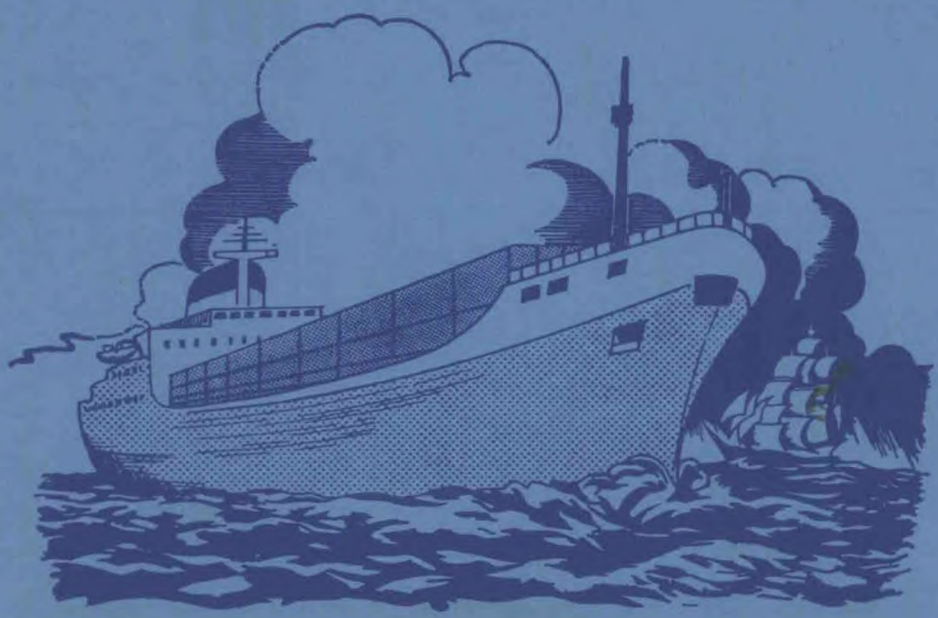
Met. O. 963

The Marine Observer

A quarterly journal of Maritime Meteorology



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THE MARINE OBSERVER

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

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

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Report of Work for 1983

(MARINE DIVISION OF THE METEOROLOGICAL OFFICE: VOLUNTARY OBSERVING FLEET AND OCEAN WEATHER SHIPS)

1. Voluntary Observing Ships

At the end of the year the British Voluntary Observing Fleet was composed as follows:

(*a*) 416 Selected Ships, including trawlers, which are supplied with a full set of meteorological instruments on loan and which make observations in code every 6 hours and transmit them to the appropriate coastal radio station wherever their voyages take them.

(*b*) 10 Supplementary Ships, including trawlers, which make less-detailed observations than Selected Ships and are supplied on loan with only a barometer, air thermometer and screen.

(*c*) 58 Coasting ('Marid') vessels which make sea-surface temperature observations in UK coastal waters and transmit them by W/T or R/T. When in the North Sea, the coasting ships include in their messages wind, weather and visibility observations.

(*d*) 13 light-vessels and 1 light-tower which make observations of wind, waves, visibility and air- and sea-temperatures; all of these send coded reports by R/T. Reports from the *Royal Sovereign* light-tower together with the *Channel, Dowsing* and *Varne* light-vessels are included in the BBC weather bulletins for shipping and all report barometric pressure, using the precision aneroid. They also report barometric tendency.

(*e*) 6 Auxiliary Ships which make and transmit visual observations of wind, weather and visibility with the addition of pressure and air temperature readings from the ships' own instruments. These ships do this work only when in areas where shipping is known to be sparse.

The importance of meteorological observations from ships at sea becomes apparent when it is appreciated that the oceans occupy nearly three-quarters of the earth's surface. Except for those made by HM Ships, Ocean Weather Ships and research vessels, these surface meteorological observations are voluntarily provided by the masters and officers of merchant ships. In the UK, the Marine Division has been responsible for obtaining these observations since 1855. These merchant ships are collectively known as the Voluntary Observing Fleet (VOF) and they vary from very large oil tankers and passenger vessels to coastal traders and trawlers.

The British VOF includes ships of many shipping companies and Table 1 shows the variety of trade routes on which they are engaged.

Table 1. Average number of British Selected and Supplementary Ships on main trade routes to and from the UK

Europe	99	West Indies	10
Australasia	14	South America	4
Far East	29	Pacific coast of North America	4
Arabian Gulf	11	Falkland Islands and Antarctic	5
South Africa	3	World-wide trading	190
West Africa	14	Near and distant-water fishing grounds	3
North Atlantic	40		

The numerical strength of the Voluntary Observing Fleet remained almost static throughout the year. Although the continued recession in world trade still has a considerable impact on the British merchant and fishing fleets, the

continuing efforts of the Port Meteorological Officers have ensured that the number of withdrawals has been equalled by the number of recruitments. These Officers are established at the major ports of London, Liverpool, Southampton, Hull, Middlesbrough, Glasgow and Cardiff and, under the guidance of the Marine Superintendent, are responsible for maintaining the numbers of a variety of ships. Most of the older, conventional ships of the British merchant fleet have now been replaced by fast modern vessels which spend less time in port and are thus at sea for a greater proportion of the year. As a result, the number of observations received continued to increase.

During a typical 5-day period in June, the average daily numbers of reports from ships and sea stations received at the Regional Telecommunication Hub (RTH) at Bracknell were as shown in Table 2.

Table 2. Average daily number of reports received at Bracknell from ships and sea stations and geographical breakdown of total daily number of reports received by Bracknell direct and via the Global Telecommunication System (GTS)

	1982	1983
Direct reception from:		
British ships	179	169
Foreign ships	74	133
Rigs, Platforms, Buoys	86	87
Total	339	389

Total daily number of reports received by Bracknell direct and via GTS from:

	1982	1983
Eastern North Atlantic	756	893
Western North Atlantic	580	541
Mediterranean	98	118
North Sea	279	312
Arctic Ocean	69	98
North Pacific	776	919
All other waters	532	512
Total	3090	3393

Apart from a few special purpose Ocean Weather Ships and research vessels, meteorological work at sea in British merchant ships has always been carried out on a voluntary basis and it is gratifying to note that the standard of observing was well maintained throughout the year. The policy of appointing Port Meteorological Officers who are Master Mariners with considerable experience of voluntary observing at sea contributes significantly to the high standard of observations received from officers of the VOF. The installation of distant-reading equipment on a number of merchant ships under construction, in order to ease the workload of observing officers, continued with the whole-hearted support and co-operation of shipowners. Once again, acknowledgement must be made to the many Commonwealth and foreign Port Meteorological Officers for their valuable services and assistance in the replacement of defective instruments in British observing ships on protracted voyages, and the withdrawal of instruments and publications from British ships which were sold or ended their career abroad.

2. Ocean Weather Ship Activities

Under the North Atlantic Ocean Station (NAOS) scheme the United Kingdom continued to operate an Ocean Weather Ship on station 'Lima' situated at 57° 00'N, 20° 00'W. The UK ship, *Starella,* a converted trawler, on charter to the Meteorological Office, continued to operate in conjunction with the Netherlands weather ship *Cumulus* on station 'Lima' which was thus manned continuously throughout the year. In addition, the *Starella* relieved the Norwegian weather ship *Polarfront* on station 'Mike' situated at 66° 00'N, 2° 00'E for 10 days during October to enable the *Polarfront* to have her annual overhaul.

The weather ship made hourly surface and 6-hourly upper-air observations throughout the year. Sea and swell records were made using the Tucker ship-borne wave recorder, and in addition, sea-water temperature and salinity readings, collection of rain-water samples for analysis by the International Atomic Energy Agency and collection of sea-water samples on passage to and from station for monitoring radioactive content were undertaken at regular intervals. A plankton recorder was towed on a number of voyages to and from station on behalf of the Institute for Marine Environmental Research.

3. Ship Routeing

The ship routeing service is now marketed under the name Metroute, and continues to advise on North Atlantic and North Pacific passages. Advice is also offered in regard to the movement of tows and salvage operations, and to vessels on other international voyages on request.

Extensive advertising in marine-oriented publications has led to a stable flow of new inquiries, including a recent one from the Shipping Corporation of India, which it is hoped will lead to a sizable fleet contract. The voyage assessment service, providing investigations into ships' performance in relation to actual weather experienced, continued to attract considerable attention from both shipowners and charterers; this service is seen as good value in assisting clients to resolve claims concerning voyage delays due to slow speeds, deviations to avoid foul weather and other factors.

4. Services to Shipping

Services to shipping via BBC Radio, British Telecom International Coast Radio Stations and our international radio-teleprinter and radio-facsimile broadcasts continued throughout the year.

During April the broadcast in Radio Teletype from Cullercoats Coast Radio Station, of weather forecasts and gale warnings for all North Sea, English Channel and adjacent coastal sea areas from Fair Isle to Plymouth, was given the acronym 'Navtex' and made operational after being experimental for some years. The 'Navtex' mode of transmission was extended on 1 October to Portpatrick Coast Radio Station whence forecasts and gale warnings for sea areas adjacent to the west coast of the UK from Fair Isle to Lundy were transmitted in Radio Teletype.

During the year four new Coast Radio Stations were established by British Telecom International and commenced transmitting the appropriate gale warnings and forecasts in VHF mode. They are Buchan Radio, Grimsby Radio, Pendennis Radio and Cardigan Radio, all operated by remote control from the existing stations Stonehaven Radio, Humber Radio, Land's End Radio and Anglesey Radio respectively.

Reports from the *Goeree* Light Tower automatic weather station, formerly included in the station reports broadcast after the Shipping Forecast on BBC Radio 4, ceased on 1 August as some of the elements contained in the reports

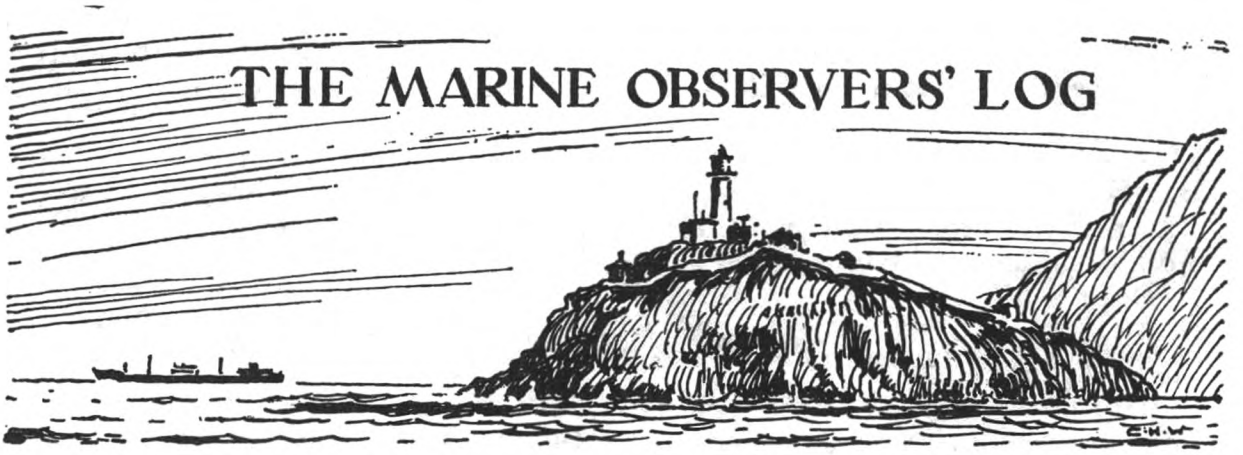
were often unreliable. In order to give a more even distribution of station reports from locations around the UK coast, weather reports from the Butt of Lewis were included in the BBC Radio 4 transmission from 1 August.

5. Inquiries

Marine inquiries, principally from shipping interests, solicitors, universities and individual firms continued at a high level.

6. Awards to Voluntary Observers

As in previous years, Excellent Awards in the form of books were made to the shipmasters, principal observing officers and radio officers who were responsible for submitting the 100 best meteorological logbooks for the year. Similar awards were made to masters and officers on short sea trades for their contribution in making sea temperature observations. The books selected for this year's awards were *Continents in Collision* by Keith Miller, *Cassell's English Dictionary* and *Philip's University Atlas*. Long-service awards in the form of inscribed barographs were made to four shipmasters in recognition of their valuable voluntary meteorological observing over many years during their career at sea.



April, May, June

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

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

TROPICAL CYCLONE 'MONTY'

Indian Ocean

m.v. *Moreton Bay*. Captain C. B. Walgate. Fremantle to Jeddah. Observers: the Master, Mr M. J. Godbehear, Chief Officer, Mr J. Kelleher, 2nd Officer, Mr N. D. R. Copeman-Mitchell, 3rd Officer, and Mr T. J. Smith, 2nd Radio Officer.

22–23 April 1983. The vessel, which was originally on a course of 308°(T) at a speed of 19·0 knots, passed within 25 n. mile of the centre of the cyclone. The following extracts are taken from the deck and meteorological logbooks:

22nd, 0600 GMT. Commenced 3-hourly weather reports as requested by Met. Perth.

0740 GMT. Light rain at vessel, wind backing to ENE, force 5, dry bulb 26·0 °C, wet bulb 25·0, sky overcast, stratus fractus, barometric pressure 1007·5 mb and falling.

0800 GMT. Altered course to 320°(T) to maintain distance between vessel and depression.

0815 GMT. Sky clearing, lightning on horizon, slight rain.

0825 GMT. Sky overcast, cumulus and stratocumulus; wind steady in force and direction, barometric pressure falling 2·2 mb below normal, rain ceased.

0935 GMT. Slight rain at vessel, wind E to E'N, gusting to force 6–7.

1500 GMT. Wind ENE, force 5.

2300–2359 GMT. Wind backed to NE'ly, force 4–5, barometric pressure 1000·2 mb and falling rapidly.

23rd, 0130–0300 GMT. Wind backed steadily to WNW, force 4, barometric pressure 994·0 mb and falling rapidly.

0145 GMT. Altered course to 340°(T) at 18·5 knots.

The following messages were sent as additional plain-language reports via Perth Radio as the vessel neared the centre of the cyclone:

23rd, 0315 GMT. Position 09° 13·5′S, 81° 43·0′E. Wind NW, force 7 (backing and increasing in strength). Barometric pressure 994·2 mb at sea level (decreasing). Short w'ly swell, height 3 m, rough seas. Overcast, C_L7. Slight rain, visibility 6+ n. mile.

23rd, 0330 GMT. wind W'N, force 12 (backing). Barometric pressure 994·2 mb at sea level (rising slightly). w'ly swell, height 4–5 m, very rough seas. Overcast, C_L7. Visibility less than 1 n. mile (owing to heavy spray).

23rd, 0345 GMT. Position 09° 07′S, 81° 41′E. Wind wsw, force 12+. Barometric pressure 994·4 mb at sea level (rising). Short w'ly swell, height 5+ m, very rough seas. Overcast, C_L7. Visibility less than 1 n. mile (heavy spray).

23rd, 0400 GMT. Estimated position of centre of cyclone 09° 18′S, 81° 48′E.

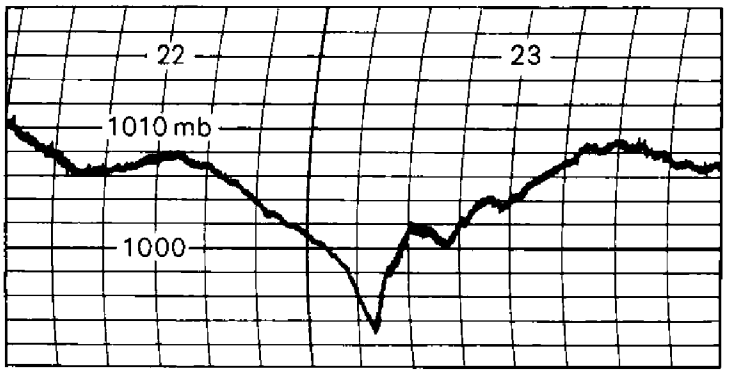
23rd, 0430 GMT. Position 08° 56′S, 81° 36′E. Wind sw'S, force 11–12 (steady and decreasing slightly). Barometric pressure 998·6 mb at sea level (rising). Short w'ly swell, height 5 m, very rough seas. Overcast, C_L7, visibility poor (heavy spray, but visibility increasing since last report).

23rd, 0500 GMT. Position 08° 45′S, 81° 32′E. Wind sw'w, force 9 (backing and decreasing in strength). Barometric pressure 1000·2 mb at sea level (rising). Short sw'ly swell, height 3–4 m, rough seas. Overcast, C_L7. Visibility 8+ n. mile (slight to moderate spray).

23rd, 0530 GMT. Barometric pressure falling, 1000·1 mb at sea level.

23rd, 0630 GMT. Barometric pressure level, 1000·1 mb at sea level.

23rd, 0730 GMT. Barometric pressure rising, 1001·7 mb at sea level. Wind w'ly, force 7–8 and decreasing in strength. Weather improving rapidly.



At 1800 GMT on the 23rd, when the vessel was 200 n. mile to the north of the cyclone, the 3-hourly weather reports were suspended and course was altered to 300°(T).

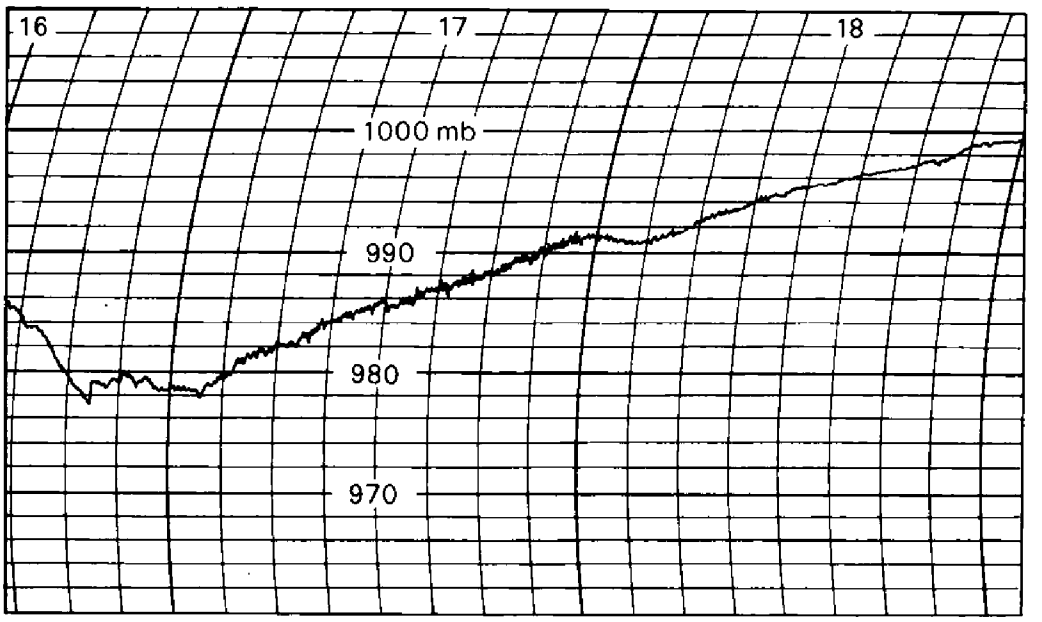
Position of ship at 0600 GMT on 22nd: 14° 20′S, 86° 06′E.

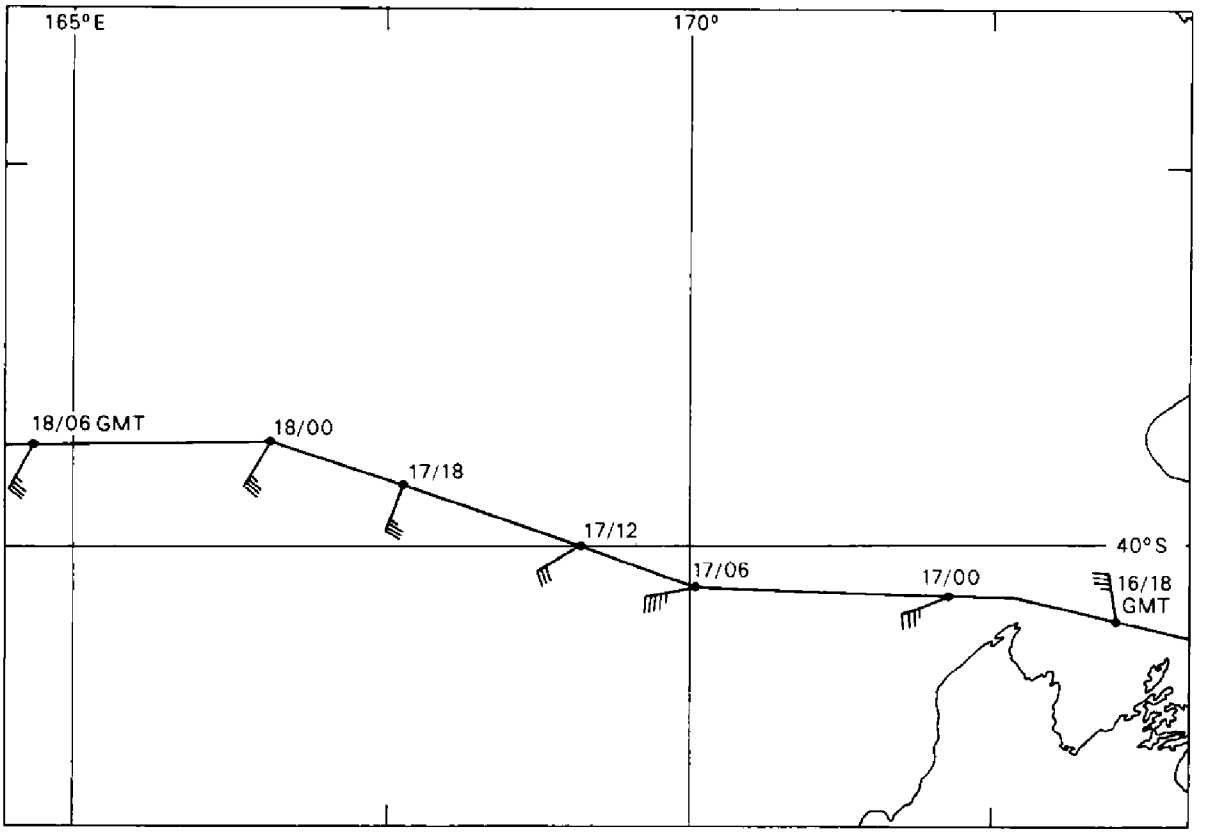
SEVERE GALE

Tasman Sea

m.v. *Australian Venture*. Captain P. Grimanes. Wellington to Melbourne. Observers: the Master and all Observing Officers.

17–18 May 1983. The vessel left Wellington at 1006 GMT on the 16th; 45–55 kn winds were forecast for Cook Strait but only 30 kn northerlies were encountered. After passing Cape Farewell the wind backed to wsw and sw and increased to force 9 with gusts to 60 kn. Very rough seas and a short, heavy swell necessitated a reduction in speed to 10 knots. The weather moderated rapidly from 0600 GMT on the 18th.





Position of ship: as shown in sketch.

Note. The *Australian Venture* is an Australian Selected Ship.

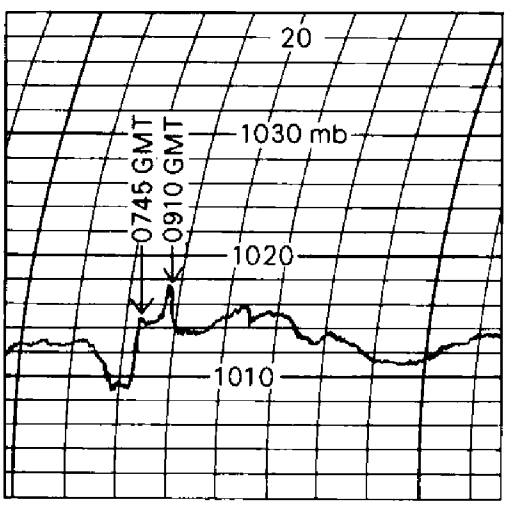
LOCAL STORM CONDITIONS

Houston Ship Channel

m.v. *New Zealand Caribbean*. Captain R. J. Tindall. At Houston, Texas. Observers: the Master and ship's company.

20 May 1983. The vessel had arrived off Galveston at 0415 GMT and at 0745 GMT was berthing at Barbours Cut container terminal. Whilst in the process of securing at the berth, the ship was struck by sudden, violent northerly storm conditions. Winds gusting to 50–60 knots were accompanied by torrential rain, thunder and lightning. By 0810 GMT conditions had eased, and berthing operations could be resumed. At 0900 GMT the wind had died away to force 2, but at 0910 a second, less violent storm passed over the ship.

Each storm was marked by rapid pressure changes, as can be seen from the sketch. Press and radio coverage later in the day reported extensive damage from storms, tornadoes and flooding in the Houston area. Some ten lives were lost during the period.



Weather conditions: at 0500 GMT, and until immediately before the storm: dry bulb and wet bulb 24·0 °C, barometric pressure 1012·0 mb, wind SE, force 2, sky partly cloudy with saturated 'wet air' conditions, visibility good;

at 0800 GMT: temperatures not recorded, pressure 1009·0 mb and rising rapidly, wind N'ly, force 10–11;

at 0900 GMT: dry bulb and wet bulb 18·5 °C, pressure 1014·5 mb, wind W'ly, force 2, sky cloudy (seven oktas).

Position of ship: 29° 45′N, 95° 18′W.

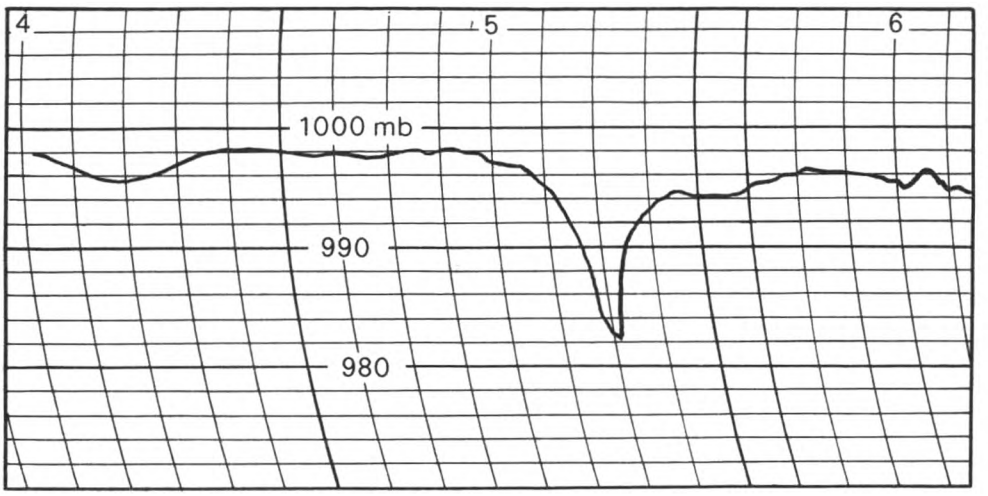
Note. The *New Zealand Caribbean* is a New Zealand Selected Ship.

SEVERE GALE-FORCE SQUALL

English Channel

m.v. *Australian Venture*. Captain P. Grimanes. Zeebrugge to Liverpool. Observers: all Observing Officers.

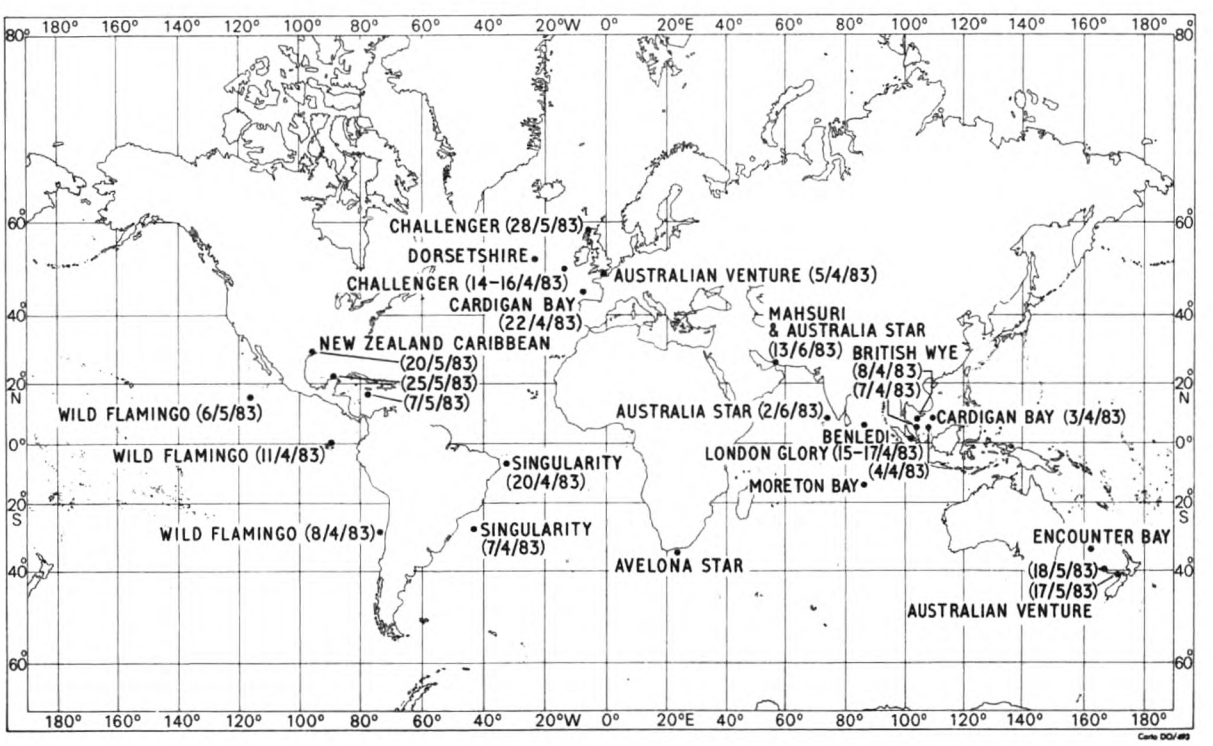
5 April 1983. Whilst transiting the English Channel on a course of 260°(T) at a speed of 16 knots, the vessel encountered a severe gale-force squall. The wind veered from SSW, force 6 to NNW, force 10 for about 40 minutes and then backed to W'ly, force 5–6.



Weather conditions: air temperature 9·5 °C, sea temperature 4·2, barometric pressure 982·2 mb, wind NNW, force 10.

Position of ship at 1830 GMT: 50° 25′N, 00° 45′W.

Note. The *Australian Venture* is an Australian Selected Ship.



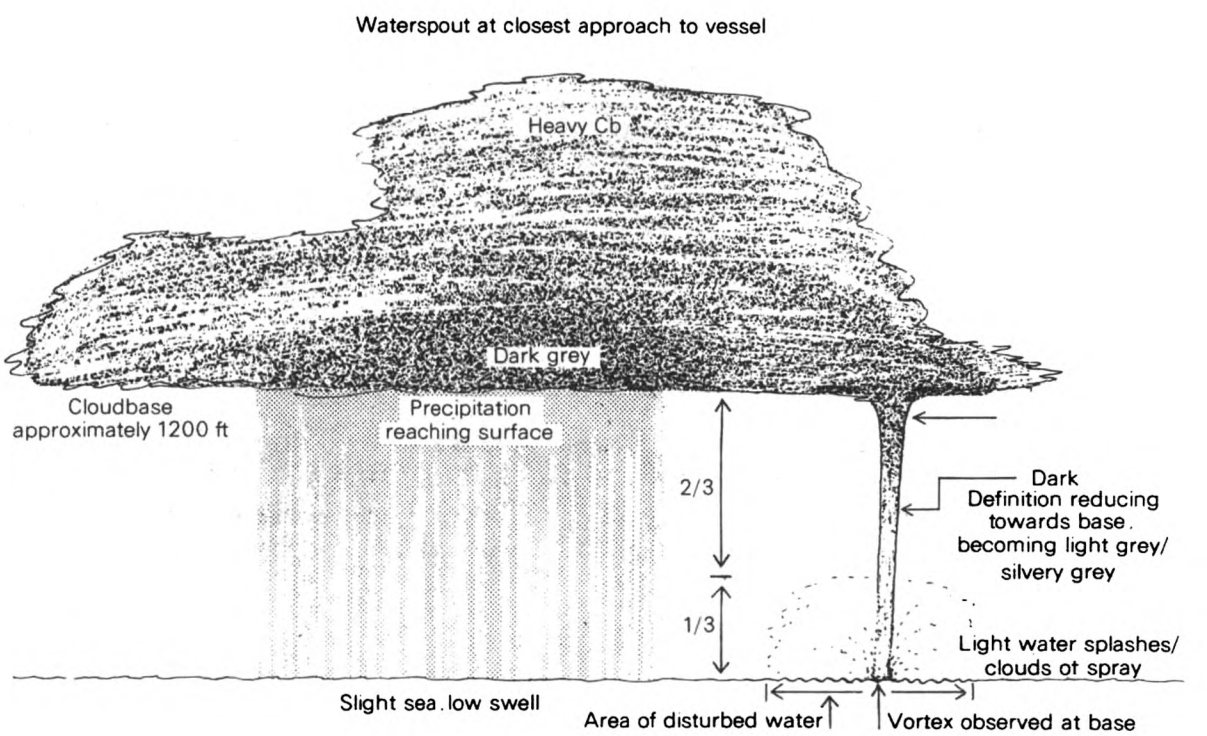
Position of ships whose reports appear in *The Marine Observer's Log.*

WATERSPOUT

Arabian Sea

m.v. *Australia Star*. Captain D. Mackillop. Fremantle to Mutrah. Observers: the Master, Mr C. Grayson, 2nd Officer and Mr–. Watson, A.B.

2 June 1983. At 0200 GMT a waterspout was observed, forming fine on the starboard bow at a distance of 4 n. mile. It had a duration of approximately 20 minutes and when fully developed it passed at a distance of 1 n. mile from the vessel. It was about 4 n. mile from the vessel when it broke up. Following the passage, it remained intact for 10 minutes, but in its final stages the column became very distorted and eventually collapsed, parting its spout at approximately one-third of its height from sea level.

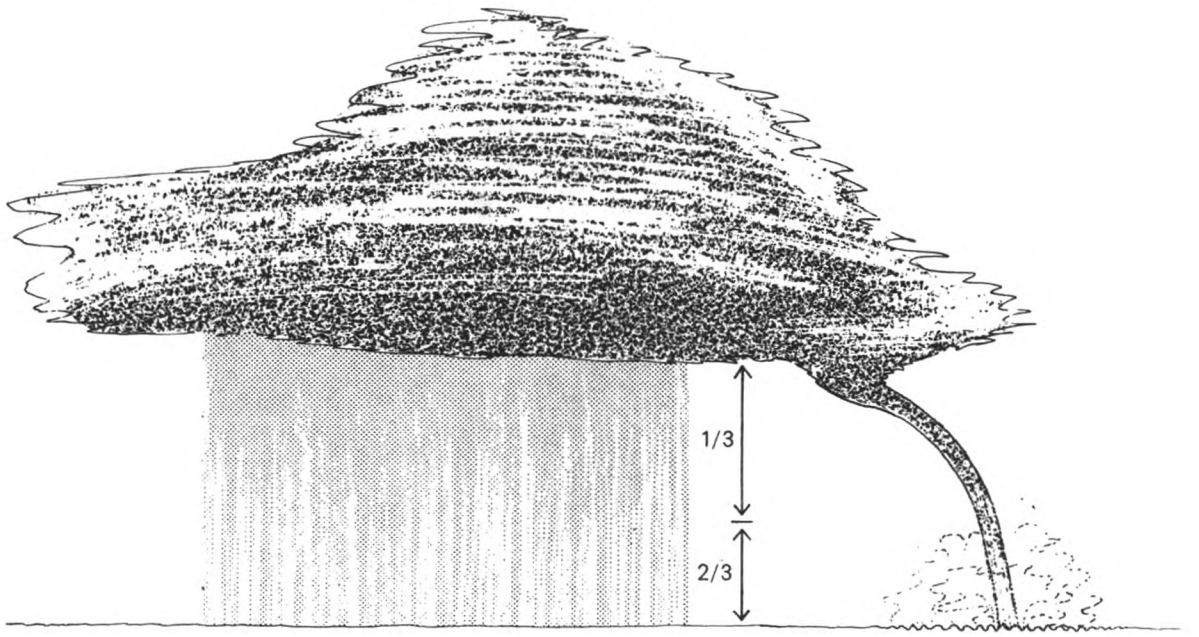


Another waterspout had been observed 15 minutes earlier, but it was partially obscured by clouds and rain.

Weather conditions: dry bulb 29·8 °C, wet bulb 26·5, barometric pressure 1009·3 mb, wind W'N, force 4.

Ship's course and speed: 318°(T) at 18·5 knots.

Waterspout prior to collapsing



Position of ship: 08° 46′N, 74° 41′E.

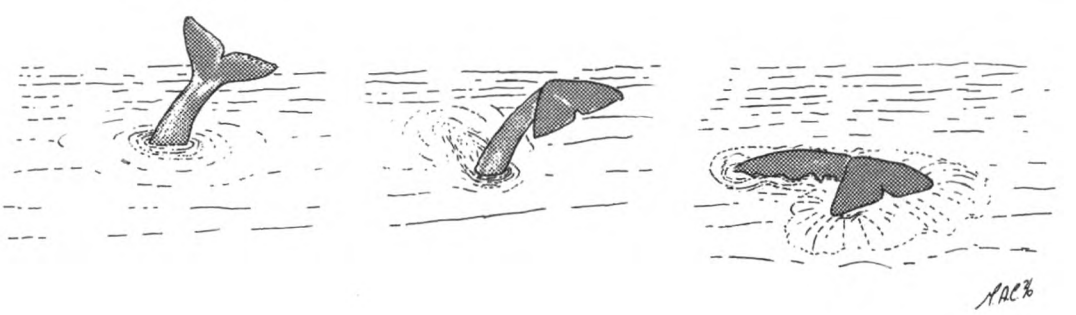
Note. The *Australia Star* is an Australian Selected Ship.

CETACEA

North Pacific Ocean

m.v. *Wild Flamingo.* Captain F. G. Bevis. Valparaiso to Balboa. Observers: Mr T. Chantler, Chief Officer and Mr M. A. Cook, 2nd Officer.

11 April 1983. At 2235 GMT two unidentified whales were observed on the vessel's port bow, approximately 1½ n. mile distant and occasionally 'blowing'.



When just forward of the vessel's beam, one of them was seen to repeatedly raise its tail clear of the water completely and to slap its tail flukes on to the surface approximately every 5 to 10 seconds. The whale could be seen slapping water well astern of the vessel. During observation no other part of body or fins was seen. The flukes were dark grey/black and gave the impression of being very

large. The second whale was not seen during the encounter, after the initial sighting. Both were heading in a sw'ly direction.

Sea temperature 29·4 °C, slight sea, wind w'ly, force 3.

Position of ship: 00° 13′N, 80° 57′W.

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

'The size, shape and colour of the flukes together with the behaviour pattern all point to these being sperm whales (*Physeter macrocephalus*).

South Atlantic Ocean

m.v. *Singularity*. Captain G. Mattey. Port Stanley to Vittoria (Brazil). Observers: Mr J. Gray, Chief Officer and Mr L. C. Pink, 2nd Officer.

7 April 1983. At 2035 GMT one whale was sighted which was thought to be a pilot whale. It passed ½ n. mile to starboard, heading south. It was dark grey in colour on the visible parts and had a distinct head similar to that of a sperm whale, but approximately 3 m from the nose the body appreciably widened and stayed this width until about 2 m past the fin, which was about 2 m past the start of the enlarged portion. This was all that was visible above the water. When the animal blew, it was a single blow, vertical and just back from the nose.

Position of ship: 28° 15′S, 43° 39′W.

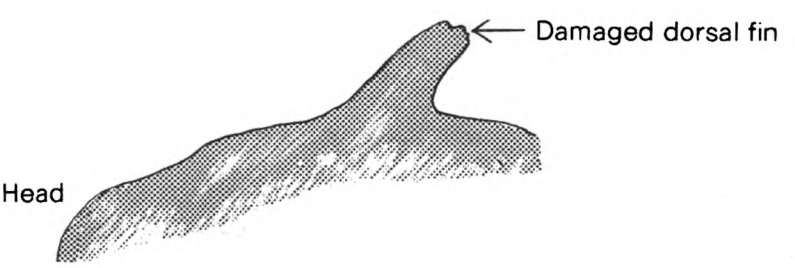
Note. Mr McBrearty comments as follows:

'No, this isn't a pilot whale nor is it any relation of the sperm whale. I believe what the observers have seen is a ziphiid, possibly one of the *Mesoplodon* species but without more detail it would be impossible to suggest which.'

Eastern North Atlantic and North Minch

R.R.S. *Challenger*. Captain P. J. McDermott. Falmouth to Falmouth via Porcupine Seabight. Observers: the Master and ship's company.

14 April 1983. At 1910 GMT a large mixed school of pilot whales and dolphins was observed. The school was swimming in a generally N'ly direction at approximately 2–4 knots. Approximately 20 pilot whales and 5 dolphins were observed. The species of dolphin was not identified as the range from the vessel was approximately ¼–½ n. mile. The pilot whales were observed as close as 100 m from the ship, sounding as the ship approached more closely. Several large pilot whales up to 6–8 m in length were in the school together with much smaller (young?) animals. One of the largest whales had a dorsal fin badly damaged, with the tip broken off as shown in the sketch. N.B. the dolphins were not



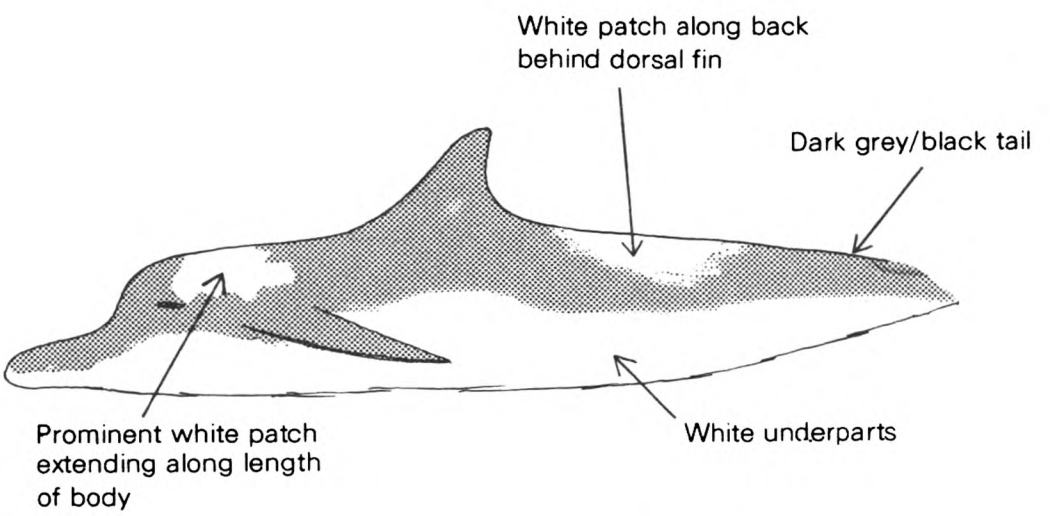
attracted to the fish which were being investigated by the precision echo sounder (in use at the time) as in previous sightings.

Weather conditions: air temperature 10·3 °C, sea temperature 11·6, sea slight to rippled, with long low w'ly swell.

16 April 1983. While the vessel was in the Porcupine Seabight a small school of pilot whales was observed. They were about 10 in number and the largest animals were up to 8 m in length. The school sounded about 100 m from the ship and was travelling in a generally N'ly direction.

Sea temperature 11·0 °C, sea slight to moderate, moderate NW'ly swell.

28 May 1983. At 2020 GMT, when the vessel was in the North Minch, with Tolsta Head (Lewis) bearing 194°(T) at a distance of $4\frac{1}{4}$ n. mile, four dolphins were observed. They were playing in the vessel's bow wave and around the precision echo sounder fish. They approached the vessel from the NW around the Butt of Lewis. Markings were as shown in the sketch and the white 'patches' were very conspicuous. The dolphins played alongside the ship for 20 minutes, and there was no apparent change in their attitude when the precision echo sounder was switched on.



Weather conditions: sea temperature 9·0 °C, rough sea, short moderate to heavy NE'ly swell.

Position of ship on 14 April: 51° 03′N, 13° 00′W.
Position of ship on 16 April: 51° 03′N, 12° 57′W.
Position of ship on 28 May: 58° 24′N, 06° 05′W.

Note. Mr McBrearty comments as follows:

'14 and 16 April. The distribution of pilot whales around our coast is generally towards the north of the British Isles. They can be seen around parts of our coast in all months of the year but there is an increase of sightings between June and September.'

'28 May. Despite the rather long beak shown on the drawing, I think that the prominent white markings and tall curved dorsal fin indicate the probability that this is a white-beaked dolphin (*Lagenorhynchus albirostris*).

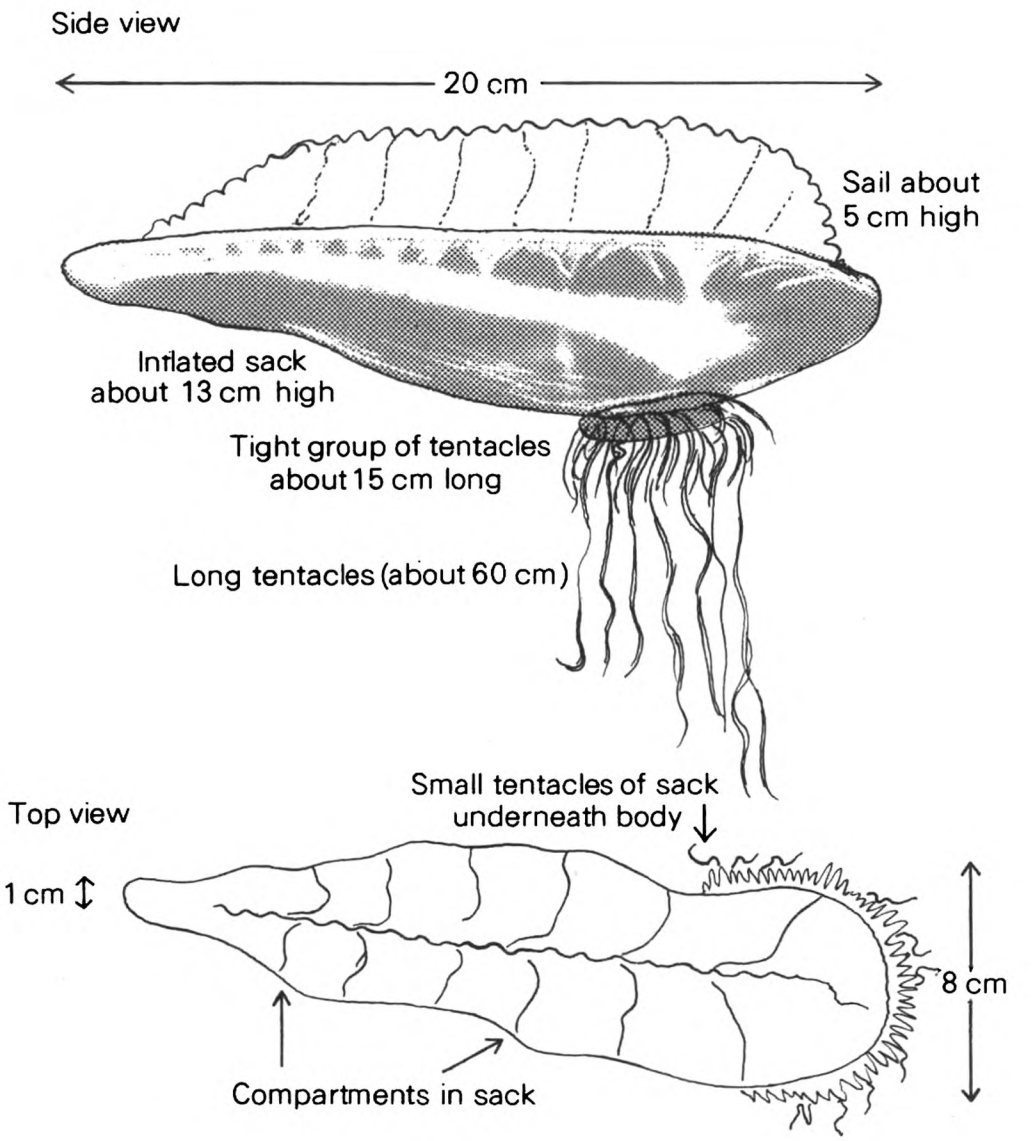
JELLYFISH

South Atlantic Ocean

m.v. *Singularity*. Captain G. R. Mattey. Vittoria (Brazil) to Pasajes. Observers: Mr J. K. Gray, Chief Officer, Mr L. C. Pink, 2nd Officer and Mr A. G. Coull, 3rd Officer.

20 April 1983. While the vessel was stopped for repairs, 6 or 8 jellyfish were seen close by. The largest one was caught in a bucket and brought on board. It was about 20 cm long and 18 cm high from its base to the top of its sail. The top edge of the sail was bright pink and serrated along its edges and the inflated sack under the sail was mauve and seemed to be made of several compartments.

The inflated sack was much narrower at one end than at the other, and it was the large end that had the tentacles hanging from it. The tentacles were dark mauve in colour and were in a tight bunch about 15 cm long springing from this one spot at the large end. There were also about a dozen tentacles of length about 60 cm hanging from the bottom of the tight-knit bunch. The jellyfish was about 8 cm across at its widest part and about 1 cm at its narrowest.



Position of ship: 06° 29′S, 32° 41′W.

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

'The very careful description and photograph were of the Portuguese man-of-war, *Physalia*. The tentacles, described as being about 15 cm long, were in fact tightly contracted in the face of danger; extended they can reach out to some 12 or more metres. *Physalia* are often reported from warmer seas (and further records would be much valued) most recently in April 1980.'

BIRDS

Bay of Biscay

m.v. *Cardigan Bay*. Captain A. J. Palmer. Port Said to Southampton. Observers: Mr J. L. Peterson, Chief Officer and Mr B. A. Mullan, Radio Officer.

22 April 1983. A large seabird was sighted close to the vessel planing just above sea level. It had long narrow wings and the colouring of an immature bird, with brownish upper wings and white underbody and axillars. From 'Tuck and Heinzel' identification would seem to point towards a young albatross, which would seem unlikely in view of the vessel's position.

Position of ship: 45° 35′N, 08° 06′W.

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

'While one cannot rule out the possibility, I think this bird is more likely to have been a Shearwater—probably Cory's (*Calonectris diomedea*), it being fairly large, with brownish upper and white underbody and wings, with a very smooth gliding flight pattern, in many ways similar to an albatross.'

South China Sea

m.v. *Cardigan Bay*. Captain A. J. Palmer. Hong Kong to Singapore. Observers: Mr. K. W. Smith , 2nd Officer and Mr B. A. Mullan, Radio Officer.

3 April 1983. At 0600 GMT, with a calm sea and under a clear blue sky, a single adult blue-faced booby (*Sula dactylatra*) was observed circling the ship. It had a blue bill, grey legs and white head, making it easily identifiable. During one particular circle of the ship it seemed to close its wings and dive with considerable velocity into the water to starboard. It remained there after one unsuccessful attempt at take-off until out of sight from the ship, and was thought to be feeding.

After a voyage so far lacking in marine/bird activity, this day was regarded as a bonus with schools of dolphins, fish leaping from the water and birds sighted; spring had come at last.

Position of ship: 09° 08′N, 109° 44′E.

Note. Captain Young comments as follows:

'Concur—Blue-faced Booby (*Sula dactylatra*). The dark tail feathers also help to distinguish it from the Red-footed Booby (*Sula sula*) which is similarly dispersed.'

m.v. *London Glory*. Captain P. J. Wright. Ube (Japan) to Singapore. Observers: Mr K. T. Cederholm, 2nd Officer and Quartermaster Sawant Mushtaq.

4 April 1983. At 1030 GMT a bird landed briefly on the signal yard-arm above the bridge; it only stayed for about one minute and the description is therefore not as detailed as could have been wished.

The bird was about 20 cm in length and had a wingspan of 25 cm; it resembled in shape, if not in size, a kingfisher. The beak was long, straight and pointed, about 5 cm in length and of a bright orange colour. The upper body was brown and the lower body a creamy white. The underside of the wings was a golden brown colour, with a distinctive D-shaped patch at two-thirds of the length from the body on each wing, the 'flat' side of the 'D' being parallel with the leading edge of the wing.

The Quartermaster said that it was called a Bul-bul and that, like a Mynah bird, it could be taught to speak.

Weather conditions at time of sighting: dry bulb 29·2 °C, wet bulb 25·2, barometric pressure 1009·7 mb, wind light airs.

Position of ship: 06° 17′N, 108° 09′E.

North Pacific Ocean

m.v. *Wild Flamingo*. Captain F. G. Bevis. Balboa to Tokyo. Observers: the Master and ship's company.

6 May 1983. At about 1200 GMT two Madeiran Storm Petrels were discovered on the boat deck. Both were exhausted and wet and had oil on their wings. They were cleaned as well as possible with soap and water (not detergent) and given a saucer of water and assorted pieces of bread,cornflakes, fish etc. and left in a sheltered position, in a shallow cardboard box on deck. Both died within two days, having appeared weak and unable even to walk, during that time. Unfortunately both were 'buried at sea' before any detailed examination or measurement was possible. Both Petrels were about the size of a starling, with the markings the same as those described in the 'Seabirds' Field Guide by Tuck and Heinzel.

Position of ship: 15° 18′N, 115° 42′W.

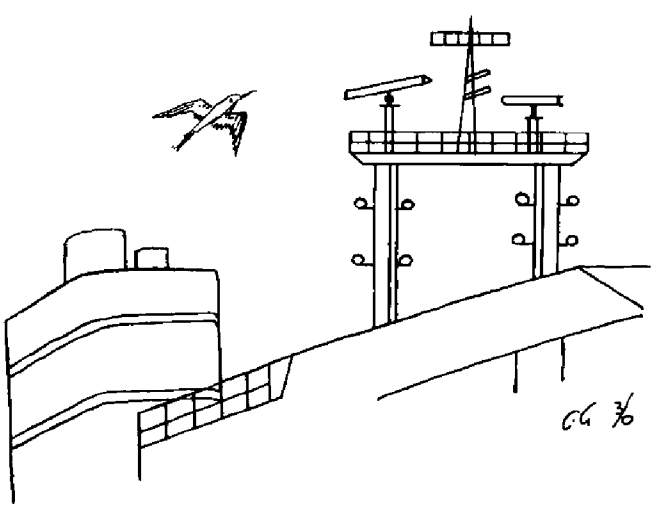
Note. Captain Young comments as follows:

'It is a pity that these birds did not respond favourably to kind treatment, but unfortunately this is not infrequently the case. It is also a pity that the opportunity was not taken to make a thorough examination of the birds as it is most difficult to make a 'positive' identification of the various species of Storm Petrel from a ship, as I know from bitter and frustrating experience.'

Gulf of Mexico

m.v. *New Zealand Caribbean*. Captain R. J. Tindall. Vera Cruz (Mexico) to Cristobal (Panama Canal Zone). Observers: Mr R. Coote, 2nd Officer, Mr G. C. Grey, 3rd Officer, Cadets A. Browne and R. Mitchell, and Mr W. Daniels and Mr L. Cook, A.B.s.

25 May 1983. At about sunset a large frigate bird was observed above the ship, in the vicinity of the funnel. The bird remained with the vessel for some six hours, varying its position only slightly and occasionally during that time, and was not seen to use its wings. It appeared to be 'riding' the thermal currents from the funnel, and the slipstream from the ship's very prominent signal/radar mast.



Weather conditions: dry bulb 26·4 °C, barometric pressure 1011·0 mb, wind NE, force 3, sky cloudless.

Course and speed: 090°T at 19·0 knots.

Position of ship at 0300 GMT on 26th: 22° 18′N, 89° 04′W.

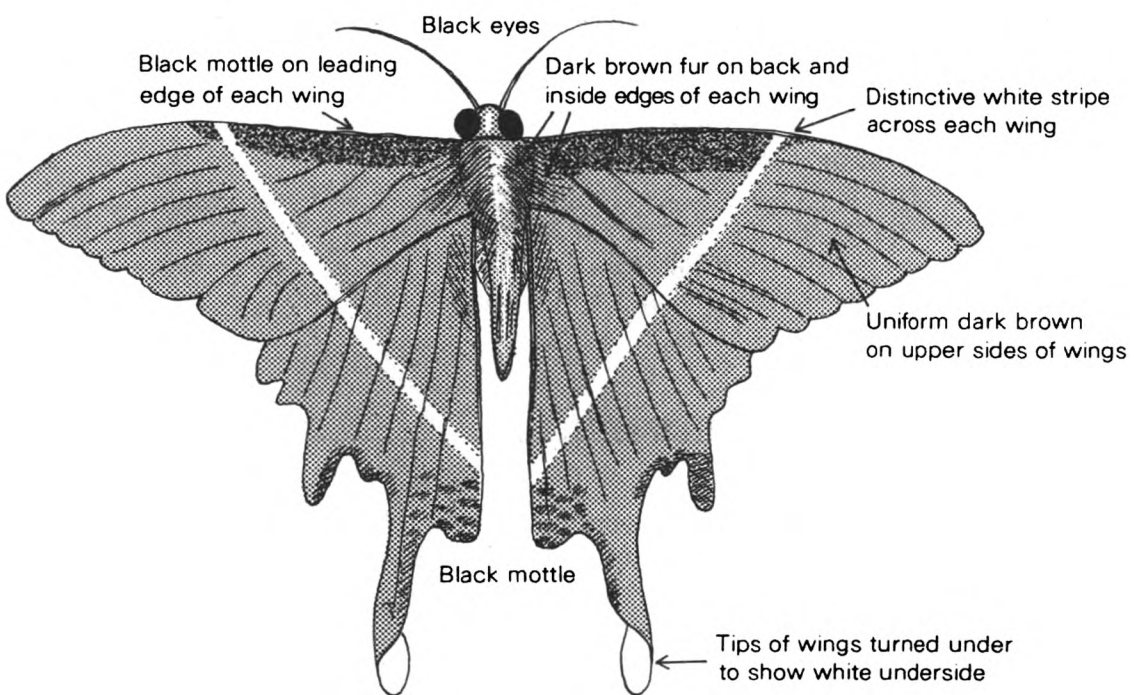
Note. The *New Zealand Caribbean* is a New Zealand Selected Ship.

INSECTS

Sumateran waters

m.v. *London Glory*. Captain P. J. Wright. At Dumai, Sumatera. Observers: the Master, Mr K. T. Cederholm and Mr G. Hicks, 2nd Officers and Mr A. Fox, 3rd Officer.

15–16 April 1983. Whilst the vessel was at anchor, moths of the kind shown in the sketch were observed on and around the vessel throughout the night. The



Pilot advised great caution in handling them and said that the dust on the wings could cause severe damage to the eyes. Their flight pattern was peculiar in that they only seemed to be able to make headway in absolutely still air; if there was a breeze they seemed to 'give up' and drop into the water or on to the land, nevertheless, if over water, they did not let the wind carry them to land. The wingspan was about 13 cm and colouring as indicated in the sketch. The underside was similar, except for the light-brown (coffee) colour. The black mottle was overall on the front wings and less evident on the rear wings. The white stripe was just as distinctive on both sides of the wings.

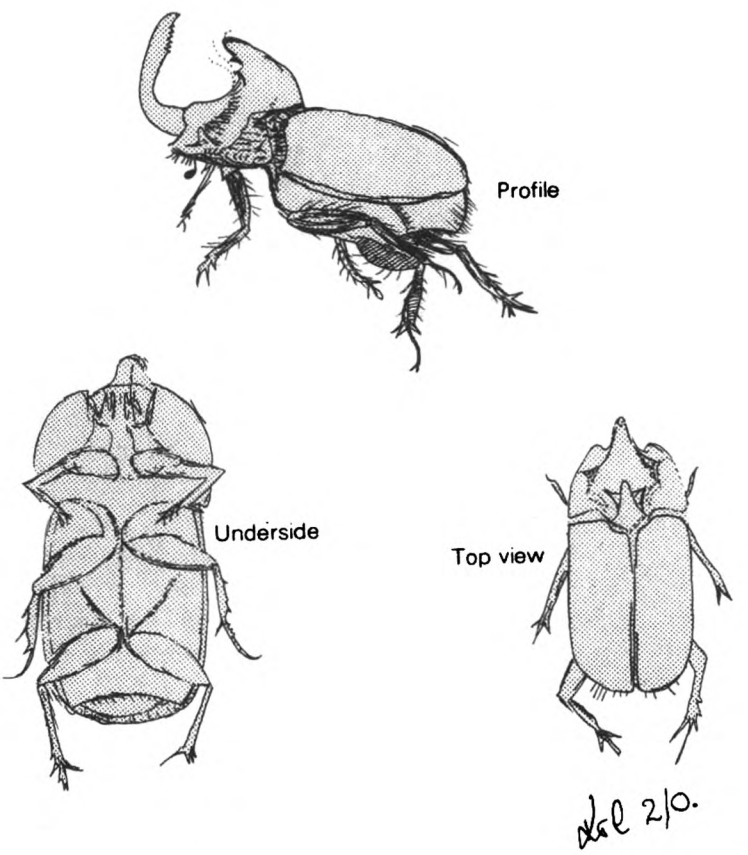
Position of ship: 01° 35′N, 101° 20′E.

Note. Mr Allan Watson, of the British Museum (Natural History), considers the moths to have been uraniid moths *Lyssa zampa* (Butler). He states that the supposed irritant properties of the scales of this species have not been reported in the literature but certainly hold true for a few species in other families of moth.

Indian Ocean

m.v. *London Glory*. Captain P. J. Wright. Dumai (Sumatera) to Long Beach (California). Observers: Mr M. Evans, 3rd Officer and Mr G. Lee, Chief Engineer Officer.

17 April 1983. The insect shown in the sketch was found dead on deck after the vessel had left Dumai. The general opinion on board was that it was a Rhinoceros Beetle. It was black and shiny all over (almost plastic-looking) except for ginger hair around the 'stern' and mouth and on the legs. Its length was 5·5 cm with width 2·5 cm and height 2 cm.



Position of ship at 0600 GMT: 01° 48′N, 101° 48′E.

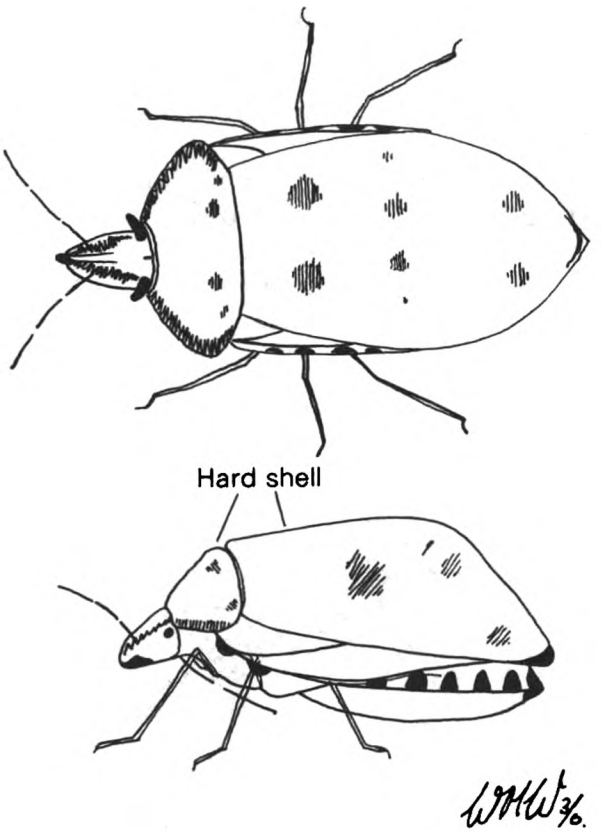
Note. Mr L. Jessop, of the British Museum (Natural History), comments as follows:

'From the drawing provided it is clear that the specimen is a rhinoceros beetle. There are several species to which this common name is applied; your specimen is a representative of the species *Trichogomphus bronchus* which is quite common in South-east Asia.'

Tasman Sea

s.s. *Encounter Bay*. Captain T. L. Watson. Botany Bay to Auckland. Observer: Ms W. M. Winter, 3rd Officer.

29 May 1983. At 0200 GMT, when the vessel was one day out from Botany Bay, the insect shown in the sketch was found on the bridge deck. The beetle measured 2 cm in length and 1·2 cm in maximum width. The soft body was covered by a hard exterior shell over its complete back, being hinged with wings possibly underneath. A feeler was observed to extend from the underside of the head beneath the body.



Position of ship: 34° 12′S, 161° 48′E.

Note. Mr W. R. Dolling, of the British Museum (Natural History), has identified the beetle as a shieldbug, *Tectocoris diophthalmus* (Thunberg). This species is widely distributed in Australia and the South Pacific across to Fiji, Samoa and Tonga and in the other direction to Vietnam and the Philippines. It feeds on cotton plants and Hibiscus.

BIOLUMINESCENCE

Gulf of Oman

m.v. *Mahsuri.* Captain G. E. Round. Bandar Abbas to Fremantle. Observers: Mr P. J. Newton, Chief Officer and Cadet L. St J. Campbell.

9 May 1983. The vessel was proceeding on a course of 149°(T) at 15 knots through the Gulf of Oman towards the Arabian Sea, having departed Bandar Abbas not three hours previously.

At 1650 GMT, a pale green glow was seen to emanate from the horizon ahead. This gave the appearance of strong moonlight upon the surface of the water. The moon, however, was not in evidence.

At 1700 GMT, rapid flashes of light were observed sweeping across the sea directly ahead of the vessel, giving the initial impression of a sudden increase of wind speed causing excessive spray.

By 1715 GMT, the vessel was totally surrounded by completely random movements of light for as far as the eye could see. The onset of this phenomenon was so rapid, not to say eerie, that the Master was called to the bridge to witness the event. For the next 15 minutes the sea was at a height of activity, displaying several systems of the most unusual bioluminescence.

The most significant of these were what appeared to be Phosphorescent Wheels, which, although they did not seem to rotate, originated from a central

hub and spread out rings in rapid succession, forming concentric circles. This was pointed out by many of those who observed them as being very similar to the instance of a stone being dropped into a quiet pond and causing waves to spread out. In this case each wave crest was a band of fantastic light. Each wheel would last for a couple of minutes, continually flashing out bands of light as though a transmitter was located at its centre. Wheels could be observed in all directions. At the same time systems of moving parallel bands could be observed, again travelling in totally random directions with respect to each other and passing off into the distance, only to be followed by another set.

It must be noted that the sheer complexity of the sea at this stage made observation very confusing to the eye. One particular characteristic of the wheels in question was the fact that their centres appeared to travel along with the ship, that is to say, a wheel on the beam seemed to remain on the beam, until fading to be replaced by a new pattern. At one stage parallel bands were seen to be emanating from the ship's side, passing away to port and starboard as if the ship had become the centre of a wheel.

The bands of light themselves were approximately 3–5 metres wide and, as mentioned, showed no preference of direction. The length of a parallel band was at least 160 m, and the diameter of the circles in a wheel ranged from possibly 3 m to 200 m. The period between successive flashes was less than a second, and the flashes were of pale green, yet having an almost golden quality.

A water sample was taken, but this showed no luminosity when shaken or stirred. Furthermore, on directing the Aldis lamp on to the surface of the water, nothing unusual could be observed. Light could not be observed as the vessel broke water and no interference was observed on radar.

Owing to the density of small craft in the area at the time, experimentation by switching off the radar and stopping the engines was not possible.

By 1730 GMT the lights seemed to become less bright and activity appeared to be decreasing. At 1740 GMT the vessel passed out of the anomaly and seemed to cross a distinct line, one side of which was active and the other dark. The lights could be seen astern, disappearing over the horizon.

Weather conditions: dry bulb 32·2 °C, wet bulb 24·5, sea temperature 27·0, barometric pressure 1002·3 mb, wind SE'E, force 4.

Position of ship at 1700 GMT: 26° 48′N, 56° 41′E.

Position of ship at 1740 GMT: 26° 36′N, 56° 47′E.

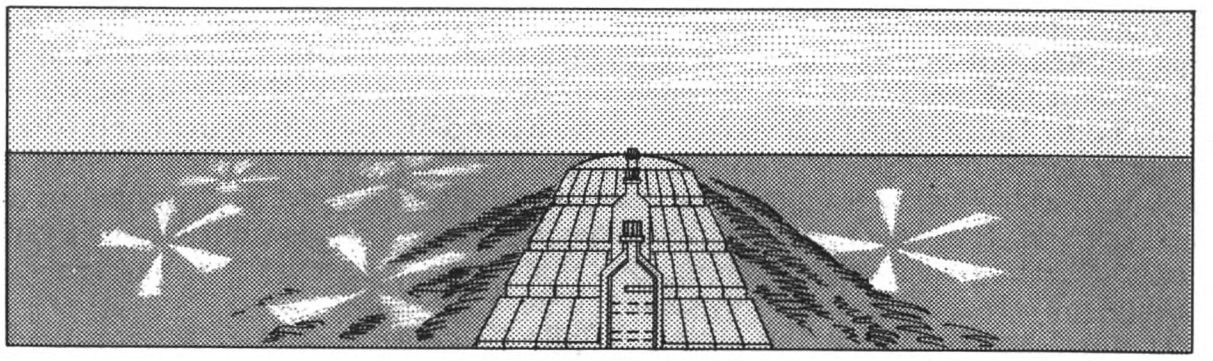
Note. Dr P. J. Herring, of the Institute of Oceanographic Sciences, comments as follows:

'This is another fascinating report of 'wheels' and associated phenomena, also very valuable in its detail. Again there is an indication that some of the phenomena were somehow associated with the vessel. Parallel bands of light are frequently associated with 'wheel' accounts but few reports have described quite such clear concentric systems. One interpretation of such wheels invokes seabed seismic activity as a source of shock waves and this area of the Arabian Sea is prone to such events, but such correlations are extremely tenuous!

m.v. *Australia Star.* Captain D. Mackillop. Jebel Ali (U.A.E.) to Karachi. Observers: Mr R. C. Savage, 3rd Officer and Mr A. Mawdsley, A.B.

13 June 1983. At 0140 GMT, as the vessel cleared the Straits of Hormuz on a course of 141°(T) at a speed of 18·0 knots, large rotating blades of luminescence were observed in all directions and extending to a range of at least 6 n. mile, which was the approximate visibility at the time owing to the ever-present local haze.

The blades of luminescence appeared to be of a silver/blue colour, increasing in size as they extended out from the centre of rotation. The phenomenon lasted approximately 6 minutes and then vanished as suddenly as it had appeared. By using the vessel's length as a reference, the diameters of the spirals were judged to vary between 100 and 200 metres.



Weather conditions: dry bulb 30·0 °C, wet bulb 29·4, barometric pressure 1000·1 mb, wind light airs, sea rippled with low swell; sky cloudless, fine and clear, with haze. (Although the sea temperature was not measured, it is presumed to have been below 29·4 °C, for within one hour the vessel passed through dense fog of the advection type.)

Position of ship: 26° 11′N, 56° 52′E.

Note. The *Australia Star* is an Australian Selected Ship.

South Pacific Ocean

m.v. *Wild Flamingo*. Captain F. G. Bevis. Valparaiso to Balboa. Observers: Mr R. P. Swinney, 3rd Officer and Lookout.

8 April 1983. At 0100 GMT bright, blue-white luminescence was visible in the vessel's bow wave and wake. Large shoals of fish were clearly visible, with the larger fish visible individually swimming away from the ship. Smaller fish were visible as luminous 'clouds'. A shoal of 35 luminous dolphins was clearly observed and counted. They left glowing trails behind them stretching from the bow to the bridge, 60 m long. Several dolphins turned away at the vessel's approach, creating loops in their trails which lasted for several seconds.

Approximate position of ship: 29° 42′S, 72° 54′W.

Note. Dr Herring comments as follows:

'This account is typical of the appearance produced by fish and dolphins when high concentrations of luminous dinoflagellates are present near the surface. The trails must have been most spectacular.'

South China Sea

m.v. *British Wye*. Captain H. Phillips. Singapore to Bangkok. Observers: the Master, Mr R. C. McAleese, 2nd Officer and Mr A. Fisk, S.M.1.

7–8 April 1983. On the 7th a bioluminescent phenomenon was observed for about 45 minutes starting at 1800 GMT; it took several forms which are listed below. On sighting the phenomenon, both ship's radars were switched off, but this made no difference. At the time of the sighting there were no other ships in the area but the fading and final disappearance coincided with the sighting and approach of another vessel. It is difficult to state exactly how bright the phenomenon was, but it was easily discernible to those on watch at the time, whereas two engineer cadets who came up from the engine room for a look could not see any sign of the phenomenon for about 3 minutes. The light given off was white with a slight hint of green.

The first type of activity seen consisted of two phosphorescent spoked wheels with centres about 1 n. mile away and about 45° on each bow. Initially the wheels rotated in opposite directions (one clockwise, the other anticlockwise) but after about 5 minutes this pattern changed to one of parallel waves approaching from right ahead and shortly after this the pattern returned to that of two spoked wheels, but this time each wheel's direction of rotation had changed. This happened several times over the next 30 minutes. It was not possible to count the number of spokes each wheel had, but the number of spokes passing each minute was approximately the same as the number of engine revolutions per minute. The spokes seemed to subtend an arc of the wheel at times equal to the arc subtended by the spaces between them and at other times they were only one-half to one-third of the width of the spaces.

Pulsating patches with waves apparently radiating out from the centre were also observed, one patch being on each side of the ship and approximately ½ n. mile away 30° forward of the beam.

At 1915 GMT on the 8th bioluminescence was again observed. It started as faint, apparently random flashes of white/light-green light on the sea surface; after about 4 minutes a pattern of counter-rotating phosphorescent wheels was established. This lasted for about 5 minutes and then changed to a pattern of rotating spiral wheels which lasted for about 3 minutes and then in turn changed to a pattern of pulsating lines approaching the ship from about 45° on each bow, the pattern being symmetrical about the ship's fore-and-aft centre line. The centres of the wheels were not visible and the width of the spokes was about one-fifth of the spaces between them. Shining an Aldis lamp made no difference to the display. A water sample was taken but showed no sign of any bioluminescence when shaken, tapped or stirred. Another ship was 4 n. mile away but did not answer calls for information about any sightings in her area. Just before the display faded altogether the wave patterns gave way to what seemed to be random flashes of light over small areas (about 2 m^2 to 5 m^2) of sea surface.

Position of ship at 1800 GMT on 7th: 06°N, 103° 30′E.

Position of ship at 1915 GMT on 8th: 08°N, 103°E.

Note. Dr Herring comments as follows:

'These phosphorescent wheel reports are most interesting. None of the current 'explanations' of these phenomena are wholly satisfactory and reports such as these will go a long way to resolving the problems. Significant features of the account are the approximate correlation of frequency with the engine revolutions and the apparent symmetry of some of the wheels about the ship's heading. Pulsating patches and travelling patches of light are also associated with other reports of such wheels (e.g. *Mar Obsr* April 1983). Wheel sightings are not common but do occur most often in the Indo-Pacific region, as in these instances, and the Northern Indian Ocean. The observers were extremely fortunate to encounter two such phenomena so close in time.'

ABNORMAL REFRACTION

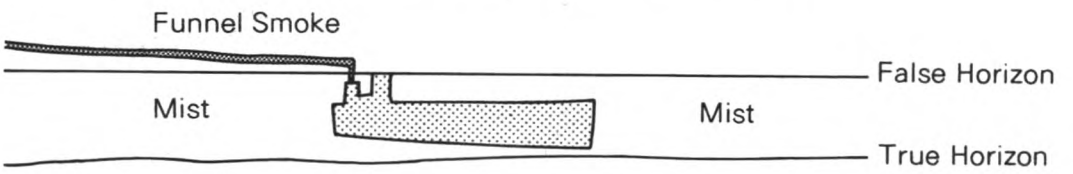
South African coastal waters

m.v. *Avelona Star.* Captain J. G. Reeve. Suez to Cape Town. Observers: the Master, Mr C. P. R. Clarke, 2nd Officer and Mr C. Purser, Chief Engineer Officer.

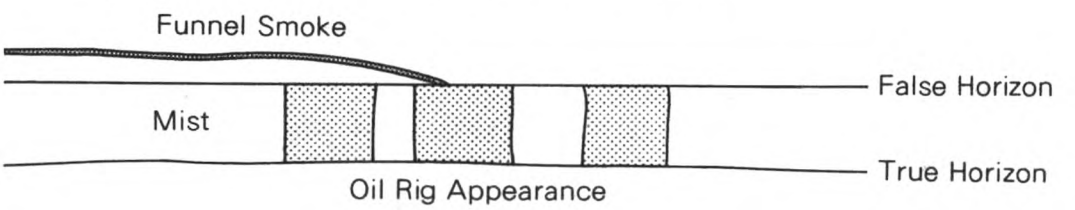
7 May 1982. During the late morning a superior mirage was observed which extended for three-quarters of the length of the horizon around the vessel. The French supertanker *Latona* first brought this phenomenon to attention when she appeared, through binoculars, to be fully loaded to her marks, but on passing close abeam at 1·5 n. mile was seen to be obviously in ballast condition

and heading eastwards around the Cape to pick up crude oil in the Arabian Gulf. Soon afterwards at 1155 GMT what appeared to be an oil-rig was visible on the port bow on a visual bearing of 320°(T). This bearing conformed with a radar target of range 17·5 n. mile and later turned out to be a bulk carrier steaming west towards the Cape. By this time it was obvious that there was a temperature inversion and that every ship encountered first played tricks on the eye. Even the Decca Navigator became unreliable!

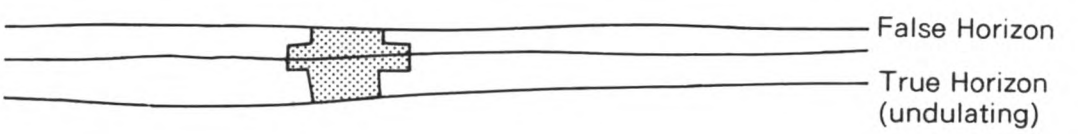
1st Mirage: 1st observation of ship at range 17.5 n. mile, 1155 GMT



1st Mirage: 2nd observation, range 15.0 n. mile, 1215 GMT



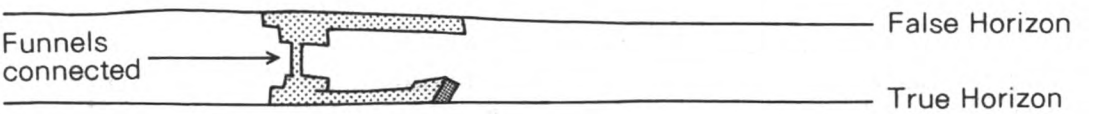
2nd observed Mirage: ship on port beam, no radar target!, 1245 GMT



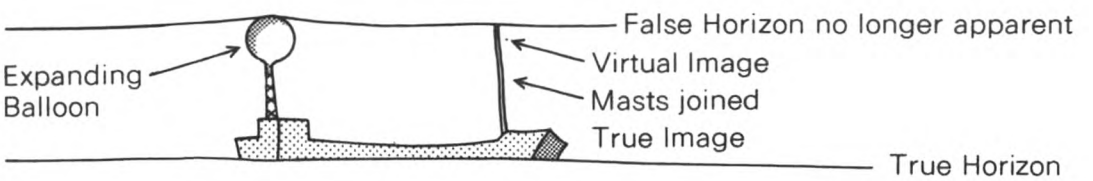
3rd observed Mirage: distance 14.0 n. mile, port beam

The last observed superior image, which was seen during the 12–4 afternoon watch, was the most amusing. At 1320 GMT an eastbound ship at distance 8·0 n. mile, whose superior image had been quite spectacular at 1315 (when it appeared as two ships one on top of the other with the funnels connected, the top ship being inverted) was fast disappearing. The last vestige of this superior image manifested itself in the shape of a balloon expanding and contracting from the ship's funnel, while the aftermast appeared to be absurdly tall. At this time the ship was close enough for the mirage effect still to be observed without the false horizon from which it emanated being seen.

3rd observed Mirage: eastbound ship, distance 10.0 n. mile, starboard bow
1315 GMT



3rd observed Mirage, distance 8.0 n. mile
1320 GMT



Weather conditions at time of observation: dry bulb 22·0 °C, wet bulb 18·6, sea temperature 15·8, barometric pressure 1020·7 mb, wind NE'ly, force 1.

Ship's course and speed 262°(T) at 18·0 knots. First target observed at radar range 17·5 n. mile, ship's visible horizon range 10·0 n. mile.

Position of ship: 34° 32′S, 23° 24′E.

Note. This observation was omitted from the April 1983 edition of *The Marine Observer.*

STELLAR SCINTILLATION

Caribbean Sea

m.v. *New Zealand Caribbean.* Captain R. J. Tindall. Cristobal (Panama Canal Zone) to Kingston (Jamaica). Observers: Mr G. Grey, 3rd Officer, Cadet R. Mitchell and Mr W. Daniels, A.B.

7 May 1983. At 0130 GMT, Venus and Sirius were both low in the western sky, Venus bearing 295°(T) at an altitude of approximately 10° and Sirius bearing 250°(T) at approximately 12° altitude. For a period of about 45 minutes, Sirius was observed to undergo rapid and brilliant flashing colour changes between red, green and white—the phenomenon rather resembling the flashing navigation lights of a distant aircraft. The display faded, with Sirius at an altitude of about 5°, at 0215 GMT. Venus, in the meantime, was in no way affected by colour changes.

Weather conditions: dry bulb 27·9 °C, wet bulb 26·0, barometric pressure 1015·1 mb, wind ENE, force 3, cloud 2 oktas of small and medium cumulus, visibility excellent.

Position of ship at 0200 GMT: 16° 31′N, 77° 25′W.

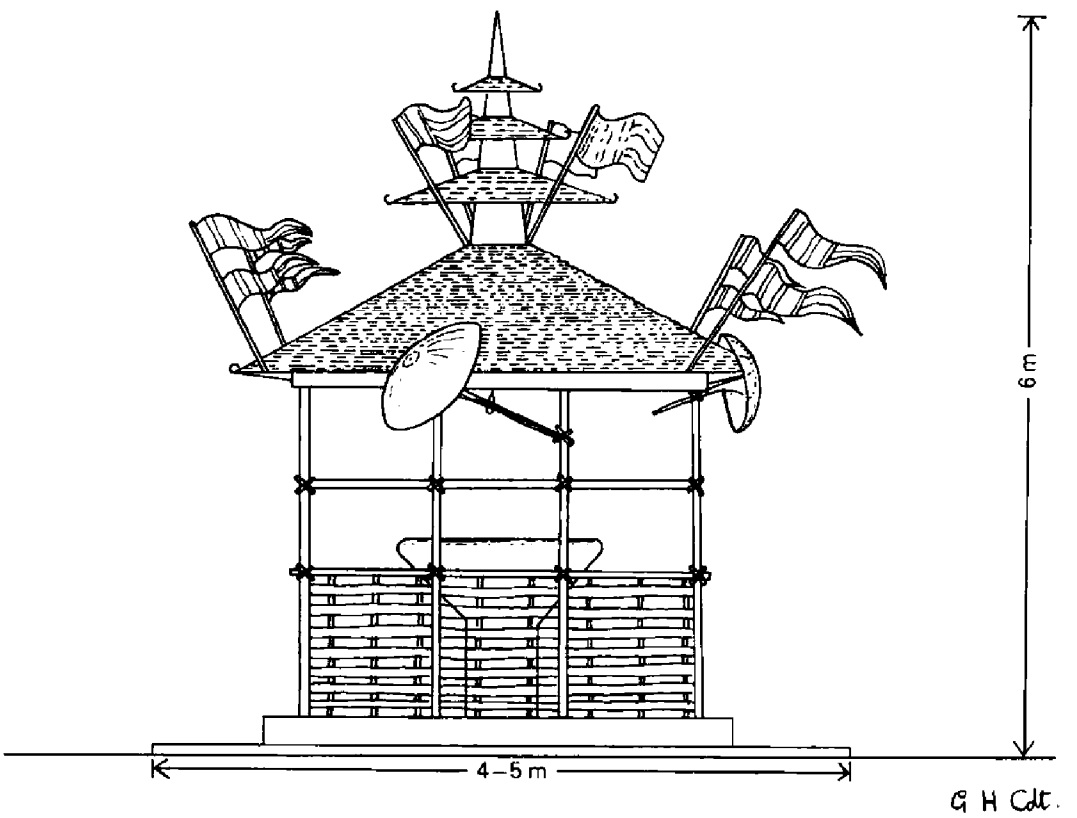
Note. The *New Zealand Caribbean* is a New Zealand Selected Ship.

UNIDENTIFIED FLOATING OBJECT

Bay of Bengal

m.v. *Benledi*. Captain O. Henderson. Tsukumi to Dammam. Observers: Mr G. Byers, Chief Officer and Cadet G. Hunter.

10 April 1983. At 0120 GMT a large, pagoda-shaped raft was seen; it was approximately 6 metres high and 4–5 metres broad. It was decked out in an array of flags and pennants (not recognized) consisting of yellow and red, first vertical then horizontal bands. On the corners of the roof Chinese parasols were attached. The whole structure appeared to be made of bamboo, plywood and rush matting, lashed to a log base. In the centre of the raft there appeared to



be an object similar to a church font and, though not seen, a bell could be heard ringing. There were no signs of life aboard. The raft was thought to be part of some Hindu religious ceremony.

Position of ship: 05° 55′N, 85° 55′E.

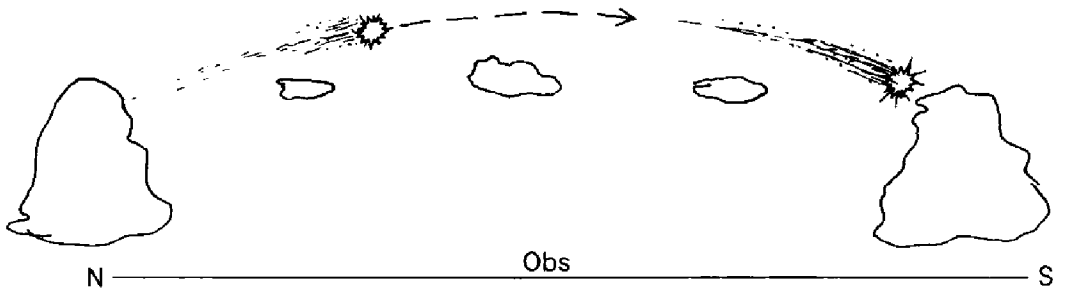
UNIDENTIFIED FLYING OBJECT

North Atlantic Ocean

m.v. *Dorsetshire*. Captain R. A. F. Edwards. Trinidad to Pentland Firth. Observers: Mr R. Holgate, 3rd Officer and Mr G. Haney, A.B.1.

9 April 1983. At 2304 GMT Mr Haney pointed out a bright white object in the sky. It was bearing approximately 360°(T) at an elevation of about 40°. It was moving rapidly southwards across the sky, leaving a bright trail behind it, like an afterglow. Also trailing astern of the object was a light trail of sparks (possibly large solid particles).

The object disappeared behind clouds, bearing about 170°(T) at an elevation of approximately 35°, and lighting the edges of the clouds. The time taken for the passage was around 20 seconds.



It was obviously a very large object, judging from its apparent size as seen from sea level. The impression given was that of an object within the atmosphere, easily showing around a one-penny piece held at arm's length.

Weather conditions at time of observation: barometric pressure 1017·1 mb, air temperature 5·2 °C, few clouds except around horizon, scattered showers.

Position of ship: 52° 34′N, 23° 34′W.

551.556.4

A DUSTSTORM OVER MELBOURNE*

By R. S. Lourensz and K. Abe†
(Head Office, Bureau of Meteorology, Australia)

The photographs (A–D on facing page) show different views of a duststorm as it advanced over the city of Melbourne at about 3 p.m. on 8 February 1983. They span a period of about 10 minutes and were taken from the roof of the 27-storey building which houses the Head Office of the Australian Bureau of Meteorology.

The dust was raised by hot, dry north to north-westerly winds averaging 33 km/h (18 kn) and gusting to 80 km/h (43 kn) as they blew over the open grazing and wheat lands of northern Victoria and south-west New South Wales (Figure 1)—an area which had become a virtual desert after experiencing one of the worst droughts on record.

The storm extended for some 500 km from Mildura in north-west Victoria (Figure 1) down to the coast near Melbourne and was up to 100 km wide. Aircraft reported dust up to heights of 2800 m, with one report of 3650 m in the Mildura area. The height of the duststorm as it approached Melbourne was 320 m. During the most intense phase of the storm, visibility was reduced to

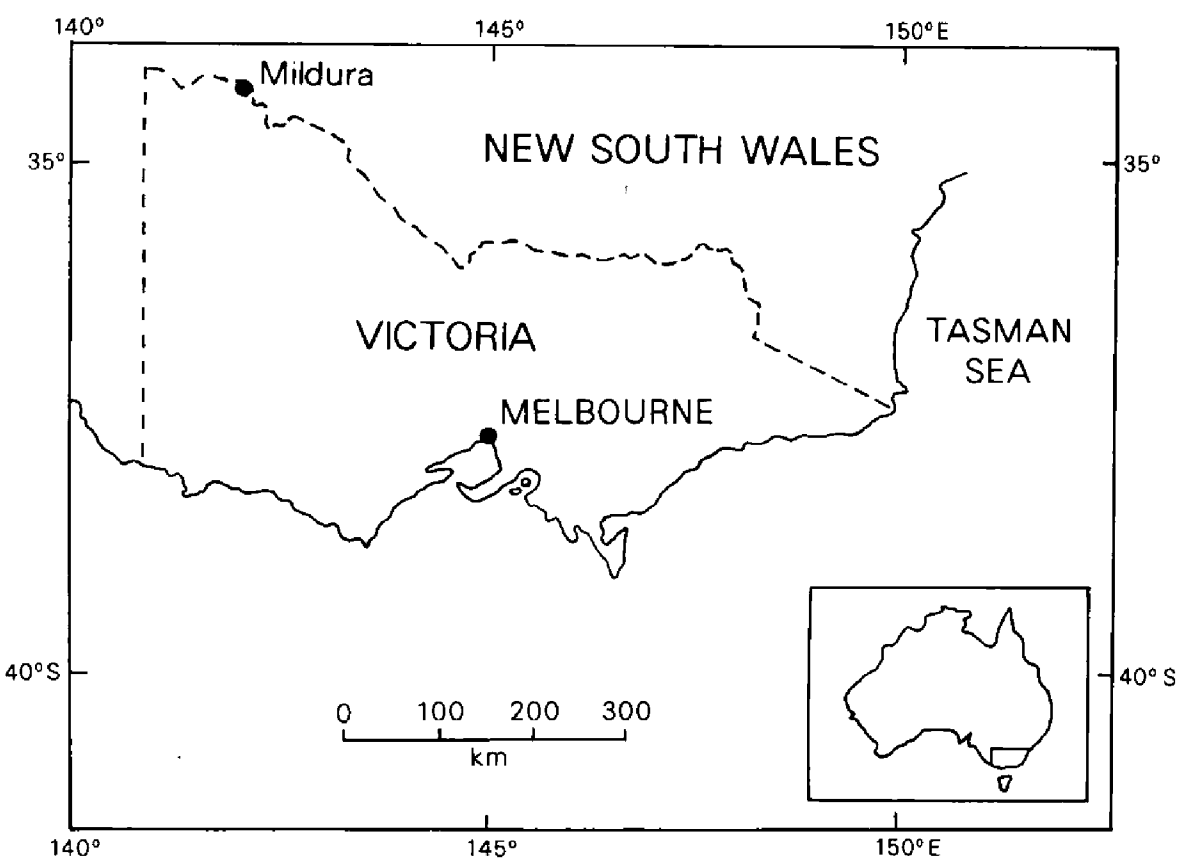


Figure 1. Locality map of south-eastern Australia

* Previously published in *Weather*, **38**, September 1983 and reproduced here by permission of the Royal Meteorological Society and the authors.

† Permanent affiliation: Meteorological Satellite Centre, Japan Meteorological Agency, Tokyo.

A

B

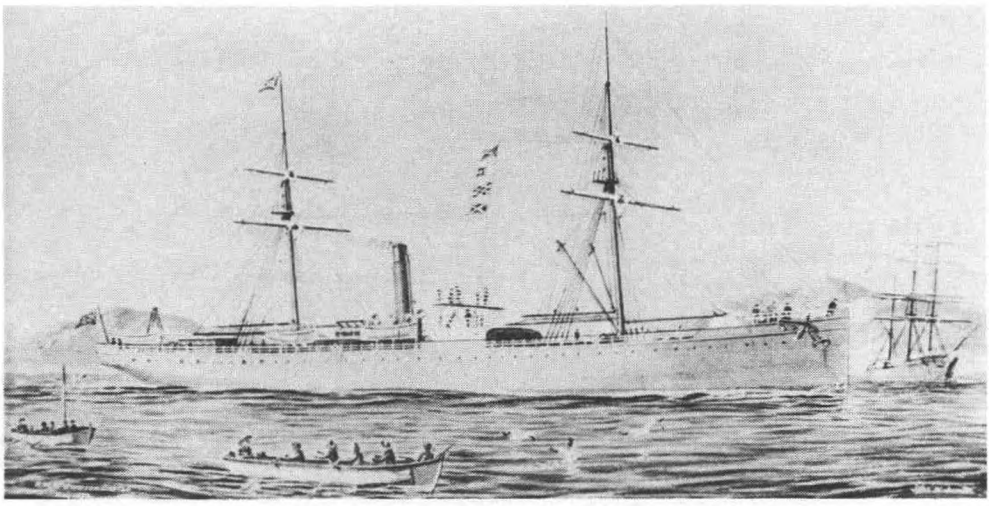
C

D

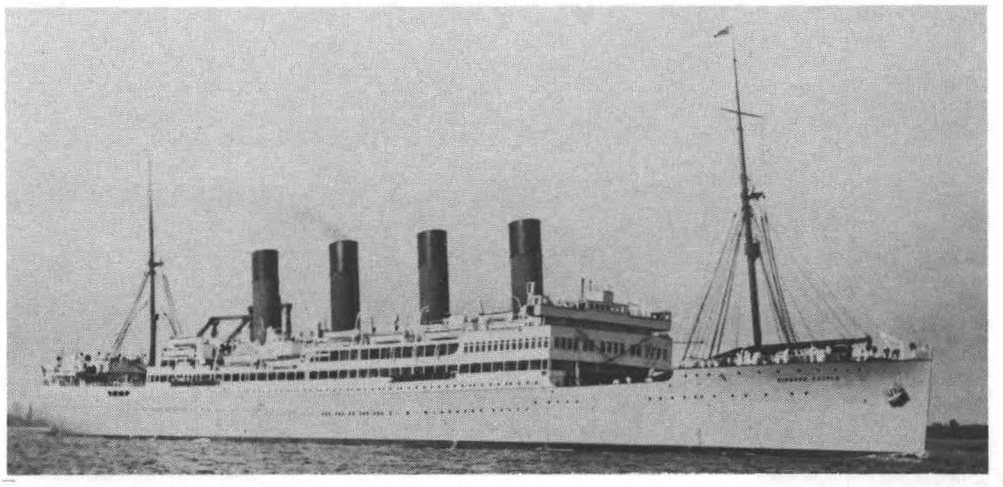
Photographs of duststorm over Melbourne (*see* facing page). (A) facing SSE, (B) facing S, (C) facing SW, (D) facing E, storm practically overhead.

Opposite page 84

Opposite page 85



Windsor Castle **2672 tons (1873)**



Windsor Castle **18 967 tons (1922)**

Windsor Castle **36 277 tons (1960)**

Photos: Union-Castle Line

VESSELS OF UNION-CASTLE LINE LIMITED (*see* page 87)

less than 100 m in the city, airports were closed and traffic came to a virtual standstill. The Victorian State Soil Conservation Authority estimated that 106 kg of dust per hectare were deposited in Melbourne suburbs by the storm—around 9½ kg per house block.

A study of the synoptic situation revealed that for a few days before the event a slow-moving anticyclone was located over the Tasman Sea, resulting in a hot, northerly airstream over much of eastern Australia. On 7 February a particularly intense low-pressure system deepened to the south of Western Australia. Its associated cold front moved rapidly towards the east of the continent and by mid-morning on the 8th was not far from the western Victoria border, as shown by the 00 GMT mean sea level pressure chart (Figure 2). The 'pre-frontal' trough reached Melbourne at about 3 p.m. (local time), changing the course of the

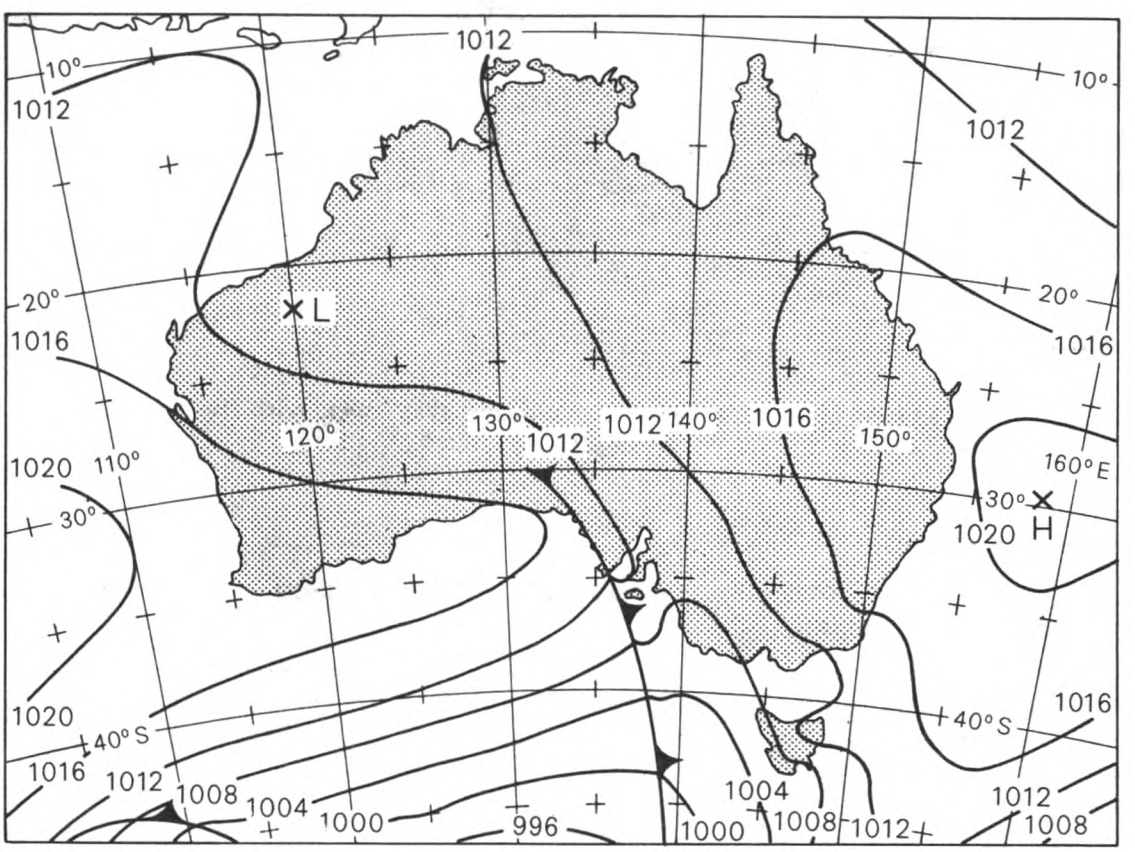


Figure 2. Mean sea level chart for 00 GMT on 8 February 1983, showing the strong north-westerly airstream over Victoria ahead of the approaching cold front and associated leading trough

south-easterly heading duststorm in such a way that it moved across the city towards the eastern suburbs. The mid-afternoon (0600) chart (Figure 3) shows the wind change associated with the trough as having passed through Melbourne. The temperature in the city was 43·2 °C shortly after 2.30 p.m., but dropped 8 °C in 15 minutes as the wind changed to the west-south-west.

The 0600 satellite picture taken by the Japanese geostationary satellite GMS-2 (not reproduced here), showed a narrow grey band which was most probably the eastern strip of the dust belt, but definition was poor owing to partial overlapping by the frontal structure.

While small-scale duststorms are quite common in Australia, particularly in rural areas, those of this magnitude are rarely observed.

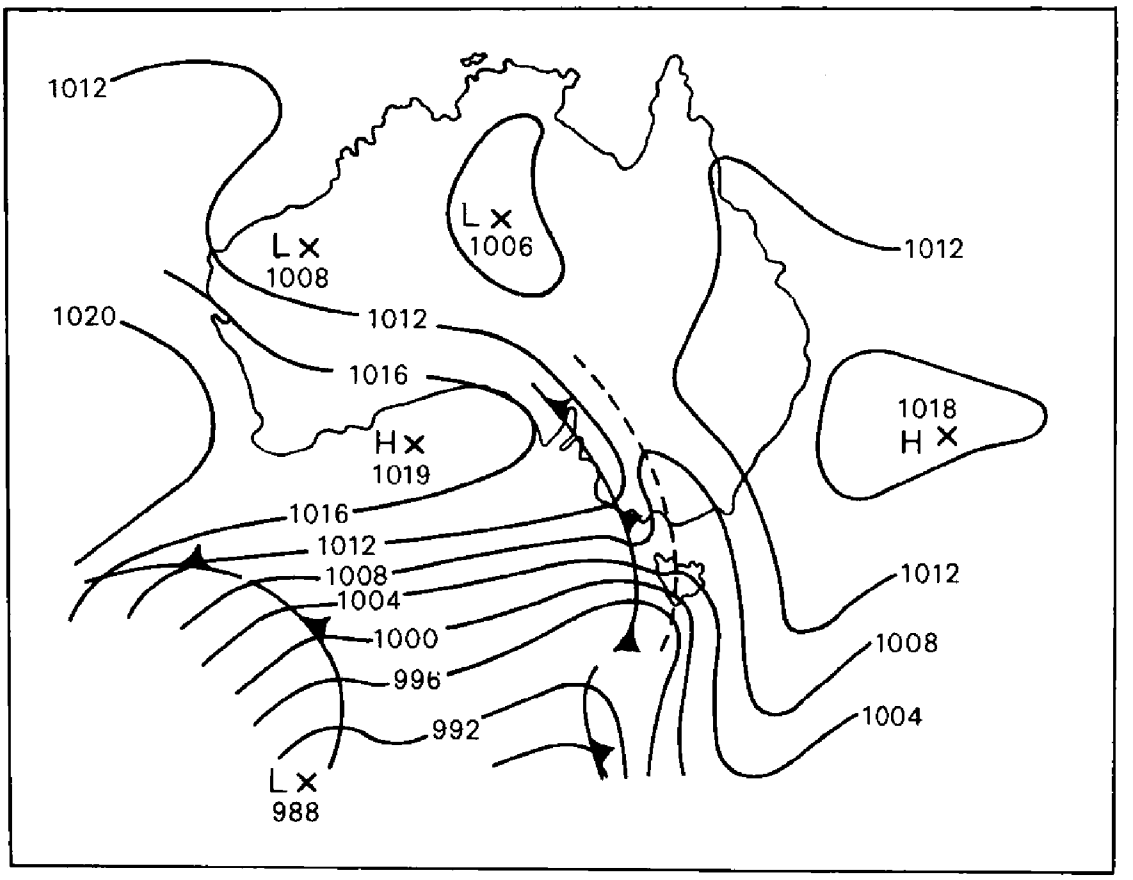


Figure 3. Mean sea level chart for 06 GMT on 8 February 1983, with the wind change now through Melbourne

Acknowledgement

This paper was originally published by permission of the Director of Meteorology, Australia.

Note. This same event was the subject of two items in The Marine Observers' Log in *The Marine Observer* for January 1984, viz. Southerly Buster, reported by s.s. *Botany Bay* and Duststorm reported by m.v. *ACT 7*.

LONG ASSOCIATION WITH SHIPOWNERS—UNION-CASTLE STEAMSHIP COMPANY LIMITED

The story of the Union-Castle Line begins as one of the growth of two separate companies and of the keen rivalry that existed between them until they came together and prospered.

The Union Steam Collier Company was formed in 1853 for the purpose of bringing coal to Southampton; five ships were ordered, of which the two largest were the *Norman* and the *Dane,* each of 530 tons. Following a spell of low employment after the Crimean war, the *Dane* left Southampton in September 1857 on the very first voyage inaugurating the South African Mail Service; the company, by now renamed the Union Steamship Company Limited, had won the contract by tender to the British Admiralty. Competition on this route soon became fierce, and the earliest required voyage time of 42 days, with a monthly service, was quickly reduced to 35 days. By 1859 the Cape Legislative Assembly had offered further incentive in the form of a bonus of £250 for every day by which a mail steamer completed the voyage from Southampton to the Cape in less than 35 days. From 1860 onwards, Union Line ships were introduced of greater size and speed, rivalling all competition that came on the scene by progressively reducing passage time, until in 1864 the voyage was reduced to 28 days.

The discovery of diamonds in South Africa in 1867 caused a rush of emigrants, much to the advantage of the Union Line. Five years later there began a period of fierce competition with ships of the London Line, or the Colonial Mail Limited, when the owner, Donald Currie, introduced his ships to the route. For nearly 30 years, his company provided alternatives to the Union Line ships, and the first *Windsor Castle* made her mark in 1873 by arriving in Cape Town only 23 days after leaving Dartmouth. When the mail contract came up for renewal in 1876, it was shared between the Union Line and the Castle Packets Company, as the rival company now became known.

In those days of intense rivalry Donald Currie, who had a flair for publicity and was intensely aware of the value in business of knowing the right people, visited South Africa and there came to know the Prime Minister in the Cape and in the Transvaal. At home Gladstone, British Prime Minister, was also a friend of his, and Currie later entered Parliament as a member for West Perthshire.

It was at about this time that the first ships of the Union Line are known to have been making observations for the Meteorological Office. The earliest records existing of an observing ship from the Union Line are those from the s.s. *German,* on a voyage from Southampton to Cape Town and back, Captain Chas. D. Coxwell, between 1 August and 21 October 1878. Many other ships of that line made meteorological observations over the next 20 years, all of them having similar ethnic names including *African, Briton, Cambrian, Celtic, Dane, Goorkha, Mexican, Moor, Norman, Nubian, Saxon, Scot* and *Spartan.*

The discovery of gold on the Rand caused a great stir in England and many prospectors made the voyage to South Africa to seek their fortunes. So great was the demand for passages at that time that it was quite a common event for tickets to be endorsed 'To sleep where any place can be found by the Chief Steward'.

In an endeavour to secure the best service for themselves by fostering competition between the two rival companies, the Cape Government had caused them to contract not to amalgamate. However, when renewal of the contract became due in 1900, both the Union and Castle companies failed to submit proposals, the contract was divided between them and there was no clause

barring amalgamation. Following initiative from Sir Donald Currie, the Union-Castle Mail Steamship Company came into being on 8 March 1900, and though much of the excitement that had come from the keen rivalry of the two companies disappeared, the merger established a service without parallel on the ocean-going routes of the world.

Two years before this merger, the first Castle Line ship to make meteorological observations had become the *Harlech Castle,* a schooner-rigged steel-hulled steamship. Between January and May 1898 she made a voyage to Cape ports, Madagascar and Mauritius, and the following entry by Captain J. C. Clinock appears in red ink in the fair copy of the meteorological log for 12 February 1898, as the ship stood off Cape Town awaiting entry: '8/0 AM. Ship rolled very heavily and the rough meteorological log slipped from the Chart Room table overboard. I have put in as much as possible from the deck log for February 10th and 11th.'

Punctuality and comfort became hallmarks of the Union-Castle Company, as its services played a worthy part in helping to build up the fortunes of the young country. After seeing service in the First World War, the company introduced larger and faster mail ships, the *Arundel Castle* and *Windsor Castle* of 1921 and 1922, each of 19 000 tons and each having four funnels and a swimming pool for first class passengers.

Introduction of new ships continued to keep pace with passengers' and shippers' demands, and expansion of the mail, refrigerated and general cargo services continued up to the outbreak of the Second World War. During the war years, all the Union-Castle Company ships saw duty around the world, mainly as troop-carriers, and it was not until the end of 1950 that the South African Mail Service was fully restored with eight passenger ships once again on the route. Post-war building included the *Pretoria Castle* and *Edinburgh Castle* of 28 000 tons, both launched in 1947, followed by *Pendennis Castle* in 1955.

In 1956 the Union-Castle Line and Clan Line Steamers, the long established Cayzer family shipping business, agreed to merge their interests and formed the British and Commonwealth Shipping Company Limited. One result of the merger was the fitting of stabilizers to a lengthened *Pendennis Castle*; she was the first of the Company's ships to be so equipped, and her contemporary decor and layout were greatly admired when she finally came into service in 1958.

The time taken for the voyage from Southampton to Cape Town had by now been reduced to 11½ days which required a service speed of 22½ knots, and in 1960 the ship that was to become the last *Windsor Castle* joined the others on the route. (Photographs of the three ships named *Windsor Castle* are opposite page 85.) She soon established her pride of place on the run, being the largest ship to make regular voyages to and from the Cape, and the *Transvaal Castle* also played an important role in the popularity of the line, when she joined the fleet soon after the *Windsor Castle*. In 1965, two cargo ships were introduced to augment the mail service.

Growing competition from the airlines in the late sixties and early seventies, followed by soaring oil prices, led to a gradual decline in the number of passengers travelling by sea, and the size of the Union-Castle passenger fleet diminished accordingly. The *Windsor Castle* sailed from Table Bay, Cape Town, on 6 September 1977, to be the last mail ship to make the run to Southampton, where she arrived on 19 September—120 years and 4 days after the 530 ton *Dane* had sailed down Southampton Water on the first epic voyage to South Africa. It was just 100 years since the co-operation began between ships of the Union and Castle Lines and the Meteorological Office. During that century, many ships of the two companies contributed thousands of meteorological logbooks in a unique association on a regular route. Masters and Officers of all 13 post-war Union-Castle ships were regular observers, the *Edinburgh Castle*

in particular holding the record of submitting 120 meteorological logbooks during her 26½ years of continuous voluntary observing between 1949 and 1976.

For the many years of dedicated observing and radio transmission on behalf of the Meteorological Office, the Masters and Officers involved merit our gratitude and thanks, and it is much to our loss and regret that the great Union-Castle Line no longer has any ships plying the oceans.

J. F. T. H.

SPECIAL LONG-SERVICE AWARDS

We are pleased to announce the names of the four voluntary marine observers who have given long and valued service on behalf of the Meteorological Office.

The period considered is the 12 months up to the end of 1982, and the Director-General is pleased to select the following shipmasters, who will each receive a suitably inscribed barograph:

1. Captain R. M. Bessant, mrin, mni, Cayzer Irvine Shipping Ltd, who sent us his first meteorological logbook from the s.s. *Worcestershire* (Bibby Bros) in 1947. Since then Captain Bessant has provided 44 logbooks during his 22 years of observing for us.
2. Captain M. A. Hill, P. & O. Deep Sea Cargo Division, whose first meteorological logbook arrived in this Office from the *Papanui* (New Zealand Shipping Company) in 1957, and who has subsequently sent us 38 logbooks during his 21 observing years.
3. Captain J. S. Thorpe, mni, Overseas Containers Ltd, who sent his first meteorological logbook in 1954 from the *Hurunui* (New Zealand Shipping Company). A total of 43 logbooks have been provided by Captain Thorpe in his 21 years of observing.
4. Captain P. H. Warne, obe, mrin, mni, Natural Environment Research Council, whose first meteorological logbook was received in this Office in 1954 from the *Jessmore* (Furness Withy & Co.) and who has subsequently provided us with 59 logbooks during his 23 years associated with voluntary observing.

The qualifications necessary to be considered for a long-service award are a minimum of 18 years of observing and the compilation of at least one meteorological logbook in the past year. Consideration is then given to length of service and quality of records to determine the recipients. The Special Long-service Award Scheme has been implemented annually since its introduction by the Director of the Meteorological Office in 1948.

J. F. T. H.

551.507.2:551.509.13

METEOROLOGICAL OBSERVING SYSTEM FOR SHIPS (MOSS)

The MOSS project was first proposed as far back as 1972, and began in a low-priority category in 1974.

Its aim is to provide a means by which observations made on Voluntary Observing Fleet (VOF) ships in the North Atlantic, Near Continent, Mediterranean and ultimately in all oceans, can be received by the Central Forecasting Office (CFO) at Bracknell within two hours of the synoptic time. At present, although observations are promptly made, many are either received several hours later, by which time their synoptic value is much reduced, or not received at all.

The original concept of MOSS was to develop a semi-automatic data read-out system for meteorological sensors on ships to facilitate the making of observations, and with a long-term view to converting this arrangement into a fully automatic system.

This soon proved to be an incorrect approach, as it was found, not surprisingly, that the observations themselves were satisfactorily made, but were often not transmitted in time during Radio Officers' off-watch periods.

The emphasis of the MOSS project therefore shifted to a series of trials of semi-automatic or fully automatic communications systems, principally concerned with different methods of transmitting the meteorological data. One experiment involving a prototype of a fully automatic system has also been undertaken.

The ships involved in these trials, which took place between 1979 and 1982, were *CP Discoverer, Oroya* and *Oropesa* of Furness Withy (Shipping) Ltd, British Antarctic Survey ship *Bransfield* and the former Ocean Weather Ship *Admiral FitzRoy*. In June 1983 the first MOSS system was brought into experimental use on board the Varne Light Vessel.

Arrangements are now being made to install the MOSS equipment on board 10 ships of the VOF, the first stage of which is a liaison visit to each ship on return to UK port by marine and technical staff of the Meteorological Office to discuss installation arrangements with the ship's Master and Officers.

The MOSS equipment consists of a keyboard, a data collection platform (DCP) and a dipole aerial measuring 24 inches high by 4 inches diameter: all equipment and wiring is supplied and fitted by Meteorological Office staff in consultation with ships' Officers and free of charge to the ship. The keyboard has a visual display unit (VDU) incorporated, consisting of a green phosphor tube with an anti-glare mask, and can easily be mounted on a chart table or a locker top. The DCP is a device capable of transmitting the meteorological data automatically to the geostationary satellite METEOSAT; the unit is about 15 kg in weight with external dimensions of about 442 mm wide, 70 mm high and 345 mm deep. The DCP unit is usually located in a convenient cupboard in the chartroom or wheelhouse, near to the keyboard site. (*See* photograph opposite page 92).

When the navigating officer keys in his coded observation, the data appear on the VDU and can be fully edited before they are transferred by the press of a key into the DCP. The DCP is later interrogated by the satellite at a dedicated time, and the data are automatically transmitted into the Global Telecommunication System via the earth station at Darmstadt and then onwards to Bracknell.

It is expected that the first few ships of the VOF will be fitted with MOSS equipment in the spring of 1984.

J. F. T. H.

AURORA NOTES APRIL TO JUNE 1983

By R. J. Livesey
(Director of the Aurora Section of the British Astronomical Association)

Observations of the aurora received from ships during this period are summarized in Table No. 1. All reports from land and sea are listed in Table No. 2. For comparison, in Table No. 3 are listed the days on which the planetary magnetic disturbance index K_p reached a value of 5 or more during any period of 3 hours in the 24, which is considered to be quite stormy.

Table 1—Marine Aurora Observations April to June 1983

Date 1983	Ship	Geographical Position		Time (GMT)	Forms in Sequence
7 Apr. ..	*Cumulus*	57° 00′N,	20° 00′W	0200	qfhG
14 June ..	*Salmonpool*	48° 00′N,	60° 53′W	0315–0340	qm_2S,m_2R_2R

KEY: f=fragmentary, G=glow, h=homogeneous, m=multiple, R=ray, R_2=medium ray, S=surface.

Table 2—Auroral Activity reported April to June 1983

Date (Night)	Location and Number of Observers	Geomagnetic Latitude Lowest	Highest	at Storm Peak	Maximum Storm Activity Code*	Time (GMT)
1/2 Apr.	North America, Scotland (2)	55	59	55	3	2100–0500
4/5	Scotland, Norway (2)	59	60	60	4	2150–0005
6/7	Scotland, Weather Ship 'Lima' (2)	58	63	63	1	2200–0205
22/23	Winnipeg (1)	59	59	59	5	0852–0920
23/24	Winnipeg (1)	59	59	59	6	0535–0610
12/13 May	Ontario (1)	55	55	55	4	0220–0500
13/14 June	Newfoundland (1)	59	59	59	4	0315–0340
17/18	Winnipeg (1)	59	59	59	6	0530–0600

*Storm Activity Code: 1=Glow, 2=Homogeneous arc, 3=Rayed arc, 4=Ray structures, 5=Active moving storm, 6=Corona, 7=All-sky aurora.

Table 3—Days on which Planetary Magnetic Index K_p exceeded 5 in value in a period of 3 hours

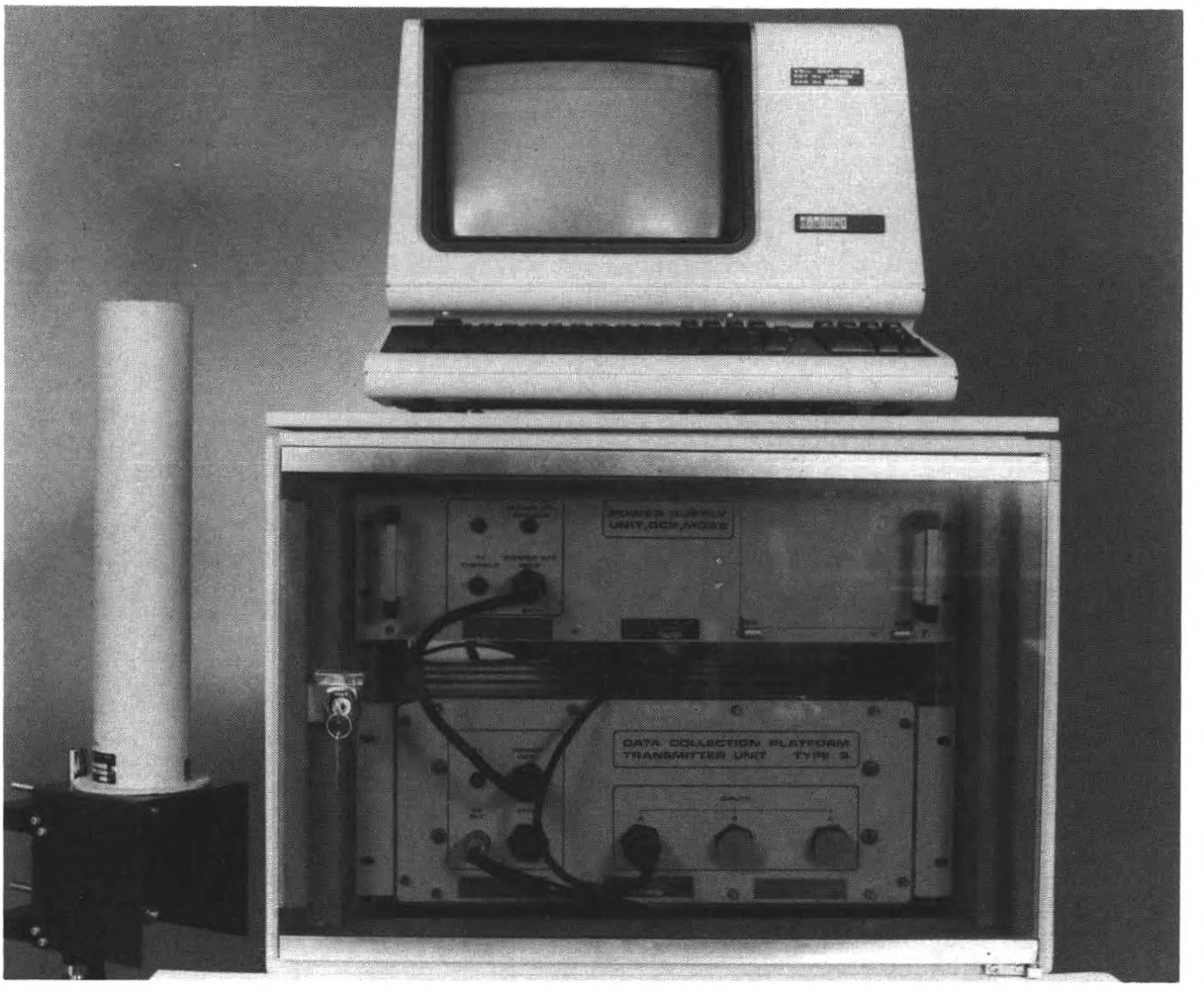
April	..	5,	6,	7,	8,	13,	14,	15,	16,	24,	25,	29.
May	..	1,	5,	11,	12,	13,	14,	17,	21,	22,	23,	24.
June	..	10,	13,	18,	22.							

The low level of visual activity reflects the changing nature of the sun's influence on the earth as the sunspot cycle declines. At this time there are fewer sunspots and flares to generate the transient type of aurora. Such aurorae as we see at present are very likely to be of the recurrent type triggered off by a disturbed area on the sun which sends out a continuous stream of particles which may hit the earth each time the sun rotates on its axis. Recurrent aurorae are quieter and lie further toward's the earth's poles than the transient or outburst aurorae. They may occur for several nights on end and recur at intervals of around 27 days, which is the time for the sun to rotate into the same relative position with respect to the earth. The sun does not rotate as a solid object but spins faster at the equator than at the poles, because it is a gas cloud, hence the time of return can reflect the latitude of the source of activity or its rotational speed.

If the conditions prevailing in 1976 were to repeat themselves we might expect fewer observations from observers on mainland Britain and more observations from ships in higher magnetic latitudes such as at the Atlantic weather station 'Lima', north of Shetland and along the Norwegian coast. It is a sad reflection on the world economic situation that the number of ships capable of reporting upon the aurora has itself declined. The names of many one-time regular reporters are no longer seen in the lists of marine observations.

In the period under review radio aurora effects were reported in the United Kingdom on 15 and 29 April, 22 and 23 May, and 15, 18 and 22 June. These have consisted either of abnormal long-distance transmissions in VHF using the aurora-generated ionospheric clouds as reflectors, or as distortion of Morse signals due to differential scatter from different parts of the electrified particle cloud. Some of the above interceptions have been made by a Radio Officer, Andy Steven, during periods ashore at Leith Nautical College. I would appeal to any Radio Officers who detect radio auroral activity to log the circumstances as to when and where it was observed and what form it took so that this information may be compared with the visual and magnetic auroral record. Radio aurorae largely correlate with visual aurora but because of the horizon and other effects it is possible to detect radio aurora at times without visible aurora and vice versa.

Opposite page 92



MOSS equipment, showing dipole aerial, keyboard and Visual Display Unit, Data Collection Platform, and Power Supply Unit (*See* page 90)

ICE CONDITIONS IN AREAS ADJACENT TO THE NORTH ATLANTIC OCEAN FROM SEPTEMBER TO NOVEMBER 1983

The charts on pages 94 to 96 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 to lines of equal pressure anomaly as wind does to isobars. Buys Ballot's law can therefore be applied to determine the direction of the wind anomaly). Southern and eastern iceberg limits will be displayed during the iceberg season (roughly February to July). In any month when sightings have been abnormally frequent (or infrequent) this will be discussed briefly in the text.

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

September

Over north-east Canada winds were more southerly than usual with air temperature averaging about 2 °C above normal. However, by the end of the month, new ice with small amounts of old ice had covered Lancaster Sound and extended across the north-west of Baffin Bay earlier than usual. The appreciable excesses of ice in Foxe Basin and along the south-east coast of Baffin Island were due to the persistence of old ice which had not disintegrated during the summer months. Over the Greenland Sea there was a weak anomaly for northerly winds and here ice conditions continued to be near normal. East of Svalbard, the weak anomaly for southerly winds resulted in continued disintegration of ice, so that the ice edge remained further north than usual over the Barents and Kara seas.

October

Over much of north-east Canada there was some anomaly for south-westerly winds. Baffin Bay soon became ice-covered and by the end of the month new and older types of ice had become consolidated to give a marked excess of ice in Foxe Basin, and to the east of Baffin Island. Icebergs were reported in Hudson Strait, east of 75°W. Pressure was much lower than usual over Scandinavia. The anomaly for south-easterly winds over the Barents and Kara seas again resulted in the ice edge remaining further north than usual. However, the pressure anomaly over the Greenland Sea was for a rather weak northerly and ice drifted southwards into Denmark Strait much as normal. New coastal ice formed earlier than usual off south-east Greenland, where cold offshore winds were a persistent feature.

November

Pressure and temperature anomalies were much stronger than during recent months. The significant feature was for a change to a strong anomaly for northerly winds over the Barents and Kara seas. Ice conditions rapidly reverted to near normal (in marked contrast to the deficits of previous months) and also resulted in new ice forming earlier than usual in Bothnia Bay and along the north-east coast of Russia. The anomaly for northerly winds was much weaker over the Greenland Sea, and, although areas of new ice developed, the pack-ice edge remained well to the west of its usual position. Higher pressure than normal over Foxe Basin resulted in an anomaly for northerly winds and excesses of ice in Davis Strait and near the eastern approaches to Hudson Strait. In Hudson Bay the anomaly was for south-easterly winds and a deficit of ice.

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	—	Sea ice normals (unpublished) and various publications.
US Department of Commerce Weather Bureau, Washington, D.C.	1965	World weather records, 1951–60. North America.
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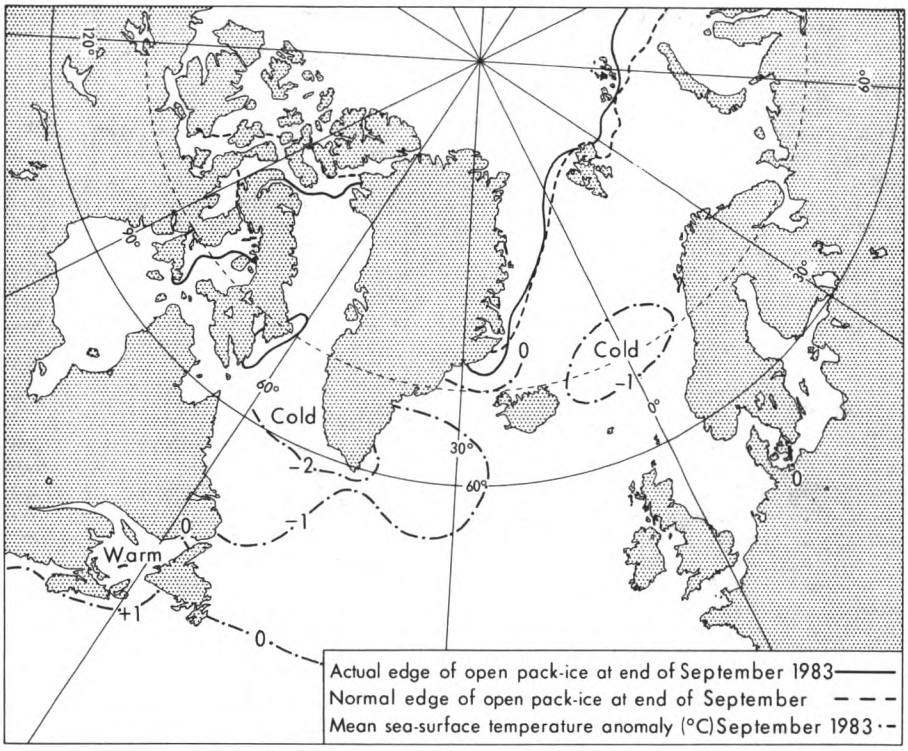
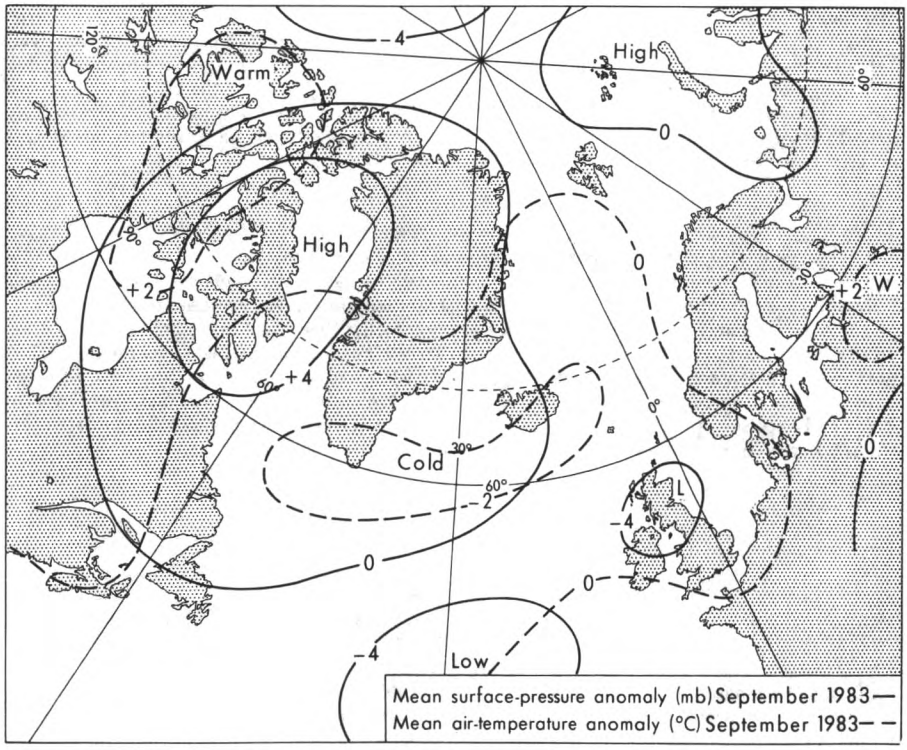
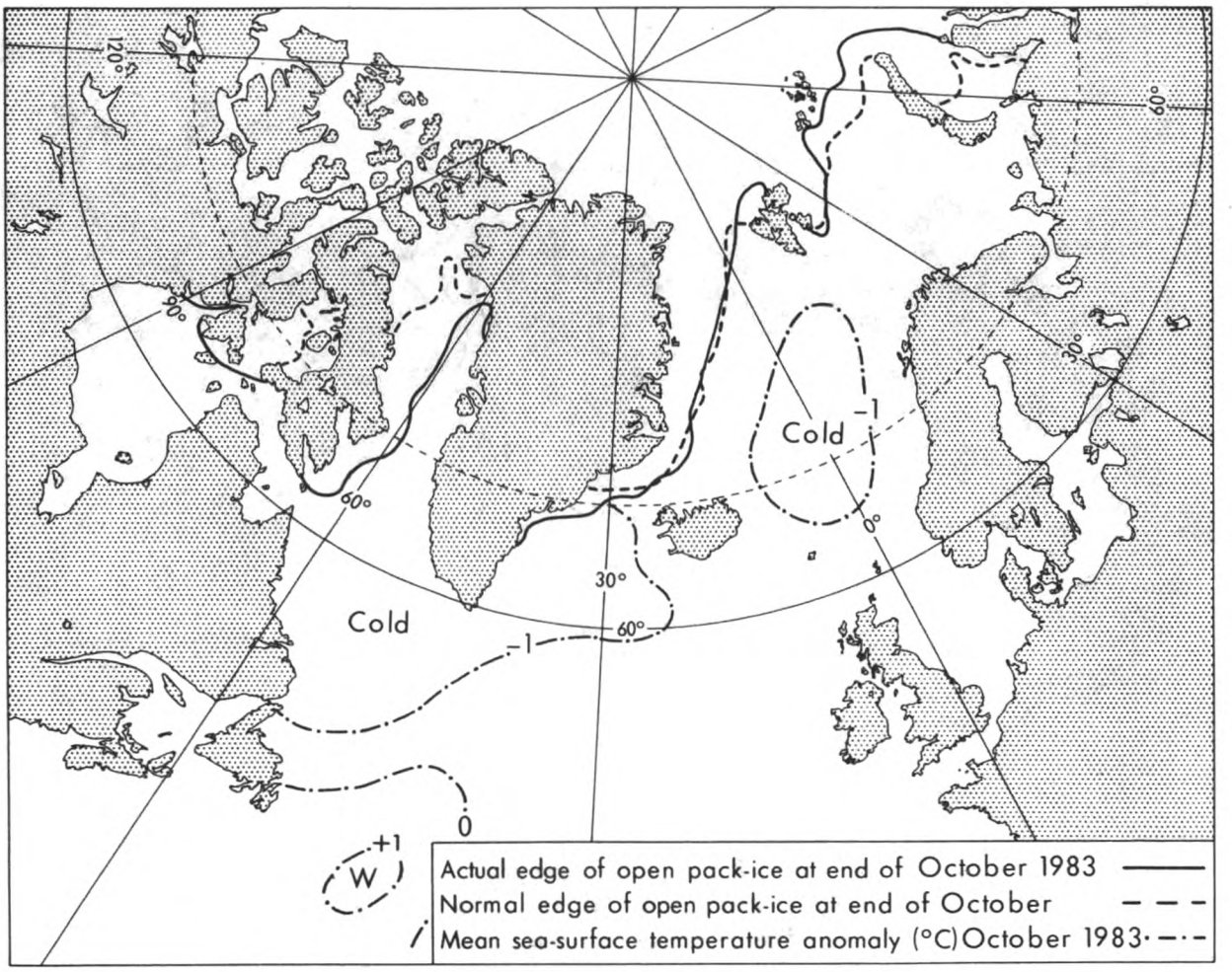
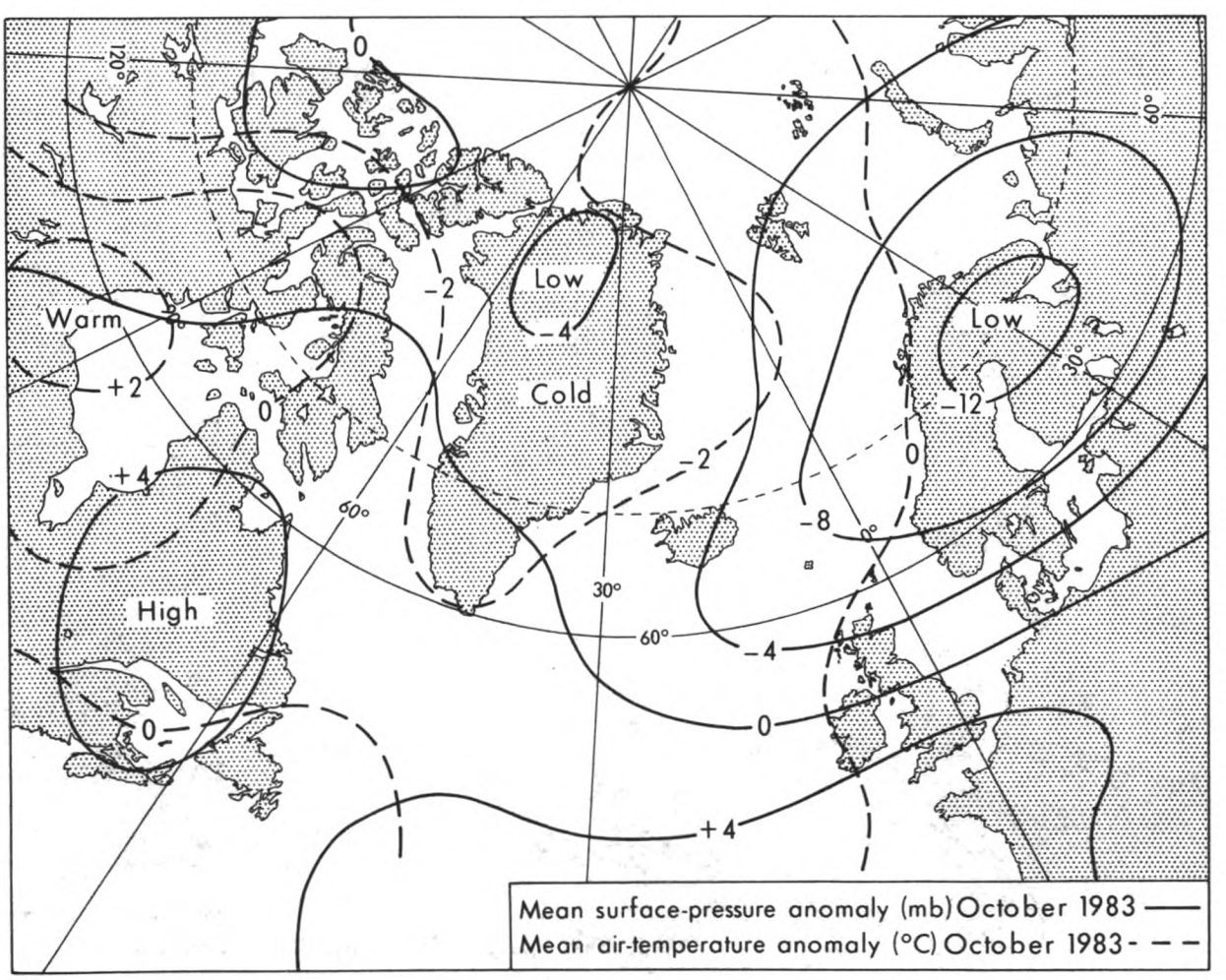
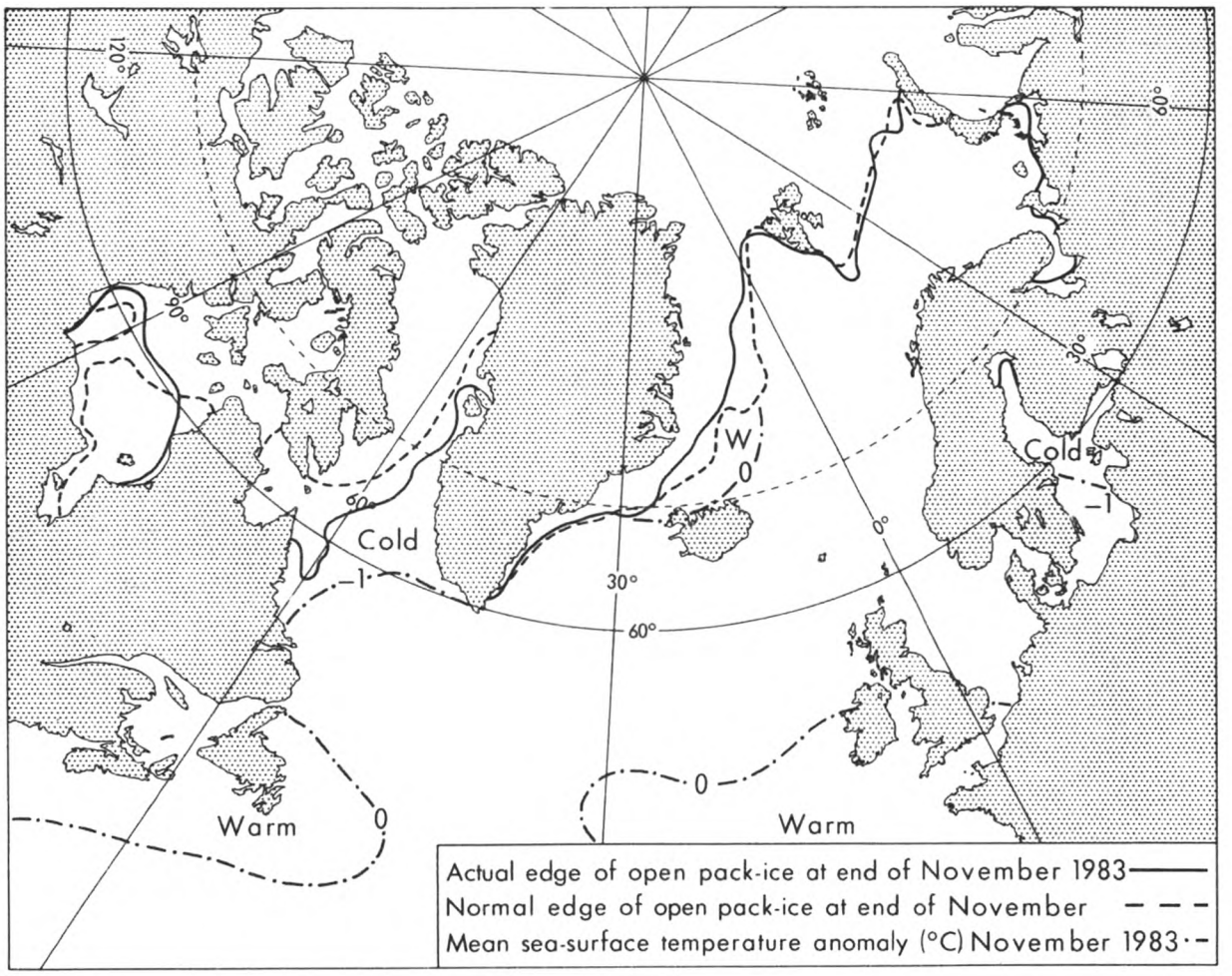
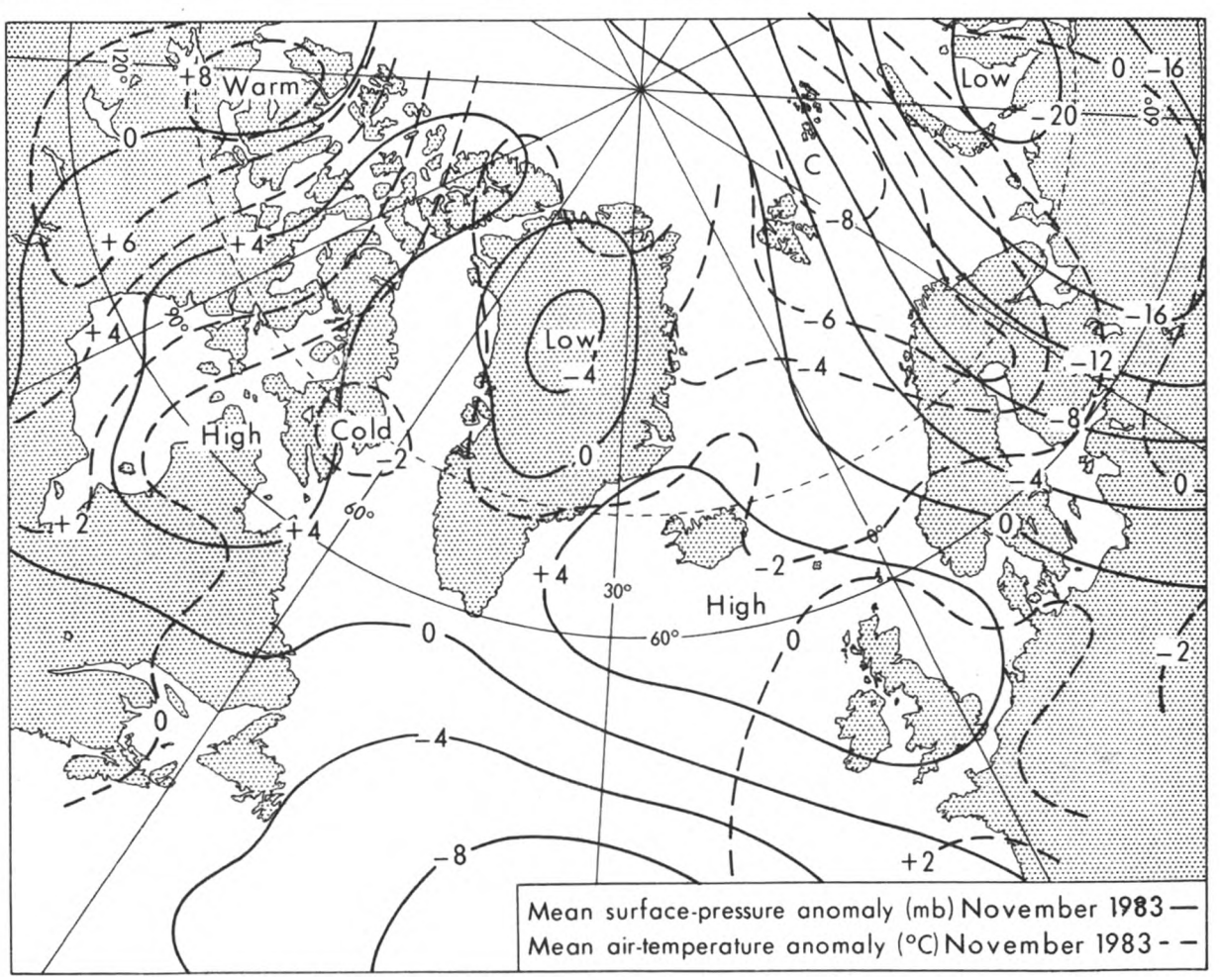

120°
60°
30°
60°
0
Cold
-1
Cold
-2
-1
0
Warm
+1
0
0
Actual edge of open pack-ice at end of September 1983
Normal edge of open pack-ice at end of September
Mean sea-surface temperature anomaly (°C) September 1983


120°
60°
30°
60°
-4
Warm
High
0
High
0
+2
+2
W
+4
Cold
-2
L
-4
0
0
0
-4
Low
Mean surface-pressure anomaly (mb) September 1983
Mean air-temperature anomaly (°C) September 1983


120°
60°
30°
0°
Cold
-1
Cold
-1
0
+1
W
Actual edge of open pack-ice at end of October 1983
Normal edge of open pack-ice at end of October
Mean sea-surface temperature anomaly (°C) October 1983


120°
60°
30°
0°
0
Warm
+2
+4
0
-2
Low
-4
Cold
Low
-12
-2
-8
0
High
0
-4
0
+4
Mean surface-pressure anomaly (mb) October 1983
Mean air-temperature anomaly (°C) October 1983


120°
60°
30°
0°
W
0
Cold
−1
Cold
−1
60°
30°
0
Warm
0
Warm
Actual edge of open pack-ice at end of November 1983
Normal edge of open pack-ice at end of November
Mean sea-surface temperature anomaly (°C) November 1983


120°
+8
Warm
0
+6
+4
+4
+4
High
Cold
−2
+2
+4
60°
0
Low
−4
0
+4
30°
60°
0
0
−4
−8
Low
0
−16
−20
60°
C
−8
−6
−4
−16
−12
−8
−4
0
0
−2
High
0
−2
+2
Mean surface-pressure anomaly (mb) November 1983
Mean air-temperature anomaly (°C) November 1983

Personalities

OBITUARY.—CAPTAIN W. T. (KING BILLY) PITCHER, retired Blue Star Line Master, has died in Melbourne, Australia. He joined the Company in 1943 and was promoted to Master in 1956.

He sent us his first meteorological logbook from the s.s. *Benedict* in 1948, and continued supplying the Meteorological Office with data up to early 1981 when we received his 42nd logbook, from m.v. *Timaru Star*. He received an Excellent Award in 1948.

OBITUARY.—CAPTAIN W. H. DODSON, retired P. & O. Master, has died. He joined the Hain Steamship Company, a P. & O. subsidiary, in 1954 and stayed in that Company's ships until his retirement in 1973.

His first meteorological logbook was sent from the *Trevaylor* in 1955, and we received a total of 26 logbooks from him, all from ships whose names began with the same prefix, until his last, received from the *Trecarne,* in July 1973.

RETIREMENT.—CAPTAIN I. WEBSTER retired on 1 October 1982 after serving over 42 years at sea.

Ian Webster was born in 1923, educated at King's School, Macclesfield and joined the s.s. *Teiresias* on 10 June 1940 as a Midshipman with Alfred Holt & Company. He had many narrow escapes during the Second World War, including rescue from St Nazaire by HMS *Oracle* about an hour before the Germans captured the western French port, following the sinking of his first ship one week after he joined her. He was in Singapore aboard a ship discharging ammunition when the Japanese invaded Malaya, and sailed in the last convoy to cross the North Atlantic a fortnight after VE Day. Apart from a short period in the war serving in Royal Mail and Canadian Pacific ships when Alfred Holt had suffered such heavy losses that they had no ship for him, he served the remainder of his sea-time with the latter Company.

He obtained his Master's Certificate in 1950 and was promoted to command of the m.v. *Automedon* in 1963; ten years later he was catapulted from his 9000 ton general cargo ship to a 226 000 dwt VLCC after intensive retraining, and remained with tankers until his retirement.

Captain Webster sent us his first meteorological logbook from the *Arakaka* in 1947. Since then we have received a further 35 books bearing his name, of which 21 were classed as Excellent, a most commendable record. He received Excellent Awards in 1968, 1969, 1970, 1971, 1981 and 1983.

We wish him a long, happy and fruitful period of retirement.

RETIREMENT.—CAPTAIN J. S. SCHOFIELD, MNI, retired on 31 July 1983 after serving more than 42 years at sea. Joseph Stephen Schofield was born in December 1924, and educated at South Shields High School for Boys, and the Marine School of the same port on the Tyne. On Christmas Eve 1940 he joined his first ship, the *City of Manila,* owned by Ellerman Hall Line of Liverpool. Captain Schofield remained with Ellermans until 1968, having obtained his Master's Certificate in May 1952, transferring to Ben Line Steamers with his command the *City of Winnipeg* when she was renamed *Benedin.* He had been promoted to command in March 1965. He commanded many Ben Line ships up to the date of his retirement.

Captain Schofield's experiences in the Second World War included being torpedoed and sunk in the Bay of Biscay on his first voyage, followed by 18 months in the Mediterranean Sea helping to supply the 8th Army in the North African Campaign. This culminated when he was serving aboard the *City of Evansville* and took part in the landings on Sicily and at Salerno.

The first meteorological logbook to be received bearing Captain Schofield's name came from the *City of Johannesburg* in January 1949. Since then he has sent us 30 more logbooks of which 5 were classed as Excellent, and he received Excellent Awards in 1963 and 1966. Besides being a Member of the Nautical Institute, he is also a Member of the Honourable Company of Master Mariners.

We wish Captain Schofield a long, happy and healthy retirement.

RETIREMENT.—CAPTAIN N. W. G. WALSH retired on 16 November 1983 after spending most of his career at sea on the Atlantic Ocean.

Norman Walsh joined the Ulster Steamship Company in June 1939, staying with that Company under its post-war name of Head Line until December 1969. Whilst serving as a cadet in the *Kenbane Head,* his ship was sunk by the German cruiser *Admiral Scheer* in 1940, and he was one of the few survivors to be rescued after spending several days in an open boat in bitterly cold conditions.

Captain Walsh was promoted to Master in 1962, and after leaving the Head Line he had a short period of service with Kaywood Fuels.

From March 1972 up to the time of his retirement, Captain Walsh sailed with Scottish Ship Management Ltd of Glasgow.

He sent us his first meteorological logbook in February 1947 from the *Lord O'Neill,* and since then has taken part in compiling 28 further logbooks, 10 of which were classed as Excellent. He received Excellent Awards in 1957, 1958 and 1983.

We hope Captain Walsh enjoys a happy and full period of retirement.

Notice to Marine Observers

PORT METEOROLOGICAL OFFICE IN SCOTLAND

The address of the Port Meteorological Officer, Scotland and Northern Ireland was changed on 16 January 1984. The new address and telephone number are:

MOD (N) Room 200F, Navy Buildings, Eldon Street, Greenock, Strathclyde PA 16, 7SL, Telephone 0475 24700.

Captain S. M. Norwell will continue as Port Meteorological Officer at the new address.

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