the list published in the July 1981 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 20.9.81)

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

NAME OF VESSEL	MASTER	OWNER/MANAGER
<i>Cairnfreighter</i>	D. Milburn	Furness Withy (General Shipping) Ltd
<i>Kindrence</i>	J. A. Stapleford	Crescent Shipping Co. Ltd

The following vessels have been deleted:
Avalon, Modan, Shell Refiner.

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
<i>Arctic Galliard</i>	21.5.81	G. Kent	J. Outhwaite		Boyd Line Ltd
<i>Badagary Palm</i>	19.8.81	E. H. Thomson	I. McClain, R. Bent, E. Mushing		Palm Line Ltd
<i>Benalbanach</i>	—9.81				Ben Line Steamers Ltd
<i>Berkshire</i>	22.1.81	K. Arthur	J. T. Grace, J. R. Head, K. N. Young	R. C. Cook	Bibby Line Ltd
<i>British Humber</i>	17.8.81	C. Mills	J. H. Brechin, C. Howells, D. Stitson	P. Shortman	B.P. Shipping Ltd
<i>C.P. Ambassador</i>	—9.81				Canadian Pacific Steamships Ltd
<i>Canadian Explorer</i>	—9.81				Canadian Pacific Steamships Ltd
<i>Cape Arnhem</i>	9.1.81	D. Solly	H. Fogarty, J. H. Donne		Scottish Ship Management Ltd
<i>Celtic Venture</i>	5.5.81	A. Rundle	J. H. Warburton, W. Jemson, S. R. Ogdan, D. J. Mackenzie		C. M. Willie (Shipping) Co Ltd
<i>Charon</i>	27.5.81				Ocean Transport & Trading Ltd
<i>Cheshire</i>	21.4.81	K. McLeod	D. M. E. McGrath, D. Jenkinson, R. W. Hopkinson	J. S. Evans	Bibby Line Ltd
<i>D. C. Coleman</i>	28.6.81	R. Raw	J. Morgan, J. Kemp, A. Williams	M. J. Walker	Canadian Pacific Steamships Ltd
<i>Danah</i>	—7.81	J. M. Burn		P. Moundson	P. & O. S.N. Co.
<i>Dart Americana</i>	9.8.81	A. C. Mathews	D. Cockrill, R. Stewart	R. Frank	Canadian Pacific Steamships Ltd
<i>Dart Atlantica</i>	8.8.81	P. Benham	E. P. Morris, C. Harding, N. Barham	K. Bennisson	Canadian Pacific Steamships Ltd
<i>Dart Britain</i>	29.8.81	P. Cullen	C. Gilberthorpe, G. Rager, A. Ross		Furness Withy (General Shipping) Ltd
<i>Discovery Bay</i>	10.7.81	R. Wood	H. A. Wren, G. Farrel	M. Howard	Overseas Containers Ltd
<i>Dorsetshire</i>	28.7.81	D. G. Marsh	M. Hume, S. Foster, N. Marshall	W. Ormrod	Bibby Line Ltd
<i>Earl Granville</i>	20.5.81	H. T. Bill	J. Bradley, M. Nash, D. Davies	E. Sandie	Sealink U.K. Ltd
<i>Edinburgh</i>					
<i>Universal</i>	5.6.81	R. Royan	D. C. Williams, G. Paxton, P. O'Sullivan	J. Stone	Cayzer Irvine Shipping Co Ltd
<i>Fort Assiniboine</i>	10.6.81	M. Allen	K. Brothers, D. Cockrill, D. Hall	T. Rowsfield	Canadian Pacific Steamships Ltd
<i>Fort Norman</i>	2.3.81	R. Hedrick	W. Levett, M. Goddard, B. Macormick	A. Wilkins	Canadian Pacific Steamships Ltd
<i>Forthbank</i>	20.7.81	H. Barber	R. A. Crowther, R. J. S. Lillis, R. Hanraads	R. J. MacDonald	Bank Line Ltd
<i>Gas Enterprise</i>	2.7.81	H. E. Brown	R. Lanz, —, Massey, —, Pressit	—, Hill-Heaton	B.P. Shipping Ltd
<i>Geestbay</i>	30.7.81	O. Springett	C. Davies, T. Hogg, A. C. Jenkins	R. Byng	Geest Industries Ltd
<i>La Costa</i>	21.7.81	R. Blair	P. Thomson, L. Parry, J. Berry	R. Smith	Buries Marks Ltd
<i>Laertes</i>	9.4.81	J. M. Dick			Ocean Transport & Trading 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
<i>Lord Curzon</i>	3.8.81	N. Storey	J. F. Hardy, M. W. Greeves, J. G. Mathew	A. Patterson	Liberty Maritime Corp
<i>Manchester</i>					Furness Withy (General Shipping) Ltd
<i>Challenge</i>	—9.81				Furness Withy (General Shipping) Ltd
<i>Manchester</i>					Furness Withy (General Shipping) Ltd
<i>Vanguard</i>	23.4.81	K. Lehepuu	G. R. Green, C. Hiltunen, T. P. Mather	J. C. Percival	Fyffes Group Ltd
<i>Matina</i>	13.7.81	J. Mason	A. Ashwood, B. Hartley	J. P. John	Overseas Containers Ltd
<i>Moreton Bay</i>		— Welch	M. Selcon, B. Brierly, K. MacMillan		Bolton S.S. Co Ltd
<i>Nosira Lin</i>	25.6.81	J. Parsloe	A. Watkins, N. Howarth, R. Avenin	M. Jackson	Stephenson Clarke Shipping Ltd
<i>Pulborough</i>	10.8.81	G. Young			P. & O. S.N. Co
<i>Qarouh</i>	—7.81	A. B. Stalker			Gardline Shipping Ltd
<i>Resolution</i>	30.6.81	D. Howell	I. Hurst, M. Pountain	J. Bryant	Jebsen (U.K.) Ltd
<i>Rollnes</i>	3.6.81	J. Aspey	S. Comfort, I. Herbert, S. Byczmsky	C. Akyampong	Turnbull Scott Management Ltd
<i>Sandgate</i>	30.7.81	P. Surtees	D. Bartlett, E. Duffy, E. Potter	M. Scanlon	Mobil Shipping Co Ltd
<i>Shabonee</i>	21.7.81	P. Callaghan	G. Donaldson, J. Lees, I. Burt		F. T. Everard & Sons Ltd
<i>Solentbrook</i>	9.7.81	W. G. Hunt	G. C. Halliwell, E. Varne		F. T. Everard & Sons Ltd
<i>Stability</i>	5.8.81	J. A. Moir	D. Gilbert		Cayzer Irvine Shipping Ltd
<i>Stirling Universal</i>	—7.81	A. Cruickshank	G. Mobbs	P. Boyle	Texaco Overseas Tankship Ltd
<i>Texaco Ghent</i>	17.6.81	A. Dorman	R. Brass, S. Hilditch	J. Devlin	Texaco Overseas Tankship Ltd
<i>Texaco Norway</i>	24.7.81	A. W. J. Reeves	P. W. Gibson, S. White, B. Caister	D. Winchester	Texaco Overseas Tankship Ltd
<i>Texaco Westmunster</i>	3.7.81	J. Walker			Texaco Overseas Tankship Ltd

The following Selected and Supplementary Ships have been deleted:

Alaunia, Alsatia, Anco Princess, Andania, Andria, Atlantic Prosper, Baltic Valiant, Border Castle, Border Pele, British Laurel, British Liberty, British Loyalty, British Maple, British Pioneer, Cast Tern, Cicero, City of Canterbury, City of Winchester, Clan MacGregor, Dart America, Dart Atlantic, Dart Canada, Desado, Donga, Dover Universal, Eredine, Esso Cambridge, Esso Scotia, Geestcrest, Geest-Tide, Gothia Team, Irish Wasa, Kirkella, Loch Lomond, Loch Maree, London Confidence, Maersk Commander, Manchester Reward, Manchester Zeal, Masirah, Overseas Adventurer, Partula, Riverina, St. Jasper, Snowball, Surrey, Texaco Gloucester, Texaco Singapore, Tourmaline, Vancouver Forest, Yorkshire.

BRITISH COMMONWEALTH

Correction to the list published in the July 1981 issue of *The Marine Observer*.

NEW ZEALAND (Information dated 1.8.81)

The following ships have been recruited:

NAME OF VESSEL	OWNER/MANAGER
Selected Ships:	
<i>Bounty III</i>	Pacific Lines Ltd
<i>Capitaine Cook</i>	Pacific Lines Ltd
The following vessels have been deleted:	
<i>Bounty II, Capitaine Kermadec</i>	

Auxiliary Ships:

New Zealand now also has a fleet of 16 Auxiliary Ships currently reporting.

ISBN 0 11 726663 9
ISSN 0025-3251