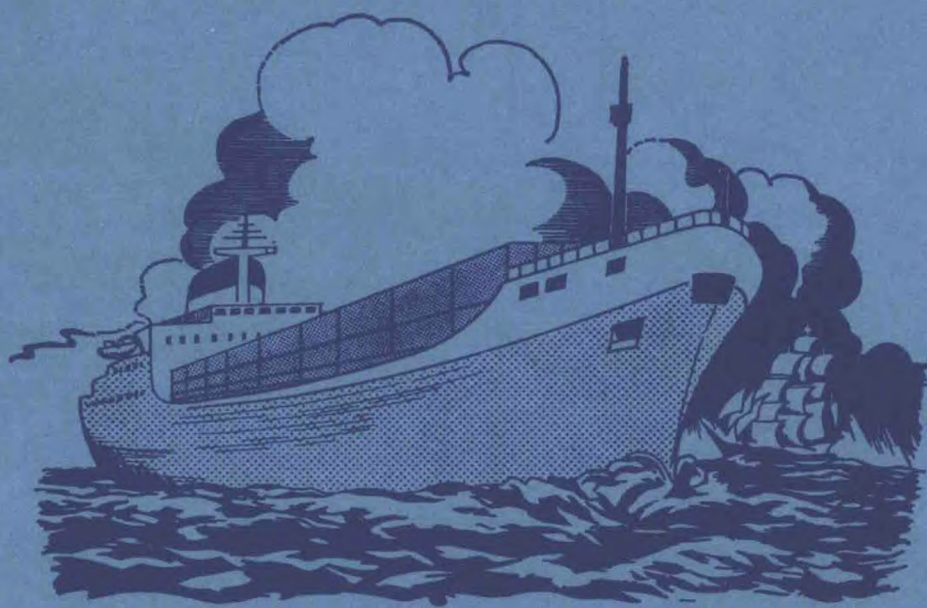


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The Marine Observer

*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

Vol. LIV

1984

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A QUARTERLY JOURNAL OF MARITIME
METEOROLOGY PREPARED BY THE MARINE
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JANUARY 1984

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*Letters to the Editor, and books for review, should be sent to the Editor 'The Marine Observer',
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Editorial

'But it gives me great pleasure to bear testimony in behalf of the great body of navigators who have enlisted in this work. They observe with fidelity, record with accuracy and regularly return, at the end of the voyage, their well-kept logs to this office, and by so doing assist mightily in advancing and perfecting the labors which we have commenced. To all such, I offer my most hearty thanks, with the assurance that great reliance is placed upon their continual co-operation and much value attached to their contributions.'

Lieut. M. F. Maury, USN
(*Notice to Mariners*, 2nd edn 1850)

Matthew Fontaine Maury's eulogy, commending mariners for their sustained voluntary efforts in weather observing on ships, has a familiar ring to it even now, over 130 years after it was written. It seems that our letters of appreciation to Masters, Observing and Radio Officers, dispatched in grateful acknowledgement of each meteorological logbook received from ships of the UK Voluntary Observing Fleet (VOF) were modelled on Maury's words; indeed they may be. Certainly the meteorological logbook has retained much of its original format, conceived following Captain (later Vice-Admiral) FitzRoy's appointment as Superintendent of the original Meteorological Department of the Board of Trade in 1854. Port Meteorological Officers (PMOs) continue to be the primary and most important liaison between ship's staff and Bracknell, collecting completed meteorological logbooks during their regular consultant ship visits.

Because ten years have passed since *The Marine Observer* contained detailed comment on logbooks,* and two years have elapsed since the introduction of the new Common Surface Meteorological Code, it appears to be a suitable occasion on which to offer a review of meteorological logbook processing. However, the writer finds himself composing his first Editorial for this journal merely days after boarding the vessel as Pilot and Deputy Editor, and having swallowed the anchor only one or two voyage lengths previously, but being nostalgically aware that the anchor is not yet completely digested, he prefers to confine himself mainly to an objective analysis of a logbook's course on its voyage from ship to shelf, and hopes that this will be of some interest to the reader. Since the logbooks referred to throughout are of the meteorological kind, there will be no need to make continual use of the prefix.

Logs either collected by PMOs, or mailed direct to Bracknell, are first passed by the clerical staff of the Marine Division to the Scientific Officer concerned with VOF instruments and fleet records, for checking of Company addresses and ships' Call Signs. They then move on to the Data Section, where details are entered into a weighty tome called *The Register*, wherein one can find records of all logbooks received, in either the current or past volumes. Each log is then allocated a consecutive number (the references contained in correspondence), and a 'green number', so called because it was originally entered in green on pre-1980 edition logs to distinguish it from consecutive numbers, which is a unique ship identification number; date of receipt and an assessment form are also appended, and an immediate acknowledgement postcard dispatched to the Master.

An average of 1208 logbooks is now being received from Selected Ships annually, and following registration it takes at the present time an abnormally long 3 months for a log to reach a marine officer for assessment. This is primarily due to the coincidence that all four Master Mariners at the Eastern Road Annexe have seen a change of station within the last year, causing shortages of staff amongst one or other of the positions, viz. Marine and Deputy Marine

* PHILPOTT, LT-CDR L. B., Logbooks. *Mar Obsr*, **XLIII**, 1973, 191-198.

Superintendents, the two Marine Officers and the PMO for SE England. Despite these changes there are only two new nautical profiles, and the division is expected to be up to full strength by the time these words are published. There is of course no diminution in the value of all the data collected or in the attention they receive as a result of the unavoidable delay. Special coding forms received from Supplementary, Auxiliary, Trawling and Light ships are dealt with on receipt in order that early acknowledgement can be mailed to the staff of these particular ships.

Before logbooks sail on from Data Section, certain phenomena reports in the additional remarks pages are photo-copied and stored on *The Marine Observer* file for later sorting for publication; ocean current observations are also copied and handed to the specialists who collate all the data, and ultimately incorporate them in pilot books and routeing charts. Copies of natural and cosmic phenomena reports are then sorted and periodically sent in batches to appropriate experts, and this fact noted in the boxes on the log's front cover. Analyses and comment received on any of these ships' reports are forwarded to the ships by way of the regular letters. At present we are fortunate in receiving detailed co-operation from several responsible bodies, to whom we are extremely grateful. As ships which have taken any part in the Dolphin Survey Project will know, we hear about cetacea from Mr McBrearty of Cambridge University; entomological descriptions are succinctly made by many experts of the British Museum (Natural History), and comments on many forms of marine life are well received from Dr Evans of Dove Marine Laboratory, Cullercoats; luminescence reports are clearly analysed by Dr Herring of the Institute of Oceanographic Sciences, Wormley, birds by Captain Young of the Royal Naval Birdwatching Society and Aurora by Mr Livesey of the British Astronomical Association. It is obvious that mariners are pleased with and appreciative of the indulgent manner in which these professionals and their many colleagues attempt to identify and analyse specimens and descriptions. One suggestion can be made concerning occasional sightings of cetacea for the Dolphin Survey Project; such reports will be more readily available for copying if they are collated in the additional remarks rather than the general remarks columns.

Logbook assessment is needed to ensure that entries are carefully monitored, and in order to grade them fairly to determine recipients of the annual Excellent Awards, presented to the 100 most deserving Masters, Principal Observing Officers and Radio Officers. Although every log received has all the data within it used effectively, no matter how sparse the data happen to be, for assessment purposes only logbooks containing 30 or more days on which at least one weather observation was recorded are considered for awards.

Entries signed by the Master on the special pages for reporting on radio clearance difficulties, freak waves and meteorological services to shipping are detached and passed to the appropriate branches of the Meteorological Office for action.

Some minor elements often requiring correction during assessment are as follows:

- (i) Compatibility of cloud types and heights, and of amounts of low/medium and high cloud.
- (ii) Dew-point temperatures on extraction from tables.
- (iii) Wind direction North must be coded 36, whereas direction 00 can only be used if wind force is coded 00 also.
- (iv) The appropriate barometer correction for the prevailing height above sea level.
- (v) All entries on red coloured pages and main page headings have a particular use; this applies especially to full personal details of Masters and Officers. As can be imagined, duplication of surnames and initials is not uncommon when one is receiving records of thousands of Officers who may be

seafaring for up to 40 years. We therefore request that verified Discharge Book numbers and signatures are always entered inside the back page, and that Masters and Officers kindly sign all other sections of the log wherever required. Discharge Book numbers and signatures are the most useful clues in the regular detective work that our staff must regularly undertake to match apparently new names with existing record cards. Concerning page headings, method of obtaining sea temperature is the most critical, because each method is allocated a different prefix for computer input.

Recording of the weather (Group 12) and its indicator of radio transmission still appear to be a cause for confusion. There is no desire to extend the work or time that Officers diligently devote to making and sending observations, but now that omission of the non-significant weather group from the radio message is mandatory, we suggest the use of a table similar to the following, to be placed with the observing gear:

Omission of Weather Group from Message

Group 12 is always to be entered in logbook, but omitted from radio message when coded in any of the following combinations:

1x Code	Ind.	Present ww	Past W ₁ W ₂	Notes re coding of Past Weather
2	7	00	00	The following combinations of W ₁ W ₂ are inadmissible: 10 20 21. Highest code figure to be recorded first.
2	7	00	11	
2	7	00	22	
2	7	01	00	
2	7	01	11	
2	7	01	22	
2	7	02	00	
2	7	02	11	
2	7	02	22	
2	7	03	00	
2	7	03	11	
2	7	03	22	
(Col. 11)	—	(Col. 28)	(Col. 29)	

It may be of interest to observers to know that many ships regularly fill all remarks columns of their logbooks with meaningful entries which are of much use to the climatologist. These entries mainly relate to changes in weather elements occurring between the synoptic hours, and the regular renewals of muslin and water to the wet bulb. The latter remarks effectively verify accuracy of wet-bulb temperature readings.

However, we realize that there are also many ships, plying congested and narrow waters, whose Officers' time is severely limited, and regular noting of remarks impracticable. This may also apply to the difficulty of writing a fair copy log, and whilst a neat presentation, written in pen or ball-point rather than in pencil, with all entries on the red pages and headings fully completed, is an ideal to aim for, we are grateful for any data collected voluntarily, no matter how hurried or brief the entries may be.

When encountered, ice accretion and sea ice are obviously important enough to be reported on account of their rarity on ocean routes. Ocean current data

also continue to be of importance from all areas, particularly as set and drift (the latter always in whole miles, not miles and decimals) can be more accurately ascertained nowadays with the aid of true satellite fixes when out of sight of land. Runs between successive stellar fixes are also to be preferred to those of a running solar fix. All data entered in current observation pages of logbooks should be in the form requested and obtained by methods described in logbook notes and textbooks. This does not preclude Officers from making additional current observation reports in the final section of the log.

Transmission is naturally a vital element of the voluntary observing process, and whether executed by the Navigating or Radio Officer on watch, there is an undoubted urgency to hand the message to the operator and clear it to nominated coast radio stations with the minimum of delay after the synoptic hour. Radio Officers are still requested to dispatch the weather message within 2 hours whenever watchkeeping duties allow. The more recent observations that reach the Central Forecasting Office, the better will be the forecast for the mariner. Whilst US radio stations may only accept weather messages up to 3 hours after observation, in the United Kingdom even 12-hours old data can usually be accepted, if it has been impossible to clear messages earlier. There is a small point requiring mention here, of interest to the Radio Officer; when transmitting the figure groups, zero should be transmitted as such and not as letter 'O', for final data input to the computer.

Originally the intention of this Editorial was not to delve into errors and omissions, but readers are asked to excuse the digression which occurred in the best interests of assisting observers, whose efforts, voluntarily made, are appreciated as much as ever in this era of reduced manning and the high-powered ship.

After assessment and marking, logbooks are further edited by the experienced meteorologists of the Data Section to eliminate residual errors, and Officers' individual records updated with ship and logbook details. It is at this stage that accurate entries of names, Discharge Book numbers and signatures become so important in augmenting the observing history of Officers, incidentally furthering their chances of being considered for receipt of Excellent Awards.

Logs proceed on their useful voyage to Processor Controlled Keying (PCK), where all data are input to the computer and a printout is made. The latter is perused for purposes of quality control by the meteorologists of Data Section, who pass it on to the Meteorological Office Marine Data Bank* for sorting and exchange with responsible countries under WMO provisions. Ocean current data are processed by the particular section concerned.

Finally, regardless of data storage technology in use today, all ship's meteorological logbooks are sent to a permanent haven in the Meteorological Office Archives in Eastern Road, Bracknell, where they are available for inspection by Ships' Officers and the general public by prior arrangement.

No discussion of ships' meteorological logbooks would be complete without a reiteration of our eternal gratitude to all the Masters, Navigating and Radio Officers who selflessly continue voluntarily to donate time and patient effort to ensuring timely observation and transmission of vital weather data. To all those mariners and to the many others at home and overseas who co-operate in our efforts to provide a meteorological service to shipping, we wish bon voyage for 1984.

J.F.T.H.

* SHEARMAN, R. J., The Meteorological Office Marine Data Bank. *Mar Obsr*, **LIII**, 1983, 208-217.



January, February, March

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

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

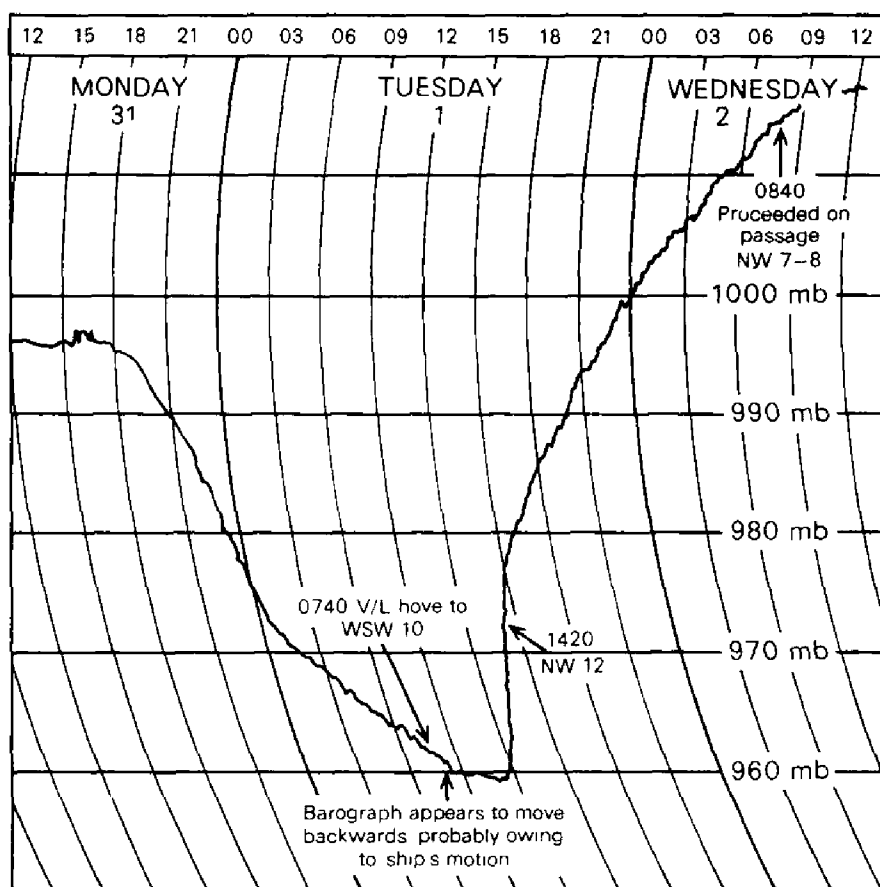
INTENSE DEPRESSION

North Sea

m.v. *Elk*. Captain B. Luke. Göteborg to Teesport. Observer: Mr J. T. Jamieson, 3rd Officer.

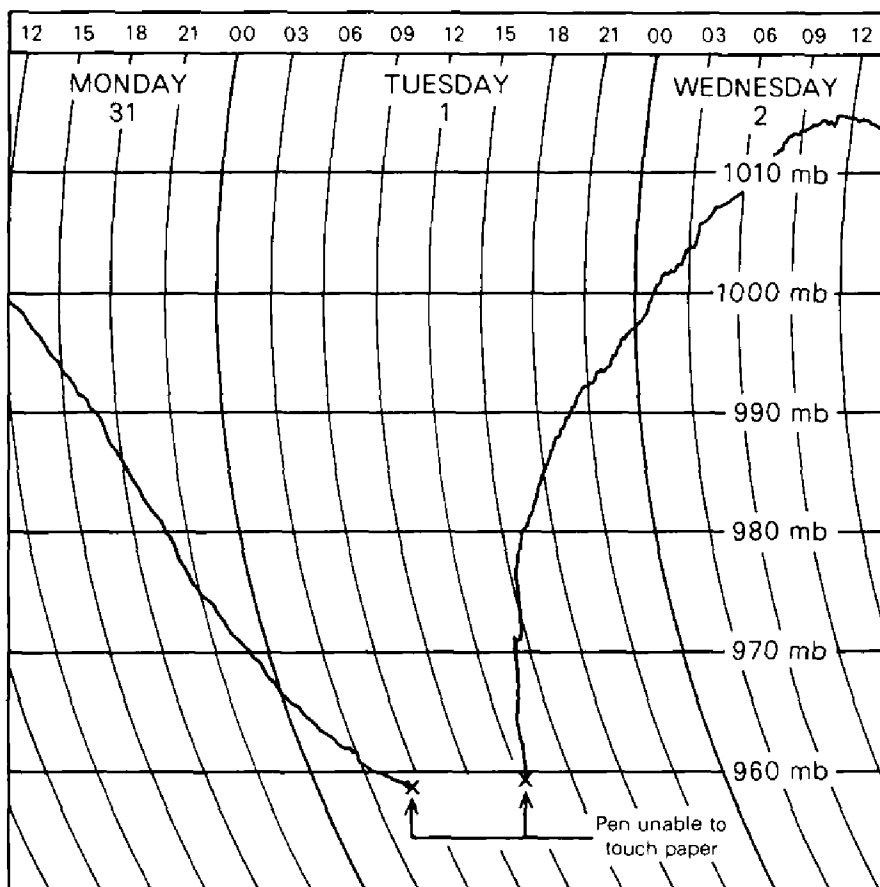
31 January–2 February 1983. During this period the exceptional barograph trace shown in the sketch was recorded. The following amplifying remarks are from the deck and meteorological logs.

- 31 January, 1900 GMT. $57^{\circ} 30' \text{N}$, $9^{\circ} 20' \text{E}$. Pressure drops rapidly from 996 mb to 975 mb in 6 hours.
- 1 February 0200 GMT. $56^{\circ} 42' \text{N}$, $6^{\circ} 08' \text{E}$. Wind SW, force 9–10, very rough seas, short heavy swell, barometric pressure 965 mb.
- 1 February, 0800 GMT. $56^{\circ} 10' \text{N}$, $4^{\circ} 14' \text{E}$. Vessel hove-to. Wind SW, force 10, very rough seas, short very heavy swell, visibility affected by spray, pressure 963 mb.
- 1 February, 1100 GMT. $55^{\circ} 55' \text{N}$, $3^{\circ} 50' \text{E}$. Barograph trace steadies at 960 mb. Wind WSW. High seas, very heavy short swell and moderate visibility. Barograph trace moves backwards!
- 1 February, 1230 GMT. $55^{\circ} 48' \text{N}$, $3^{\circ} 30' \text{E}$. Pressure rises extremely rapidly, increasing by 18 mb in 3 hours.
- 1 February, 1420 GMT. $55^{\circ} 46' \text{N}$, $3^{\circ} 16' \text{E}$. Wind NW, force 12. Poor visibility, wind knocks top off swell.
- 1 February, 1800 GMT. $55^{\circ} 55' \text{N}$, $2^{\circ} 40' \text{E}$. Wind NNW, force 10–11. Moderate visibility, high seas, very heavy short NW'ly swell, pressure 983 mb.
- 2 February, 0000 GMT. $56^{\circ} 08' \text{N}$, $1^{\circ} 32' \text{E}$. Wind NW, force 10. Good visibility except in snow showers. High seas, very heavy short NW'ly swell, pressure 995 mb.
- 2 February, 0400 GMT. $56^{\circ} 14' \text{N}$, $0^{\circ} 42' \text{E}$. Wind NW, force 10–11, good visibility, high seas, very heavy NW'ly swell, pressure 1007 mb.
- 2 February, 0800 GMT. $56^{\circ} 16' \text{N}$, $1^{\circ} 30' \text{E}$. Wind NW, force 7–8, good visibility, rough seas, confused moderate to heavy swell, pressure 1015 mb.



s.s. *Esso Aberdeen*. Captain W. McMaster. At Fulmar S.P.M. Observers: the Master, Mr T. Potts, Chief Officer, Mr M. Hustwith, 2nd Officer and Mr M. P. Kemp, 3rd Officer.

31 January–2 February 1983. Part of the barograph chart for the week starting 31 January is shown in the sketch. Of particular interest is the period 31 January–1 February which marked the passage of a particularly intense depression. The vessel was forced to unmoor from the Fulmar Single Point Mooring (S.P.M.) where she had been loading crude oil, because of deteriorating weather conditions at 1430 GMT on the 31st. Wind at the time was SSE, force 8–9, the weather being overcast with passing rain showers. By midnight the wind had veered to SW, force 7–8. Soon afterwards, early on the morning of the 1st, the wind speed increased rapidly to force 12 from the SW with winds in excess of 85 knots. Between 0700 and 0800 there was a slight moderation to force 10, followed by the wind veering to NW. Throughout the rest of the day the wind was NW'ly, force 10–11 with frequent rain squalls and, at times, showers of hail. A gradual moderation took place on 2 February and the vessel was able to return to the Fulmar S.P.M. at 2000 GMT.



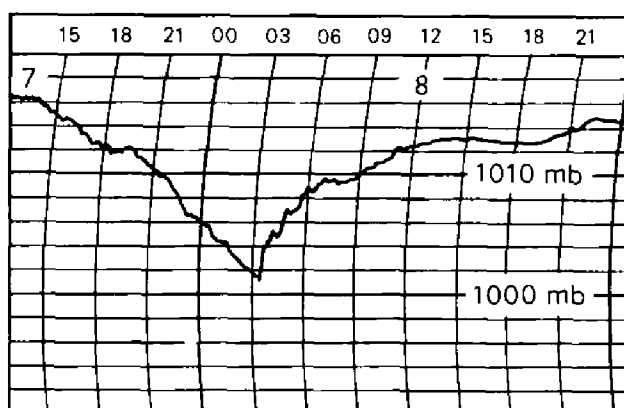
Approximate position of ship: $56^{\circ} 29' N$, $02^{\circ} 08' E$.

SOUTHERLY BUSTER

Bass Strait

s.s. *Botany Bay*. Captain J. M. Brackenridge. Lyttelton to Melbourne. Observers: Mr A. J. Ball, 2nd Officer, Mr S. Hewitt, 2nd Engineer Officer, Mr D. A. Kelsall, Radio Officer and Mr P. Johnson.

8 February 1983. At 0320 GMT as the vessel was approaching Melbourne the wind was observed to back and freshen from N'ly, force 4-5 to wsw'ly, force 7-8. The change of wind velocity occurred virtually instantaneously and at the same time there was a sudden rise of $2\frac{1}{2}$ mb in barometric pressure (previously the pressure had been falling at 4 mb in 3 hours). Following this change there



was a dramatic fall in air temperature and an increase in humidity: 0320 GMT, dry bulb 29.5 °C, wet bulb 19.5; 0330 GMT, dry bulb 25.0 °C, wet bulb 19.5; 0340 GMT, dry bulb 23.0 °C, wet bulb 19.5; 0350 GMT, dry bulb 22.0 °C, wet bulb 19.3.

At the time of the change it was noted by a number of the ship's company, both on the bridge and on deck, that the pressure change made their ears 'pop', in one case causing minor discomfort. In addition, at this time, the speed logged was observed to drop from 21 knots to 19 knots.

There was no visual sign of the approach of the change; it was, however, well anticipated owing to the receipt of Weatherfax maps from RMC Melbourne and a strong wind warning from Melbourne Radio.

A few hours later, on arrival in Melbourne, it was found that prior to the change Melbourne had recorded its highest February temperature, over 43 °C, and that after the change the strong winds had carried in dust from the drought area (visibility within the duststorm estimated as low as 20 m) which had disrupted the city, and the winds themselves had done some considerable damage in country areas to the west of Melbourne.

Weather conditions at 0100 GMT: dry bulb 22.9 °C, wet bulb 19.9, sea temperature 17.0, wind ENE'ly, force 2-3, sky cloudy with haze.

Weather conditions at 0500 GMT: dry bulb 19.8 °C, wet bulb 17.8, sea temperature (inland waters) 17.8, wind SW'w, force 6.

Position of ship: 39° 26'S, 146° 09'E.

Note. The following extract is taken from the 5th edition of the *Meteorological Glossary*:

southerly buster: A name given in south and south-east Australia to a sudden change of wind, usually from a north-westerly direction to a southerly direction, which is accompanied by a sudden fall in temperature. This change of direction occurs behind a cold front, and if the rise of pressure is considerable the southerly wind is violent. The arrival of the southerly wind is usually marked by a long crescent-shaped roll of cloud. The temperature sometimes falls by as much as 20 degrees Celsius in half an hour. These storms are sometimes accompanied by thunder and lightning. They are similar to the PAMPEROS of South America and the LINE-SQUALLS of middle latitudes. They are most prevalent from October to March.

DUSTSTORM

Australian waters

m.v. ACT 7. Captain F. P. McGuckin. Alongside Swanson East Container Terminal, Melbourne. Observers: the Master and ship's company.

8 February 1983. At 1455 LMT the observers witnessed the worst duststorm to be experienced in Melbourne for over two decades. Throughout the morning of the 8th, northerly winds of 15-20 knots swept across the arid areas to the north of the city, carrying thousands of tonnes of sand and dust south towards a cold front approaching from the south-west.

At 1200 midday all cargo operations ceased as the temperature exceeded 38 °C and by 1430 the temperature had climbed to 43.5 °C, the highest recorded February temperature in Melbourne since records began. The difference between the dry- and wet-bulb temperatures amounted to some 20 °C, which gave some indication of the dry conditions that were experienced.

At 1440 the ship's company observed what was thought to be a vast bank of cloud, 1000-2000 ft high, covering the south-western horizon and rapidly approaching the city. At a distance of 2-3 miles it became apparent that the cloud was in fact a mass of sand, thick black at the centre and sandy red on the fringes. The observers watched in disbelief as houses, factories, bridges and

ships became enveloped in a swirling mass of dust and sand. Day became night, motorists switched on their headlights, airports were closed, and visibility was reduced to less than 200 metres in a strange science-fiction type world where everything assumed the colour of shimmering sand. The worst phase of the storm occurred at the leading edge. The temperature dropped instantly to 29 °C and gale-force south-westerly winds uprooted trees and brought down power lines, causing general disruption throughout the city. This initial phase lasted approximately 10 minutes and during the course of the following hour the visibility improved and the wind moderated.

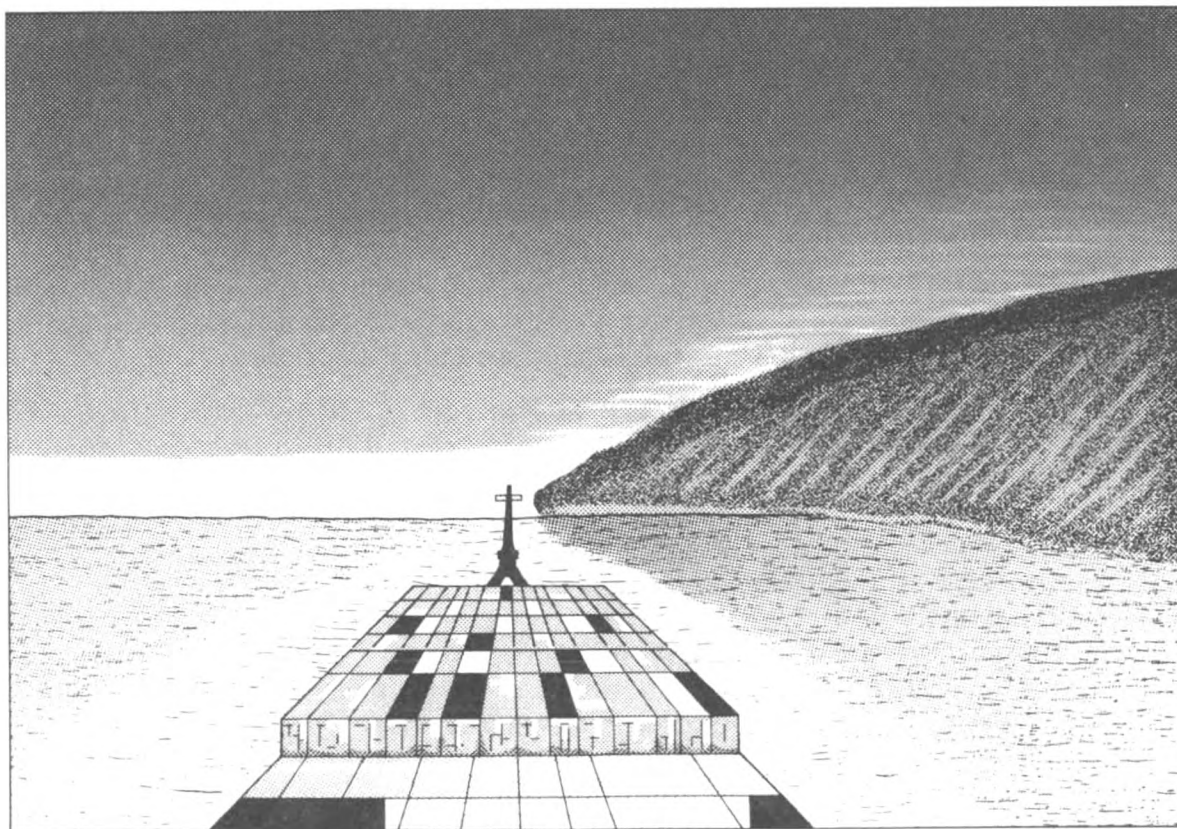
Position of ship: 37° 40' S, 145° 00' E.

SEVERE LINE-SQUALL

East China Sea

m.v. *Kowloon Bay*. Captain D. G. Brown. Pusan to Suez. Observers: Mr D. J. Bailey, Chief Officer and Cadet A. W. Lewington.

29 January 1983. At 0920 GMT the vessel passed through a severe line-squall. Preceding the squall there was 8/8 low stratus cloud at 300 ft and light westerly winds, accompanied by occasional lightning and intermittent slight rain. As the squall approached, the frequency of the lightning increased and a very low curtain of black cloud (010°/190°(T)) approached fast at a height of 150 ft with trails of vapour rising along its face. As the cloud passed over the wind increased in less than a minute to more than force 10 from the wsw. It was difficult to estimate the exact strength as no sea was raised, but spray was blown directly from the sea surface and the vessel, which was heading 222°(T), took a 6° list to port.



S.T.A. Read (Cdt)
detailed by
D Bailey (C/O)

After about six minutes the wind suddenly dropped to calm. There was a marked line and then a short pause followed by hail at first lasting about 20 minutes and slowly decreasing while the wind returned to wsw, force 3.

Position of ship: $24^{\circ} 51' \text{N}$, $120^{\circ} 40' \text{E}$.

WATERSPOUT

North Atlantic Ocean

m.v. *City of Durban*. Captain R. H. Jones. Cape Town to Southampton. Observer: Mr R. Jackson, 3rd Officer.

8 February 1983. At 0920 GMT when the vessel was on a course of $025^{\circ}(\text{T})$ a sea-surface agitation in the form of large quantities of spray being blown from the surface in an area estimated to be about 50 m in diameter was first observed about $1\frac{1}{2}$ points on the port bow at a distance of approximately 8 n. mile. The agitation was beneath a large cumulonimbus cloud with a ragged base but at this stage with no noticeable 'funnel' formation. When the surface agitation was almost abeam at distance 2.7 n. mile a complete waterspout developed between cloud and surface. The duration of the phenomenon was very short, about $1\frac{1}{2}$ minutes. The rotation of the spout was anticlockwise and the height by vertical sextant angle was 610 m. Shortly after the waterspout had disappeared the surface agitation also ceased.

Weather conditions at time of observation: dry bulb 7.0°C , wet bulb 5.8 , sea temperature 13.5 , barometric pressure 1009.2 mb ; wind NE'N, force 7, $\frac{7}{8}$ cumulonimbus cloud cover with frequent heavy showers of rain or sleet; visibility between showers approximately 12 n. mile, rough seas and head swell.

Position of ship: $46^{\circ} 12' \text{N}$, $07^{\circ} 40' \text{W}$.

INTENSE TROPICAL THUNDERSTORM

Timor Sea

m.v. *BP Endeavour*. Captain J. H. Booth. Voyage not specified. Observers: the Master and ship's company.

2 January 1983. At 1945 GMT when the vessel was on a course of $062^{\circ}(\text{T})$ intense sheet lightning was observed on the horizon almost straight ahead. A heavy rain cloud could be seen by radar about 16 n. mile away and at this time the vessel was experiencing continuous slight drizzle. The successive events of the thunderstorm can briefly be summarized as follows:

2020 GMT. Frequent flashes of forked lightning visible with loud thunder shortly afterwards. Lightning, either sheet or forked, was visible every 3 to 4 seconds. The precipitation, however, continued to be slight drizzle, with the rain cloud visible at 8 n. mile.

2026 GMT. Thunder could be heard approximately 12 seconds after a display of forked lightning. Precipitation had increased to a moderate shower.

2029–2038 GMT. Thunder was heard 5 seconds or less after a display of forked lightning, which was now visible on all sides of the vessel, although by 2038 its frequency had decreased to about once every 2 minutes.

2046 GMT. By now there was only occasional lightning, mostly sheet, with no thunder. Horizontal visibility was uncertain, but the cloud cover could be seen to be predominantly cumulonimbus.

2048 GMT. Precipitation increased to heavy rain.

2052 GMT. A break in the cloud cover was visible on the eastern horizon. Precipitation had eased to a moderate drizzle.

2057 GMT. Visibility good, light drizzle.

2100 GMT. By now the storm had passed astern and lightning activity had ceased. The cloud cover was predominantly nimbostratus with scattered fractocumulus below, and precipitation had ceased.

Weather conditions at 2100 GMT: dry bulb 27.4 °C, dew-point 25.7, sea temperature 31.0, wind NW'ly, force 2 (as it had been throughout the thunderstorm).

Position of ship: 14° 55'S, 124° 10'E.

Note. The *BP Endeavour* is an Australian Selected Ship.

STRONG AND ABNORMAL CURRENTS

East Coast of India

m.v. *Pholas*. Captain R. W. W. Baldwin. In the Godavari Delta. Observers: the Master and ship's company.

31 March and 4, 7 and 8 April 1983. The *Pholas* is chartered as a soil investigation vessel, and during the majority of her work is held on location for drilling by a dynamic position system, which combines the use of a taut wire, computer and four multi-directional, variable pitch thrusters. A number of occurrences which testified to the existence of strong and abnormal currents took place as follows:

On 31 March, with a water depth of 475 metres, during the 4–8 a.m. watch, a small power increase had been noted on the pen recorder which registers the wind speed and direction, horse-power used, fore/aft movement, port/starboard movement and the change in ship's head. During this small power increase the vessel stayed within 3 metres of station. At 0730 the power requirement had resumed its original level. At 0900 the power requirement increased again and at 0915 it began to rise dramatically. By 0940 the thrusters were working at their maximum limits as set in the computer, and the vessel was still being moved slowly off station. The movement was bodily to port, with the ship's head at 210°(T). During the next 30 minutes the ship struggled to hold station, with the thrusters maintaining their maximum power requirement. Suddenly, after this period, the current appeared to vanish, the power dropped as dramatically as it had built up, and after 15 minutes the ship was again holding position within 3 metres. During this period it was estimated that the current was in excess of 4½ knots.

Between 4 and 7 April strong currents were again experienced ranging from 3.2 to 4.3 knots in a direction of 075–080°(T).

On 8 April, with water depth 90 m, the vessel was working on location, holding station within 3 m. Without warning the ship was displaced 6 m sideways twice, and continued to oscillate against a variable force for about 40 minutes. After a further 30 minutes, a second series of oscillations was noted on the pen recorder. After these two periods station keeping returned to normal.

It was understood on board that the pen recorder traces were similar to those already recorded in the Andaman Sea. Should it turn out that these oscillations are assisted by large volumes of fresh water running over the heavier salt water, it is ironical that at the time of the occurrence there were riots in Madras due to the water shortage.

Position of ship on 31 March: 16° 22'N, 82° 20'E.

Position of ship on 4 April: 16° 16'N, 82° 11'E.

Position of ship on 7 April: 16° 19'N, 82° 16'E.

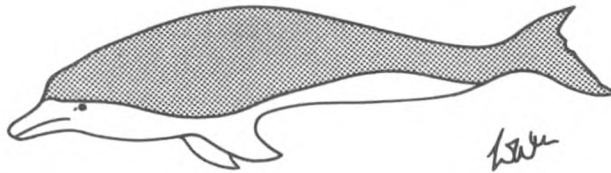
Position of ship on 8 April: 16° 20'N, 82° 11'E.

CETACEA

South Pacific Ocean

m.v. *Resolution Bay*. Captain W. A. Murison. Port Chalmers to Zeebrugge. Observer: the Master.

11 January 1983. At 0744 GMT two medium-to-small dolphins with unusual markings were sighted. They did not jump clear of the water. White beaks and



flippers were clearly seen. Over the next couple of days more sightings were made of small groups of these dolphins, which were thought to be the Southern Right Whale Dolphin.

Position of ship: 50° 54' S, 169° 21' W.

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

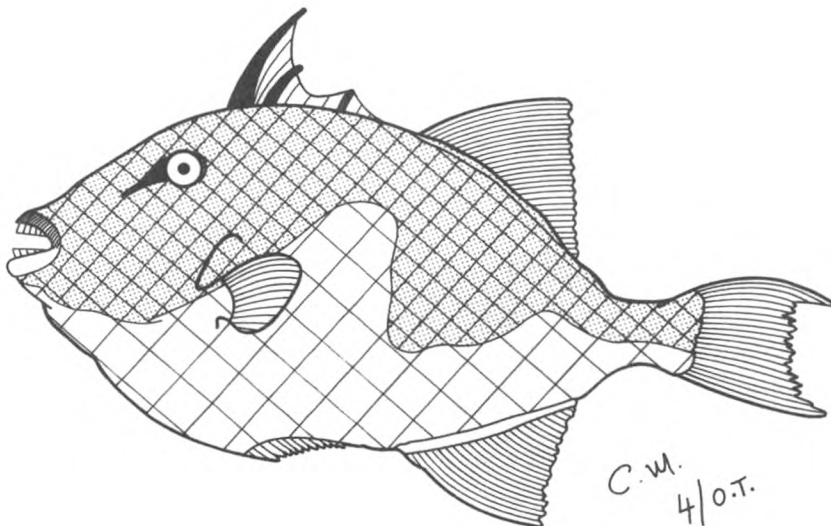
'Right Whale Dolphins absolutely spot-on—see *The Marine Observer* No. 275, January 1982, p. 32.'

FISH

North Atlantic Ocean

m.v. *Anco Enterprise*. Captain B. Hoare. New Orleans to Rotterdam. Observers: Mr R. J. Murray, 2nd Officer and Mr D. W. Pritchard, 4th Officer.

19 February 1983. At approximately 1800 GMT three of the fish shown in the sketch were discovered on deck during rough weather. This specimen was 21 cm long, 11 cm tall and 3 cm broad. It had dark upper skin and paler undersides



with diamond-like criss-cross pattern all over. It had upper and lower sets of sharp, protruding teeth, and three cartilage-type spikes with membrane 'sails' between them, which retracted into the fish's body above the eyes. The gills were just slits beneath the eyes. The observers considered it to be a trigger fish.

Position of ship: $33^{\circ} 40' \text{N}$, $37^{\circ} 13' \text{W}$.

SUCKER FISH AND SILVER FISH

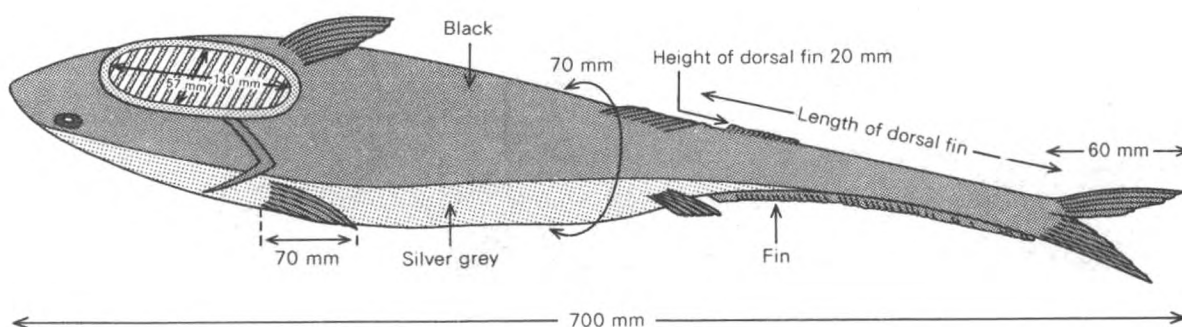
Persian Gulf

s.s. *British Ranger*. Captain R. Towell. At Khorr al Fakkhan Anchorage. Observers: the Master, Mr H. J. Conlon, 2nd Officer and Mr A. L. C. Smith, 3rd Officer.

31 December 1982–3 January 1983. While the vessel was at anchor much of the crew's spare time was passed fishing and among the many types of fish caught was the sucker or pilot fish (as named by the crew). As there was no information on board concerning their identity, the name stuck. This type of fish was plentiful in the surrounding waters, travelling in large shoals. It was thought that they were parasites and clung to the underbellies of the larger sharks. The specimen which was detained was alive at the time of observation and was later returned to the sea, where it carried on unperturbed.

The fish was approximately 70 cm in length and had a noticeably tapering body. It was black in colour with a silver grey belly. The main attraction of the fish was its 'sucker' which proved itself to be very effective, as on several occasions the fish fastened itself to the deck rather securely while the hook was being retrieved from its mouth. Another fish caught managed to stick to the side of the vessel and came on board with a few coats of ship's anti-fouling compound attached to its sucker. The sucker itself took over the main area around the back of the head and measured 14 cm in length by $5\frac{1}{2}$ cm in breadth. It was transversely ribbed along its entire length. It seemed to be made of a rubbery type of material and protruded very slightly from the body.

The body of the fish was 7 cm in diameter, tapering towards the tail. It was roughly circular as opposed to the 'flattish' sides of fish in general, which possibly indicated that it could grow to quite a size. The dorsal fin was 2 cm in height at its highest point and ran from the tail of the fish to about half its length. A fin of similar dimensions was found on the underside of the fish. The tail was 6 cm in length and was quite broad. The fins just behind its gills were each 7 cm in length and two more fins were found top and bottom at the termination of the dorsal fin. The fish proved to be quite docile both in and out of water; no weight was recorded as scales were not to hand at the time of observation.



One other point noted was that the fish had no teeth when its mouth was opened, but only a line of what could be termed gristle. Even allowing for this they seemed to thrive, like any other fish, on any material or galley waste that went over the side. As earlier stated, these fish were in profusion around the ship and proved very easy to catch; they were all of the same general size and dimensions as the sample taken. No sharks were seen up to the time of observation but it was assumed that they were not very far away.

Another quite different type of fish was observed while the vessel was at anchor; they were not positively identified but were thought to be garfish of some description. Like the sucker fish they were very plentiful in the surrounding waters and were disliked immediately by the amateur 'fishermen' as they possessed pretty sharp teeth. One fish was brought up to the bridge for inspection but was unfortunately dead on arrival. Like the sucker fish it was approximately 70 cm in length. The entire body was silver in colour and silky smooth to the touch. There were no scales along the length of its body, just a plain skinlike covering. The body itself was long and thin, but one prominent and noticeable point was the size of its head. This measured $11\frac{1}{2}$ cm from the back of its gills to the tip of its lower jaw. The mouth, which was 5 cm in length, carried a large number of small sharp curved teeth about 4 mm in length. There were, however, larger and more prominent teeth at the tip of each jaw which gave the fish its rather vicious appearance. On the upper jaw four similar teeth of around 7 mm in length were found, two of which remained outside the mouth when it was in the closed position, as the lower jaw was undershot, all of which added to the vicious appearance of the fish.

The body itself was narrow, being $6\frac{1}{2}$ cm in height and about $1-1\frac{1}{2}$ cm in thickness, giving a very flat appearance. The dorsal fin, which measured around 1 cm in height, ran along the entire length of the top of the body, and seemed to be its only means of propulsion, as no other fins were found on its body. It was also noted that the fish had no tail, the body simply tapering off to a fine point. One notable feature of its body was that a line extended from the tail of the fish to its gills.

Position of ship: $25^{\circ} 22' N$, $56^{\circ} 22' E$.

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

'With regard to the sucker fish so nicely illustrated, it should perhaps be explained that it was exactly that, and not a pilot fish. Pilot fish also accompany larger fish, especially sharks, but they have no sucker and do not cling on. The sucker of the sucker fish is a modified dorsal fin.

'The silver fish may have been a cutlass fish, this being a silver fish with a whip-like tail without a caudal fin.'

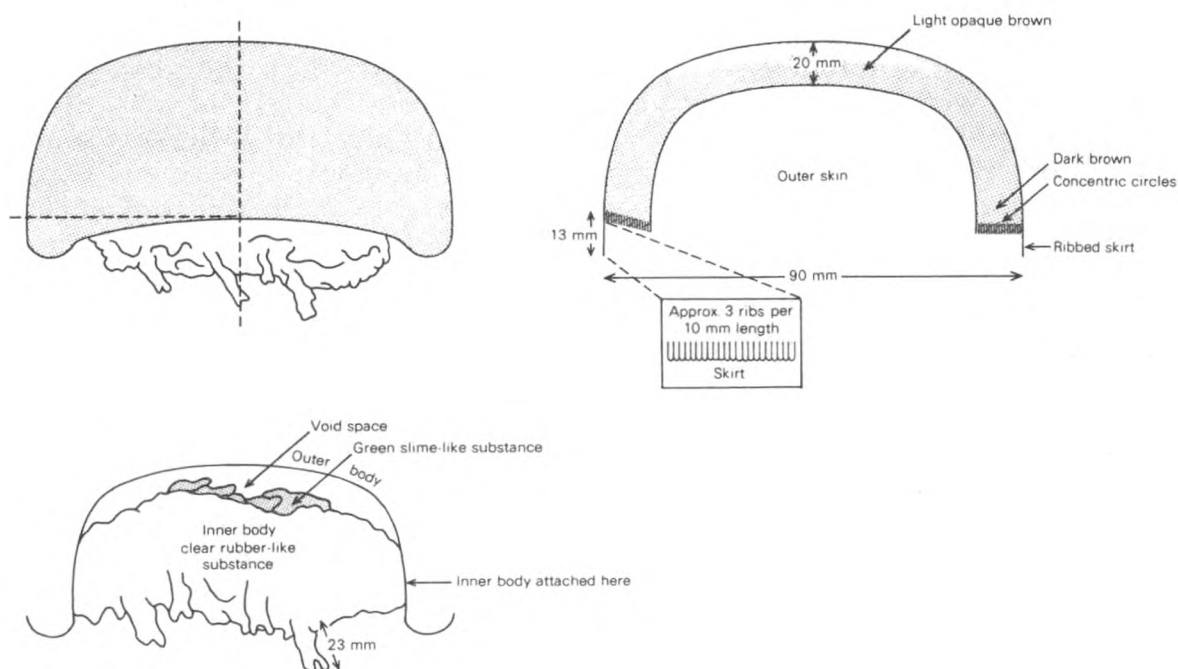
JELLYFISH

Persian Gulf

s.s. *British Ranger*. Captain R. Towell. At Khorr al Fakkhan Anchorage. Observers: the Master, Mr H. J. Conlon, 2nd Officer, and Mr A. L. C. Smith, 3rd Officer.

31 December 1982–3 January 1983. On the day previous to the vessel's arrival at the anchorage, viz. 30 December, large numbers of jellyfish were observed passing the ship's side. On arrival, efforts were made to obtain a sample of these jellyfish, which were still present in large numbers. The only way to obtain a specimen was to request the ship's engineers, while doing routine inspections of the sea strainers, to pass on an 'intact' jellyfish to the bridge. This they did

on overhauling the condenser. Despite assurances that it was alive on leaving the engine room, it was found to be dead on arrival at the bridge, where it was later thoroughly examined (see sketch).



The specimen measured 90 mm in diameter and its outer body was light brown in colour, but tending to become darker towards the 'fringe' or skirt. The skin surface was hard and smooth with no markings except for the skirt which was ribbed vertically. The skirt was 13 mm in depth and had between four and five ribs per 10 mm length. The main body of the specimen was 20 mm in thickness and dome-shaped. On closer inspection the main body inside the skirt was noticed to be made up of a series of concentric rings too numerous to count. The specimen was then bisected vertically to allow an examination of the 'inner' body.

The 'inner body' appeared to be attached to the 'outer body' only at the bottom sides, leaving a cavity between the two. This cavity contained a small amount of what appeared to be pale green slime, which gave the jellyfish a greenish tinge when viewed from the underside. This tinge was also noticeable on jellyfish in the sea, and along with the large numbers was the main point of interest when observed from the vessel.

The inner body was opaque and was akin in texture to a firm but pliable rubber, possibly owing to the fact that the specimen was dead. There were four tentacles which had shrivelled and withdrawn towards the body, again probably owing to the fact that the creature was dead. At the time of observation these tentacles were opaque and measured 25 mm in length. The tentacles on live jellyfish in the sea were, however, observed to be considerably longer, probably in the region of 70–80 mm.

It was found, on talking to other ships in the anchorage via VHF radio, that these jellyfish had been causing some of them considerable problems. Several ships had experienced repeated 'blackouts' owing to choked or blocked sea intakes, caused by these jellyfish having been drawn into them. The problem was more acute with ships anchored close inshore than with those further out.

Position of ship (on 30 December): 22° 00' N, 60° 00' E.

Note. Dr Evans comments as follows:

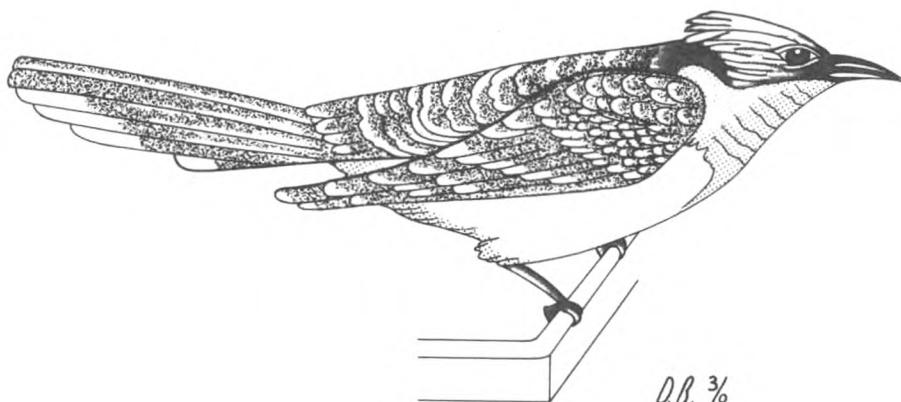
'I have now received several reports from this area of jellyfish answering to this description. A preserved specimen would be very welcome; meanwhile my best guess is that it is *Stomolophus meleagris* which is a jellyfish well known from both sides of the American continent in temperate and tropical waters. It has also been reported from Japan but I have no knowledge of it from around the Persian Gulf, hence my interest.'

BIRDS

North Atlantic Ocean

m.v. *Vic Bilh*. Captain S. R. Garratt. Forcados to Genoa. Observers: the Master, Mr C. D. Whittemore, 2nd Officer and Mr D. Barker, 3rd Officer.

12 January 1983. At approximately 1500 GMT an exotic bird was noticed perching by the after maindeck winch. Its plumage was a mottled bluish grey with light-coloured patches at the ends of its feathers. The bird had a yellow

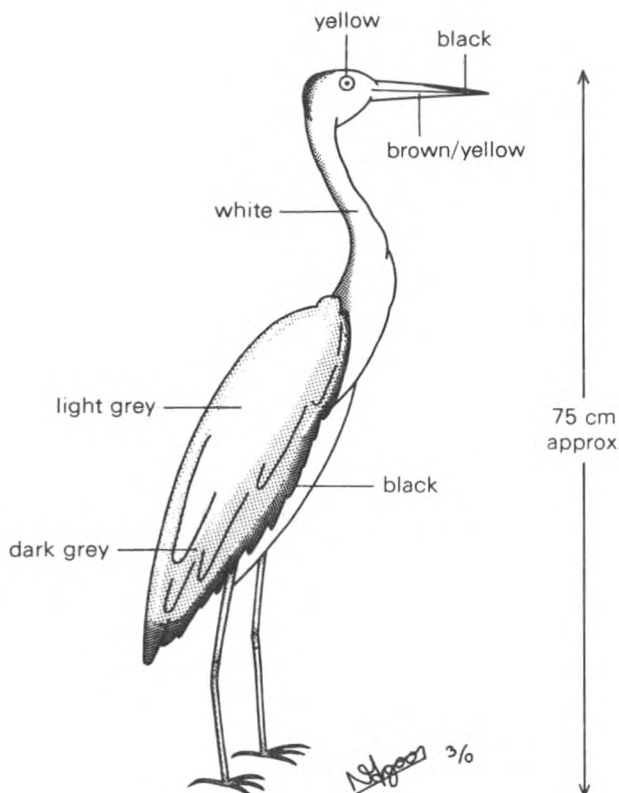


throat and a light-coloured crest on its head. It was white-breasted and was approximately 40 cm from beak to tail. The bird was later identified as a great spotted cuckoo.

Position of ship: 28° 58' N, 13° 06' W.

m.v. *Appleby*. Captain M. B. Bradley. Richards Bay to Rotterdam. Observers: the Master and ship's company.

28 January 1983. At 0850 GMT a very tired-looking bird landed on deck, soon after a heavy sandstorm. It settled there, drawing in its head for an hour until it was disturbed by the carpenter taking soundings. As it took off it was carried away from the vessel by the wind and it took 10 minutes to fly back. It was spotted occasionally during the next two days, the last time being at 1400 GMT on the 29th when it was seen in the shade of the hydraulic pipes aft of one of the holds. It was thought to have been a type of heron.

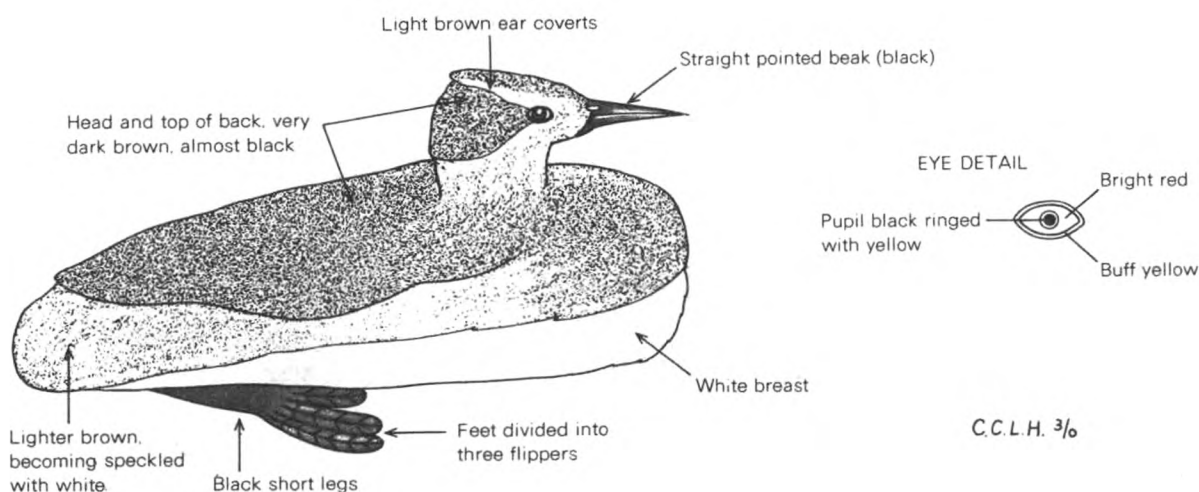


Position of ship: 19° 25' N, 17° 50' W.

Persian Gulf

m.v. *W. A. Mather*. Captain P. H. Hill. At anchor off Kuwait. Observers: Mr C. J. Doodson, Chief Officer, Mrs C. C. L. Heffer, 3rd Officer, and other members of the ship's company.

16 March 1983. At 1700 GMT, whilst the vessel was at anchor, a bird was observed to fly into the bridge window with a loud thud and to fall on to the maindeck below. A member of the crew retrieved the bird, and it was found to be still alive, although somewhat stunned. On close inspection, it did not have any apparent external injury and all the feathers appeared to be intact. It was obviously some kind of sea bird, as its feet were divided into three flippers, on the end of thick, black short legs. The bird measured approximately 20 cm in length, and its height from the bottom of the breast to the top of the head while sitting was about 13 cm. Most of the head and back, including the wings,



was a dark chocolate brown colour with the odd white feather, extending a darker brown, almost black, on top of the back and head. Its lower plumage was mainly white. The eyes were a bright red colour surrounded by a buff yellow third eyelid, with small black pupils surrounded by bright yellow. There were light brown ear coverts extending backwards from the eyes. The beak was black, straight and pointed and was approximately 2 cm long. The bird had no tail feathers, and it was thought that this was its normal state, rather than that it had lost them on impact with the bridge window.

The bird was placed on the chart table where it was observed until it started to recover, and was then put in a sheltered spot on the bridge wing. It moved its head around continuously, seemingly aware of its surroundings. The next day, when it appeared to have fully recovered, it was offered water, bread and raw fish, but refused to touch all of these. It also made no attempt to fly, not surprisingly after its accident of the night before! It did, however, walk around the bridge deck in a most amusing fashion, with its feet out at right angles to its body. This was likened by one member of the ship's company to Charlie Chaplin's famous walk!

As it showed absolutely no interest in flying, it was thought that it might prefer the water, being a sea bird. The Chief Officer held the bird out over the rail and it thankfully left his hands and dived into the sea. It was observed carefully and closely through binoculars as it swam away from the ship, occasionally diving under the water in search of much-needed fish for food.

No-one on board could positively identify the bird, but it was thought that it might have been some type of grebe.

Position of ship: 28° 59' N, 48° 55' E.

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

'I am sure that this bird was a Black-necked Grebe (*Podiceps nigricollis*) in summer plumage. The peculiar (and rather amusing) gait is due to the legs and feet being set so far aft—more suited to propulsion in water than on land.'

Arabian Sea

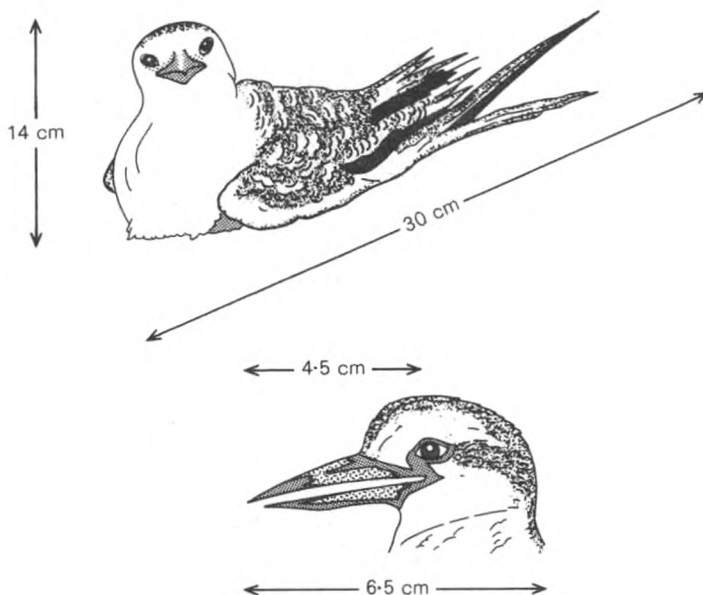
m.v. *Nosira Madeleine*. Captain J. Cooper. Abu Dhabi to Townsville. Observers: the Master, Mr P. G. Bascombe, 3rd Officer, Mr G. Mitchell, 4th Engineer Officer and other members of the ship's company.

22 January 1983. At 2200 GMT, when the vessel was 165 n. mile off the coast of India, two birds were observed on the lower bridge deck. Both appeared to be suffering from exhaustion and one of them at first appeared to be unable to walk. Both birds left the vessel within the next few hours, one at 0100 GMT and the other at 0400 GMT, none the worse for their ordeal.

The bird which was first to depart was agitated whenever it saw a member of the ship's company. It was, however, possible to get within a couple of metres of the other bird, shown in the sketch, before this too became harrassed and squawked loudly. Both birds were of exactly the same size and colouring and both had grey webbed feet.

An hour after the last bird's departure when the droppings were being cleared up a partially digested squid approximately 13 cm long was found. The observers were unsure whether the birds were exhausted or just suffering from indigestion or a combination of both.

Position of ship 15° 46' N, 70° 38' E.



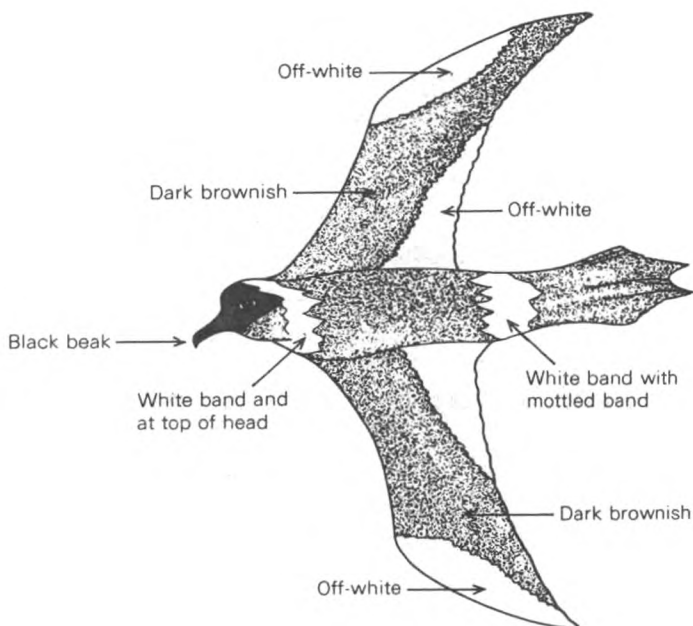
Note. Captain Young comments as follows:

'Though lacking a description and colours, these birds, I'm sure, would be red-billed tropic birds (*Phaethon aethereus*) to judge from the excellent sketch. There is no mention of the distinctive elongated tail feathers, possibly owing to moult or immaturity. From my own experience and previous reports, tropic birds are quite frequently found on ships, not necessarily owing to stress of weather. Ships appear to have quite a fascination for them and they probably fall foul of aerials etc.; being pelagic they have little strength in their legs which restricts their movement on deck and gives the impression of exhaustion. A helping hand on take-off does not come amiss. Small squid form quite a large part of the diet of the larger oceanic seabirds, as confirmed by this interesting observation.'

North Pacific Ocean

m.v. *Benledi*. Captain O. Henderson. New Orleans to Los Angeles via Panama Canal. Observer: Mr R. S. Walker, 3rd Officer.

5 February 1983. At 1522 GMT, when the vessel was 100 n. mile off the coast of Central America, a pair of birds was sighted following the vessel. They



occasionally landed on the sea before resuming their flight. One bird was slightly larger than the other. Body length was approximately 45 cm and wingspan 90–120 cm. The underbellies were white and other features were as shown in the sketch.

Position of ship: 12° 11' N, 90° 47' W.

Note. Captain Young comments as follows:

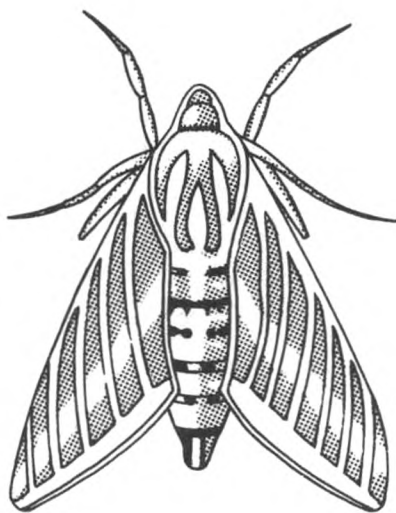
'The birds sighted were almost certainly two types of Skua, probably in some stage of moult, hence no mention of distinctive elongated tail feathers. The smaller bird was probably an Arctic Skua (*Stercorarius parasiticus*). The three Skuas—Longtailed (*Stercorarius longicaudus*), Pomarine (*Stercorarius pomarinus*) and Arctic—are most difficult to differentiate between in both immature and moult conditions. Their behaviour was typical. They migrate northwards and southwards with the seasons.'

INSECTS

Tunisian waters

m.v. *Vic Bilh*. Captain J. Y. MacAlpine. At anchor at La Skhirra. Observer: Mr D. Barker, 3rd Officer.

21 March 1983. During a spell of warmer weather (daily maximum temperature about 23 °C) a profusion of insects was noted on and around the vessel. Wind conditions were relatively calm, seldom reaching force 3. One of the most notable insects was a moth which was found dormant but still alive upon the bridge-wing deck. Colours were shades of brown throughout. The body was a ruddy fawn colour and wings light fawn with very light 'veins' running almost the full width of the wing. The wings were outlined on the inner and dorsal edges with



D.B. 3/8

white, and had dark brown to black patches. The body appeared segmented in the abdomen, having black bands cut with white spots marking the divisions between segments. The thorax had three prominent white 'badger' stripes arranged longitudinally, the middle one of which extended back as far as the first black band on the abdomen. The body was characteristically furred and the total length of the moth was around 5 cm.

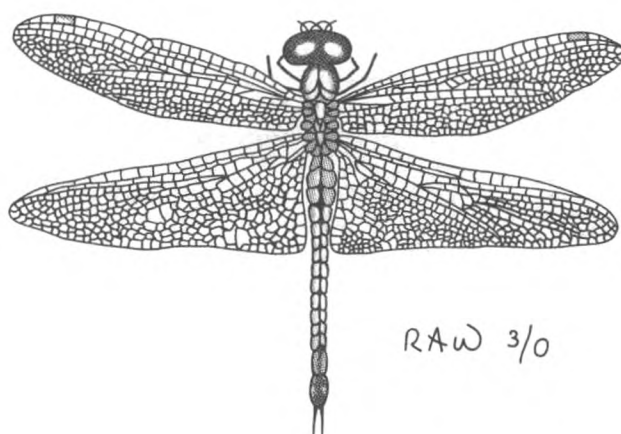
Position of ship: 34° 16' N, 10° 10' E.

Note. Mr A. H. Hayes, of the British Museum (Natural History), has identified the moth as a Striped Hawk Moth (*Hyles lineata livornica* Esper) of the family Sphingidae. It is common in the Old World tropics, with subspecies in the Americas, and migrates to this country.

Coral Sea

m.v. *Arafura*. Captain R. M. Coates. Osaka to Sydney. Observers: the Master, Mr R. A. Westwood, 3rd Officer and Mr P. S. Suffell, Radio Officer.

27 February 1983. At 0300 GMT a number of dragonflies appeared on board the vessel, as shown in the sketch.



The dragonfly was 52 mm long and had an 85 mm wingspan. The abdomen measured 35 mm, was forked at the end and was of an olive colour. The thorax was also an olive colour and the eyes were dark brown and had a transparent appearance.

The vessel was 300 n. mile from the nearest point of land and in the vicinity of tropical cyclone 'Elinor'.

Position of ship: $15^{\circ} 50'S$, $154^{\circ} 30'E$.

Note 1. The *Arafura* is an Australian Selected Ship.

Note 2. Mr Stephen Brooks, of the British Museum (Natural History) comments as follows:

'Thank you for the sketch of the dragonfly made by Mr R. A. Westwood of m.v. *Arafura*. Although I cannot be certain of the identity of this species I think it is probably *Pantala flavescens* (Fabricius). This species occurs all over the world and is known to migrate over large distances and, as in this case, has been found well away from land.'

AURORA BOREALIS

North Sea

s.s. *British Norrness*. Captain P. N. Johnson. Hound Point to Göteborg. Observers: Mr A. Kenyon, 2nd Officer, Cadet A. Quenet and Mr R. Woodross.

10 January 1983, 0345–0415 GMT. Horizontal bands of red above greenish-blue stretching approximately 60° over the horizon and rising to an elevation of about 30° were observed. The red colour became very prominent and then faded away to be replaced by vertical blue striations covering the same area. The whole aurora bore northwards.

Position of ship: $54^{\circ} 50'N$, $4^{\circ} 38'E$.

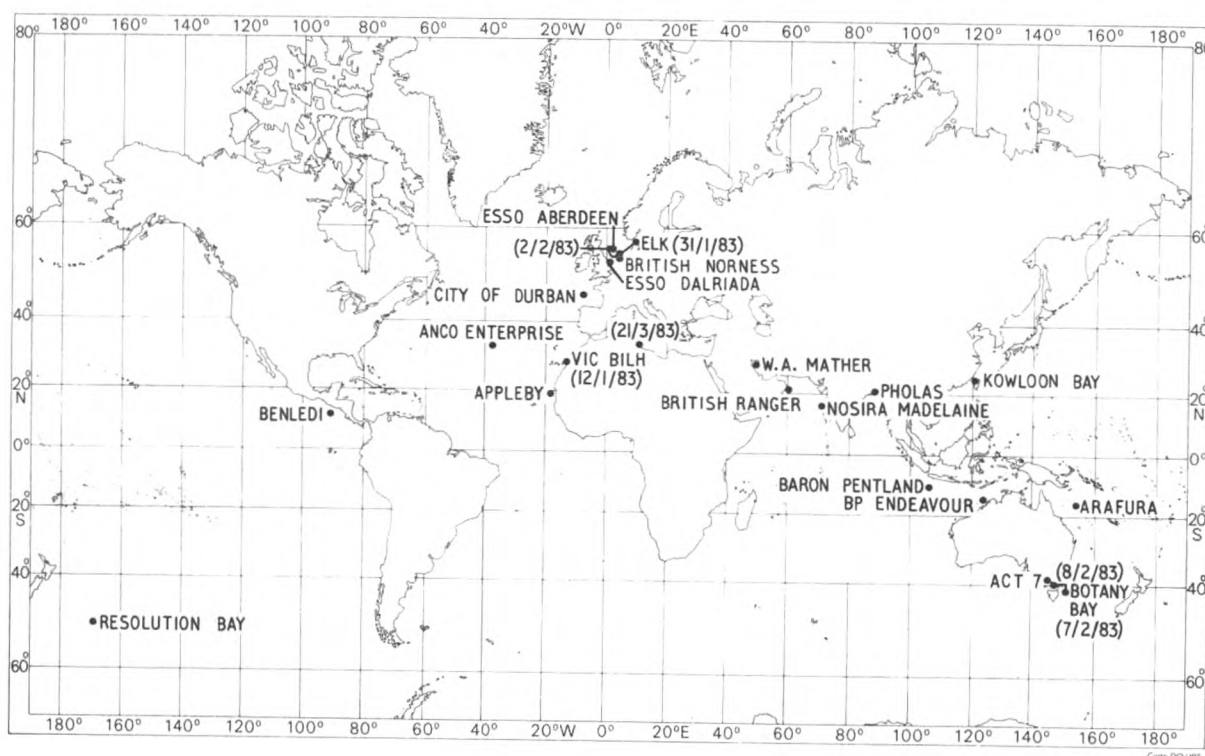
s.s. *Esso Dalriada*. Captain W. D. Boler. Rotterdam to Sullom Voe. Observer: Mr P. J. Devos, 3rd Officer.

8 February 1983. At approximately 0015 GMT the commencement of an auroral display was observed by the sighting of a single ray of moderate activity, the brightness of which oscillated between moderate and weak. The ray was observed in the direction of true north and its movement was from east to west. This single ray was followed by several more displaying similar characteristics, a rayed arc being the final outcome at about 0023 GMT.

As the rays slowly progressed towards the west, so they dissipated, a band of low cloud on the horizon precluding any observation of the elevation of the arc's lower edge. The rayed arc was followed by intermittent displays of single or grouped rays (there being 2 or 3 rays to any one group), with the whole display terminating at 0049 GMT when two bright rays of moderate activity finally disappeared.

A weak homogeneous arc was left remaining, the arc increasing in size and activity to reach a peak at about 0230 GMT when the light emitted from the arc was such as to make objects on deck clearly visible. At this stage flaming was clearly predominant, with the waves being pulsed outwards at a rate of about two every three seconds. Activity and luminosity of this arc gradually subsided until, at 0400 GMT, it was barely visible.

Position of ship at 0015 GMT: 53° 09' N, 00° 45' E.



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

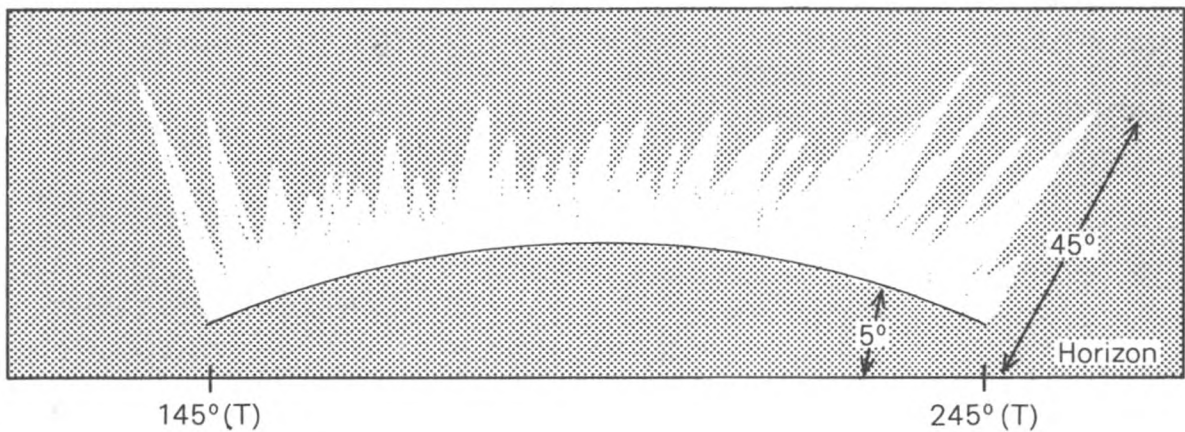
AURORA AUSTRALIS

Tasman Sea

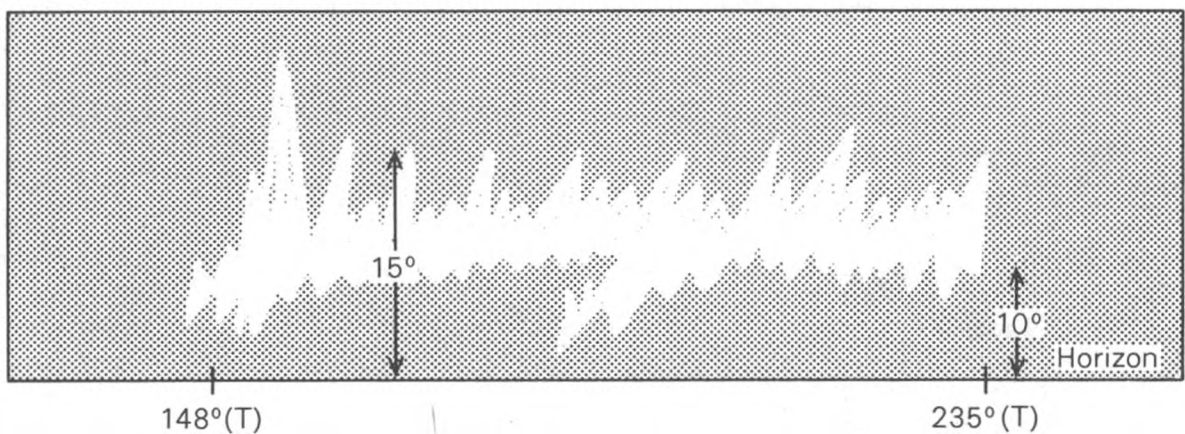
s.s. *Botany Bay*. Captain M. J. Brackenridge. Lyttelton to Melbourne. Observers: Mr A. J. Ball, 2nd Officer, Mr M. J. Chapman, 3rd Officer, Mr J. Lunt and Mr P. Johnson.

7 February 1983, 1150–1600 GMT. The aurora was first observed at 1150 GMT and was in the form of a homogeneous arc between 5° and 15° in altitude and bearing $170^{\circ}(\text{T})$ to $220^{\circ}(\text{T})$. Initially its colour was a pale grey, so that with no clouds the sky to the south seemed to be well illuminated. By 1215 GMT distinct vertical rays had appeared from this arc, reaching an altitude of 45° . The arc was by now between $145^{\circ}(\text{T})$ and $245^{\circ}(\text{T})$ from the vessel. The rayed arc had turned to a pale blue-green glow with the rays most distinct at its extremities.

1230 GMT



1500 GMT



The aurora then returned to an arc of light above the horizon with bands or rays of vertical light occasionally forming over the next couple of hours. At 1450 GMT it again took on a more distinct form with vertical stripes within the arc between 10° and 30° in altitude. At 1510 GMT the aurora was at its most spectacular with the vertical rays seemingly pulsating, flashing and flickering. The aurora finally disappeared at 1600 GMT. In just over 4 hours three distinct forms had been observed, viz. the homogeneous band, rayed arc and rayed band.

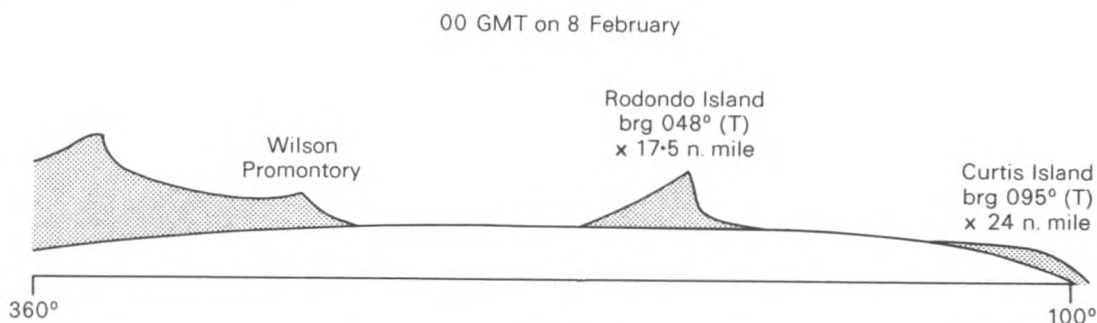
Position of ship at 1200 GMT: $41^{\circ} 30' \text{S}$, $150^{\circ} 54' \text{E}$.

INFERIOR MIRAGES

Tasman Sea

s.s. *Botany Bay*. Captain J. M. Brackenridge. Lyttelton to Melbourne. Observers: Mr M. J. Chapman, 3rd Officer and Mr D. A. Kelsall, Radio Officer.

7-8 February 1983. At 2230 GMT on the 7th definite false echoes in the shape of extensive bands formed on both the ship's radars at about 30 n. mile range. These echoes remained seemingly stationary and at closer range could not be removed despite the use of maximum rain-clutter control; they remained visible until 0100 GMT on the 8th.



At this time the vessel was approaching the Australian coast in the region of the Bass Strait on a course of 310°(T) at a speed of 20 knots and the visibility was reduced by haze. Rodondo Island, 350 m at its highest point, could not be seen visually until it was 18 n. mile off and at this time it was realized that nothing could be seen directly above the horizon between approximately due north and 095°(T), the island being 'cut off' for two-thirds of its height. This effect appeared to be too distinct to have been caused by haze obscuring the land.

Position of ship at 0000 GMT on 8 February: 39° 26'S, 146° 07'E.

UNIDENTIFIED FLYING OBJECT

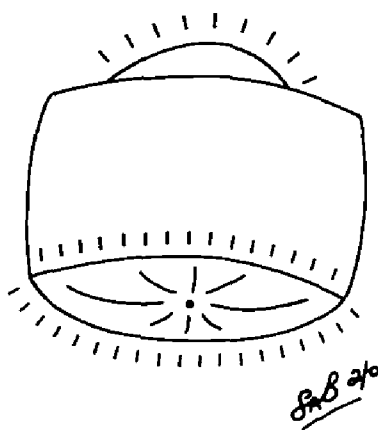
Indian Ocean

m.v. *Baron Pentland*. Captain C. Strachan. Christmas Island to Fremantle. Observers: the Master and Mr S. A. Budd, 2nd Officer.

20 January 1983. At 0515 GMT, whilst the vessel was drifting off Christmas Island, a report was heard on Christmas Island Radio. It was stated that several of the Islanders had telephoned to say that an object was high in the sky to the west of the Island. It was eventually spotted from the ship and observed through binoculars (7×50) and a sextant monocular (6×30). At 0536 GMT the sextant altitude of the object was 42°0' 27'0"; height of eye 22 m, sextant error nil, true bearing 215°.

First thoughts were that this was the satellite Cosmos 1402, but this was dismissed as it was a day too early and was not moving fast enough. In fact it appeared stationary to the naked eye. Another school of thought was that this was a weather balloon. As can be seen from the simple sketch, it was unlike any weather balloon previously seen by the observers. It was of a squat cylindrical shape, wider than it was tall. The circle at the bottom appeared to be dimly lit with a pale blue colour. The 'torso' was almost invisible, even with binoculars, giving the impression that there were two distinct and separate lights. The top 'light' appeared to be a dome atop the main body and it was extremely bright.

By wedging the binoculars in the bridge doorway, it was possible to gain a very steady view, as the vessel's main propulsion system was shut down and the seas were slight. Thus a clearer picture was obtained and in this way the object was identified as being cylindrical. The bottom circle also appeared to be 'webbed' with dark radial lines.



At 0620 GMT the true bearing was observed to be 233° and very much lower in the sky, although at this point it was very much fainter and it was impossible to determine its altitude by sextant. At 0643 GMT contact with the object was lost after it had disappeared to the west. The observers would be most grateful to learn the true nature of the object; in the meantime they remain sceptical with regard to the existence of the 'little green men' of recent popular folklore.

Position of ship at 0536 GMT: $10^{\circ} 12' S$, $105^{\circ} 23' E$.

Note 1. The *Baron Pentland* is an Australian Selected Ship.

Note 2. Mr G. M. Webb, of the Rutherford Appleton Laboratory, Chilton, comments as follows:

'The time of day would rule out most glowing atmospheric or object re-entry phenomena. The object was slow and steady, but Venus (a common candidate in such cases) would not seem to have been in the correct position to fit. A meteorological balloon drifting nearby would fit the bill and is probably the most likely explanation.

'I guess that just south of Java (Krakatoa, King Kong etc.) anything can happen!'

Correction. On page 190 of *The Marine Observer*, October 1983, the position of the *Coastal Trader* should be $37^{\circ} 11' S$, $177^{\circ} 16' E$, and not $37^{\circ} 11' S$, $117^{\circ} 16' E$ as printed.

Abnormal Waves off the South-east Coast of South Africa*

BY CAPTAIN J. K. MALLORY

(Professor of Oceanography, University of Cape Town)

Much has been said and written about the abnormal waves which have been experienced over the years along the eastern seaboard of South Africa. Many theories have been put forward as to the probable causes of these waves which have occasioned considerable damage to vessels when steaming in a south-westerly direction down the east coast between Durnford Point and Great Fish Point. It would therefore be of interest to examine the details concerning the individual occurrences as far as they are known. Unfortunately it is not always possible to obtain full details after a period of time has elapsed since the wave was reported, hence in some instances the case histories are incomplete.

It is safe to say that many other ships must have experienced abnormal waves off the South African coast between Durnford Point and Cape Recife, but because in each case the speed of the vessel at the time had been suitably reduced, the ship sustained no damage and hence there was no specific reason for reporting such an occurrence other than as a matter of interest. This is unfortunate because so much more could have been learnt about these phenomena if more specific reports had been available, especially if they had included details of wind and waves, meteorological data, soundings, and ship's course and speed. A list of 11 known cases of vessels either having reported encountering abnormal wave conditions or having foundered as a result of storm waves is given in the Appendix. As will be seen they range over a period of 11 years. All vessels except one, that is to say *Southern Cross*, were proceeding in a south-westerly direction.

Environmental background

It will be noted that reports of abnormal waves have only been received from vessels in the area from Durnford Point to Port Elizabeth, hence it is necessary to examine this section of the South African coast in detail to determine whether there are any unique features to which can be ascribed the possible cause of such a phenomenon.

Firstly the submarine topography is of importance because this has a direct influence on the movement of the water masses in the area. As shown in the bathymetric charts compiled over the period 1964-74, the continental shelf is, generally speaking, relatively narrow. Between Durnford Point and the Bluff, Durban, it is approximately 20 n. mile wide but then it narrows abruptly and remains at 5 n. mile off Port St Johns, whence it gradually widens until off Great Fish Point it is 20 n. mile wide, remaining at that width until to the west of Cape Recife (see Figure 1). Along the coast between Port St Johns and East London the continental slope, i.e. the seaward edge of the continental shelf, is much steeper than usual, the 1000 fathom line being within 15 n. mile of the edge of the continental shelf. Numerous deep canyons are located along this

* See **Acknowledgements** for the source of this article.

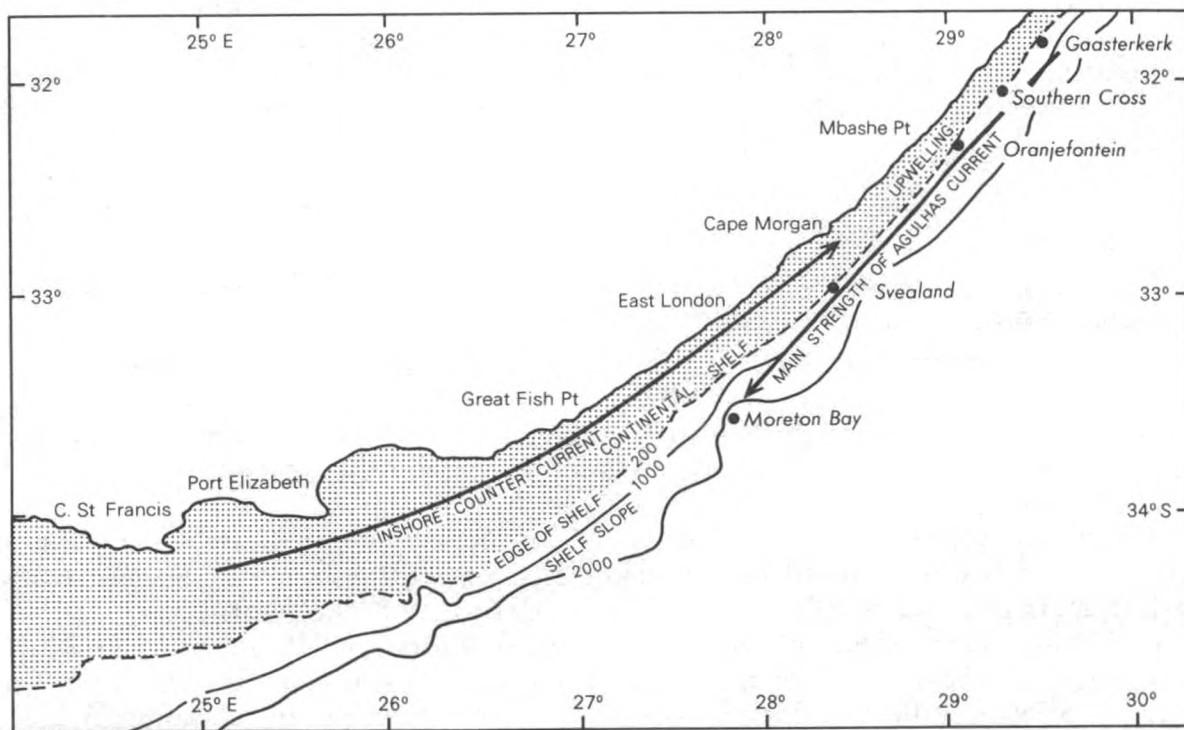
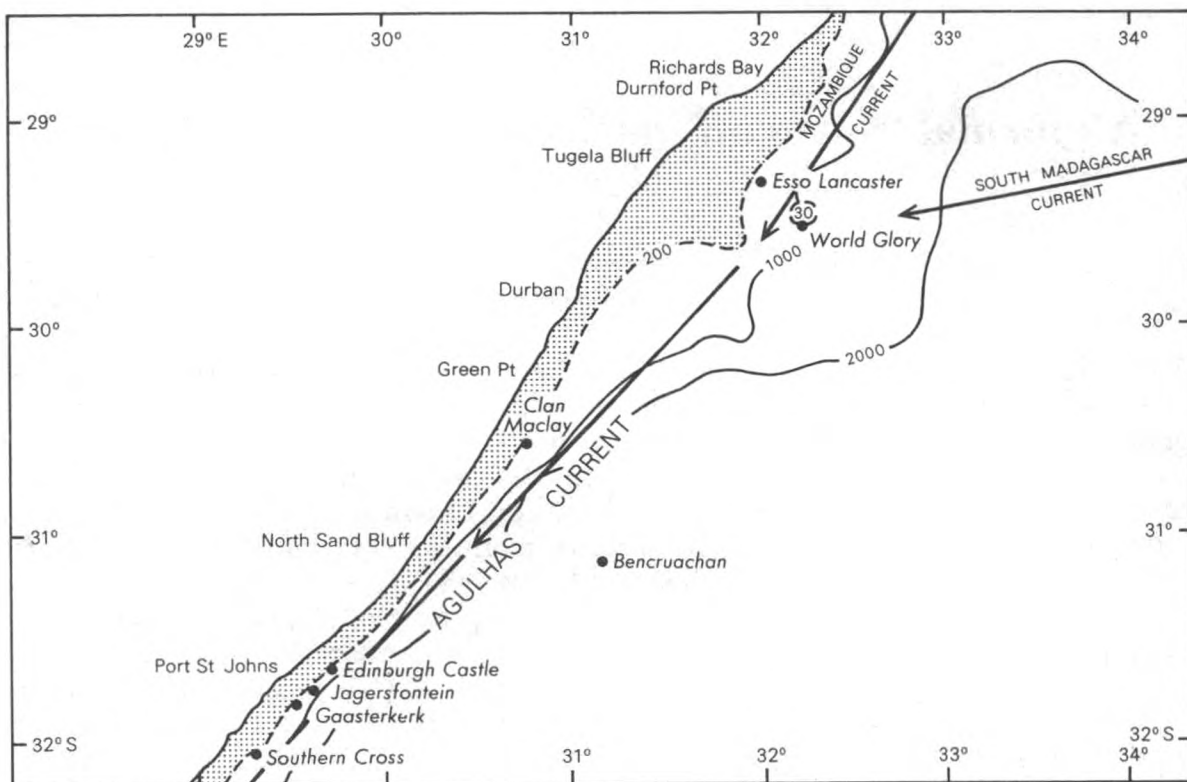


Figure 1. Chart of south-east coast of South Africa, showing Continental Shelf, Shelf Edge and Continental Slope, Agulhas Current, Inshore Counter-current and Coastal Upwelling, and Position of Ships which have encountered an Abnormal Wave. Depths are indicated in metres.

stretch of the continental slope, but because of the lack of soundings outside the 100 fathom line, the full extent of these canyons has not yet been plotted.

As far as can be ascertained the continental slope and rise is free of sea mounts or other protrusions except that in the approximate position $29^{\circ} 32'S$, $32^{\circ} 10'E$ a reported shoal of 22 fathoms is shown on the Admiralty Charts 2088 and 3851. However, as has already been stated, the area has not been closely examined so further shoal areas may exist.

The Agulhas Current

The mighty Agulhas Current sweeps down South Africa's south-east coast moved by its own momentum and the dynamic forces acting in this part of the ocean. It has its origin in the trade wind area of the central Indian Ocean where the surface drift is known as the South Equatorial Current. This drift current impinges on the east coast of Madagascar and the coast of Mozambique, forming two stream currents, one flowing southwards down the coast of Madagascar and the other along the Mozambique coast. The Madagascar section on reaching the southern extremity of the island veers across the Mozambique Channel towards the coast of Natal where it meets the Mozambique Current between Durnford Point and Durban and then flows southwards as a tremendous oceanic river, the Agulhas Current (see Figure 1).

The course of this current is greatly influenced by the submarine topography as the core of the current penetrates to a depth of over 330 metres. As the depths at the edge of the continental shelf are less than 300 metres and the shelf slope is very steep between Durban and East London, the core of the current is chiefly confined to the seaward side of the shelf. Here it attains its maximum velocity and rates of 4 to 5 knots are frequently experienced between Port St Johns and East London, especially during the southern summer and autumn when the N.E. Monsoon in the Arabian Sea ensures a maximum flow through the Mozambique Channel. The width of the Agulhas Current is from 60 to 100 n. mile. Under certain circumstances the southerly flow extends across the continental shelf to the coast but, as will be explained later, this is due to meteorological influences.

Meteorological conditions

On this south-east section of the South African coast the wind regime is motivated by two distinct seasonal sets of meteorological conditions. During the summer months, November to May (see Figure 2), a low-pressure area is situated over the interior of South Africa whilst a high-pressure system extends over the south-west Indian Ocean, south of Madagascar, resulting in the prevailing winds on the SE coast being from the NE to E, i.e. with the current and therefore contributing towards its velocity. Occasionally during the summer, a low-pressure system will originate on the South West African coast in the vicinity of Walvis Bay, caused by the large difference in the temperature of the air over the sea and over the land. This low-pressure system travels rapidly southwards along the coast and around Cape Agulhas and up the south-east coast. Strong westerly to south-westerly winds are experienced in association with the passage of these lows but they are of short duration with a short fetch.

During these summer months the depressions moving from west to east across the Southern Ocean in regular succession around the Antarctic continent are usually centred too far south to influence the coastal conditions to any great extent, although at times a heavy swell associated with such storms rolls in from the sw, but it is usually of a fairly regular character, and abnormal waves have

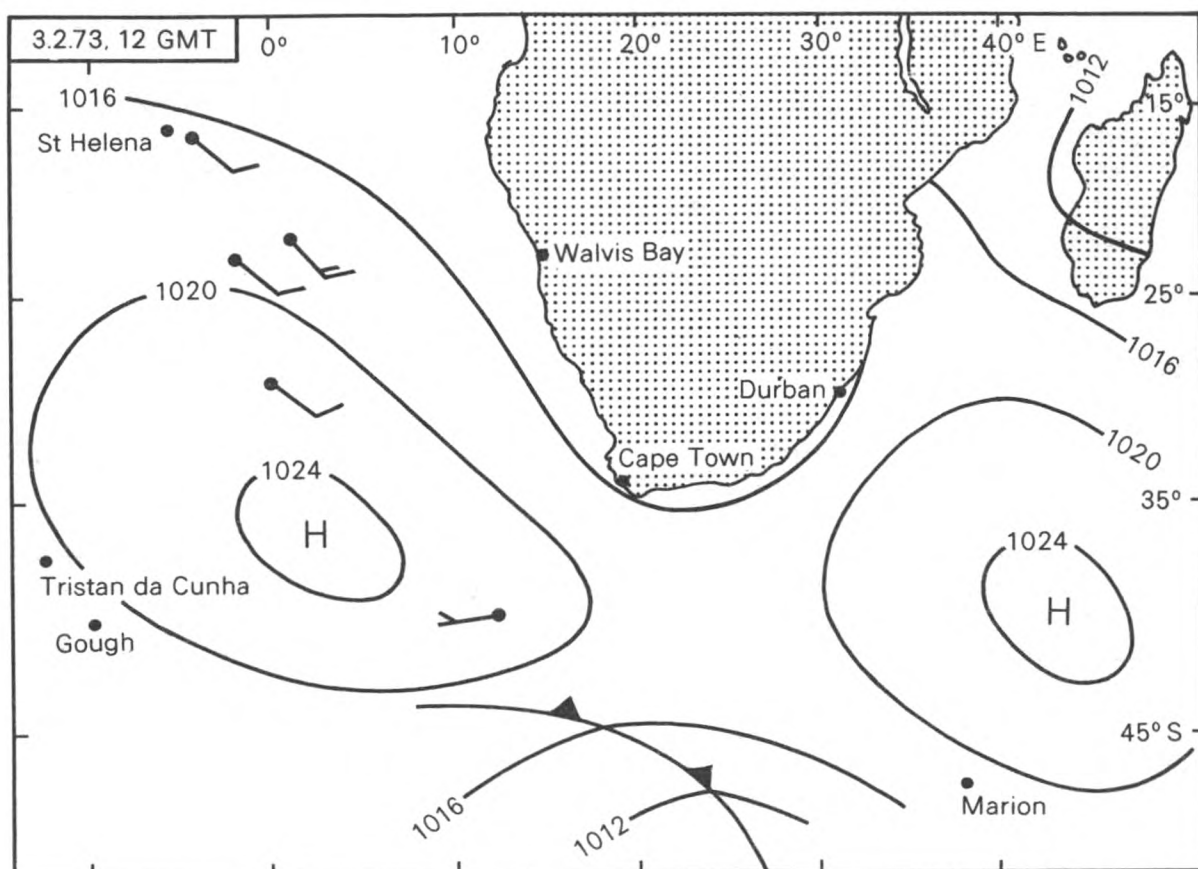


Figure 2. Typical summer conditions in the region of South Africa. The continent is flanked by two oceanic anticyclones and crowned by a thermal depression. The polar front is pushed far to the south.

only been reported once, i.e. by the *Jagersfontein* on 18 December 1959. On this occasion a very deep depression of 976 mb was centred at Marion Island 12 hours previously, which was unusual for this time of year.

During the winter months the meteorological pattern changes (see Figure 3). The low-pressure area in the interior of South Africa fills up and the southern depressions extend further northwards with the result that from late May to mid-October their influence is felt all along the southern and south-eastern coasts of South Africa. This results in strong south-westerly winds blowing parallel to the SE seaboard for 24 to 48 hours after the passage of the cold front (see Figure 4).

Counter current

There is one further aspect to be considered before we look at the wave regime. With the passage of a cold front along the southern and eastern seaboard, a counter current flows in an easterly to north-easterly direction at about 1 to 2 knots (see Figure 1). This counter current flows close inshore, within about 3 to 4 n. mile of the coast and hence inside the southward flowing Agulhas Current. It begins to flow about six hours prior to the passage of the cold front and is probably caused by a combination of the wind-driven surface current, an ingress of the West Wind Drift, a retroflexion of the Agulhas Current south of Mossel Bay and a gradient current due to the lowering of the atmospheric pressure as the depression moves eastwards, and hence the raising of mean sea level.

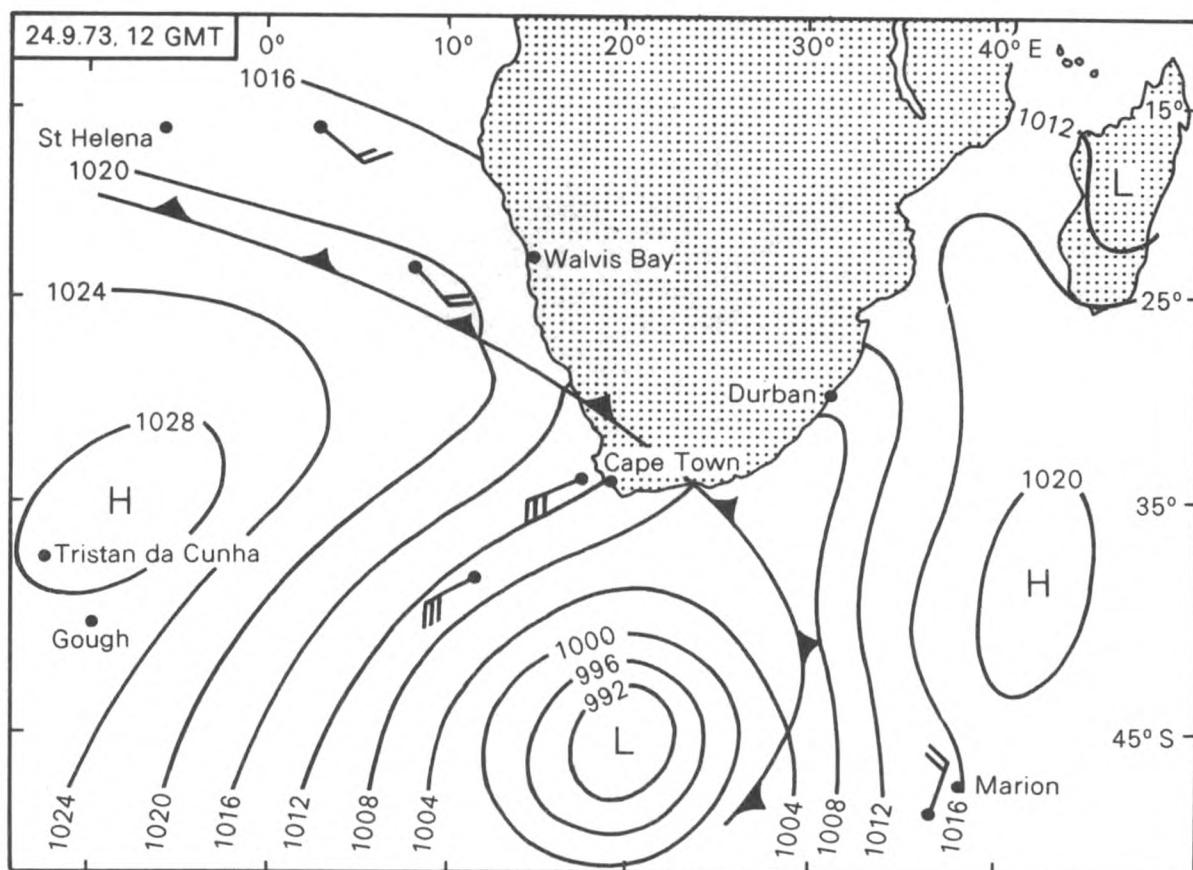


Figure 3. Typical winter conditions in the southern hemisphere. In comparison with the preceding figure the oceanic anticyclones are less extensive and offer little resistance to the polar front, the active waves of which travel from west to east in the latitude of Marion Island.

One other feature of this coast has to be noted. Prior to the passage of a cold front the wind on the coast is usually from the ENE to NE, force 6 to 7 for 24 hours or more (see Figure 3). This wind acts on the surface water on the continental shelf, which, being subject to Coriolis Force, moves away from the coast, resulting in upwelling occurring close inshore. At the same time sea level in the vicinity of the 100 fathom line is raised thus creating a gradient which tends to increase the velocity of the Agulhas Current along the edge of the continental shelf.

The wave regime

The waves on this section of the African coast are not only those directly associated with the wind blowing at the time but are a combination of the locally generated waves and those coming up from the Southern Ocean, where they have been generated over vast distances up to 1200 n. mile. It has been stated that the centre of the depression, the outskirts of which reach the southern and south-eastern shores of South Africa, usually pass over Marion Island during the winter months, May to October, and as will be seen from the reproduction of the synoptic weather map, shown in Figure 3, the fetch of the south-westerly wind is 1200 n. mile or more. The waves generated by this wind are fully developed and will therefore have reached their maximum height and length by the time they reach the vicinity of Port Elizabeth.

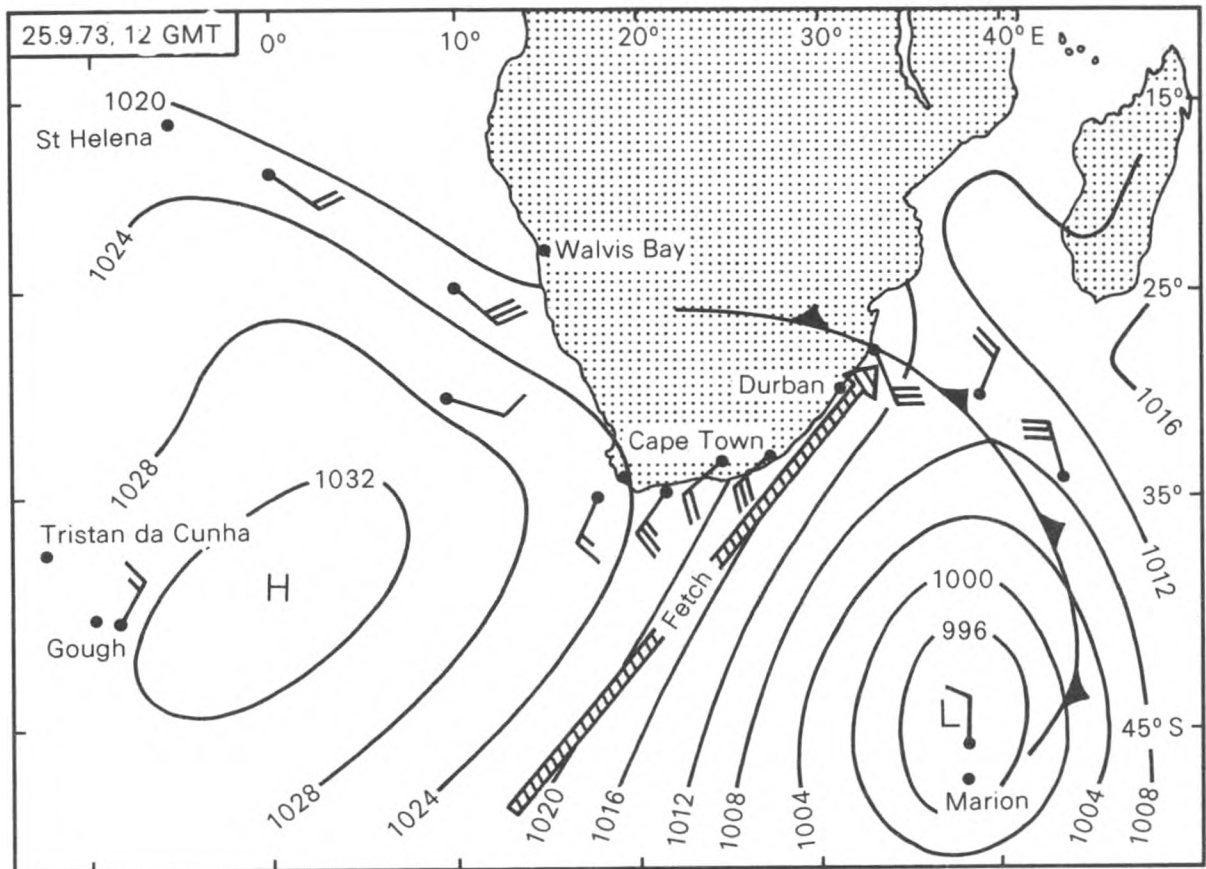


Figure 4. General situation favouring the formation of freak waves. A long fetch, behind the depression centred on Marion Island, is aligned in the direction of the Agulhas Current, which flows in the reverse direction to the south of Durban. The close resemblance to the chart for the previous day (Figure 3) shows that such a situation may well be foreseen.

Even though the wind along the coast may not be very strong these ocean waves still come rolling in. There may be more than one source generating such fully fledged waves, having differing wavelengths and frequencies. The locally generated waves are shorter and steeper. All these are greatly affected by the south-westerly flowing Agulhas Current which tends to shorten the wavelength and raise the height of the sea, and this effect is of course more pronounced where the opposing current is strongest, i.e. just outside the 100 fathom line. Because the wavelengths of the local waves, and the long-distance swell waves differ to a considerable degree, they are frequently being momentarily super-imposed upon one another, thereby increasing the height.

It may so happen that there are occasions when all the wave trains are in conjunction, and a gigantic wave forms for a few minutes after which the separate waves become disunited and the wave heights return to normal.

These abnormally high waves are naturally associated with correspondingly deep troughs. If these were of a normal sinusoidal character, a ship handled in a seamanlike manner would rise up to the approaching wave and, although she might take some green water over the bow, would probably suffer no severe damage.

However, this is not the case with these abnormal waves, hence the reason why they have been referred to previously as 'freak' waves. It would appear that as the differing orbital motions of the waves become integrated, whilst under the influence of the current flowing strongly against the direction of the waves, an abnormally high steep wave is formed. These waves have been reported to

be in excess of 18 m in height and have always been associated with a correspondingly long deep trough—which occurs in advance of the wave. It is this phenomenon which constitutes the great danger to a vessel steaming into the sea at speed, and which has given rise to the expression 'a hole in the sea'.

Conclusion

All the circumstances which contribute towards the formation of an abnormal wave have now been examined but before making any specific pronouncement on the effect of this wave, the course of events leading to its formation are summarized as follows:

- (a) Prior to the passage of a cold front along the SE coast, a strong north-easterly wind accentuates the speed of the Agulhas Current, that tremendous body of water up to 100 n. mile wide and 330 m deep, flowing in a south-westerly direction, having its maximum velocity and depth just outside the 100 fathom line. The velocity can be as high as 5 knots but averages 3–4 knots between Port St Johns and East London.
- (b) A very rapid change in direction of the wind occurs with the passage of the cold front, which is travelling at about 25 knots along the coast. Records show that a change from NE, force 6 to SW, force 6–7 occurs in about 4 hours.
- (c) The effect of the south-westerly wind on the sea state immediately takes place. The south-westerly wind comes away suddenly at anything up to gale force, and immediately brings with it a very rough sea. These local wind-generated waves are within an hour of the onset of the wind up to 3 m high, having a wavelength of approximately 60 m and a period of 6–7 seconds.
- (d) The effect of this fast southward flowing current shortens the wavelength of the locally generated waves and increases their height. As a result these waves would be 3 m high or more with a length of about 50–60 m.
- (e) Fully developed waves up to 6 m high or more, generated by the south-westerly wind over a tremendously long fetch, accentuate the height of the locally generated waves. These waves travel at about 30–35 knots but are slowed down when they encounter the south-flowing current. As a result the height of the waves is increased, probably by about 25 per cent, to approximately 8 m with a wavelength of about 150 m.
- (f) The superimposition of two or more waves of differing wavelengths creates an abnormally high wave up to 20 m high, which, however, only lasts a relatively short period of time, perhaps a matter of a few minutes.
- (g) Because this abnormally high wave is travelling in the opposite direction to the fast-flowing current, the northern or leeward face of the wave becomes extremely steep, with the crest almost at breaking point.
- (h) A long abnormally deep trough also occurs on the north-eastern side of the wave, possibly owing to a suction effect caused by the combination of the two or three waves moving against the fast-flowing current.
- (i) Eight of the 11 ships which reported abnormal waves were within two or three miles outside the edge of the continental shelf. None of them were inside the 100 fathom line.
- (j) Four of the 11 ships were near known canyons on the shelf slope.
- (k) On 7 of the 11 occasions, there was a deep atmospheric depression centred at or near Marion Island during the 24 hour period preceding the occurrence. On the other 3 occasions active depressions were so situated that strong south-westerly winds had been blowing over distances of about 1000 n. mile towards the position of encounter. In other words on

every reported occasion south-westerly winds with a fetch exceeding 1000 n. mile had been blowing for some considerable time before the occurrence.

Effects of an abnormal wave on a vessel

So what then is the effect of this abnormal wave on a vessel heading into it?

The ship may be steaming at a reduced speed, although with a large vessel there is often a tendency to consider that she is able to plough her way at full speed through the normal seas being experienced, i.e. up to 8 m. Then suddenly without any warning the bow falls into a long sloping trough, probably greater than the length of the ship, so that she virtually ends up by steaming downhill with increased momentum. At the bottom of the sloping trough a very steep mountain of water probably more than 18 m high and almost about to break is racing towards the ship at up to 30 knots or 15 m per second. Under these circumstances nothing can be done to help the ship overcome the tremendous pressures and weights which are about to be exerted on the hull. The ship's forepart has no time to lift to the onrushing mountain of water, hence it plunges into the wave, which then becomes unstable and crashes down with a mighty force on to the deck, usually striking it in the vicinity of the break between Nos 1 and 2 hatches or about 30 m abaft the stem.

The buoyancy potential of the forepeak, chain locker and any other empty spaces in the forepart gives this foremost part of the ship an upward lifting motion as it struggles to rise to the surface, whilst at the same time the tremendous weight of the sea crashing down on to the deck abaft this buoyant area places a colossal strain and stress not only on the deck itself but also on the internal members of the ship's structure in the vicinity of the bulkhead between Nos 1 and 2 hatches, which results in considerable internal structural misplacement.

The solution

Because these abnormal waves occur without any warning it is not possible for a vessel encountering one to manoeuvre and thus avoid risk of damage. There is, however, one obvious criterion which gives a distinct guide as to how to lessen the chances of encountering an abnormal wave and this is to keep away from the vicinity of the outer edge of the continental shelf or 100 fathom line between Richards Bay and Great Fish Point. When steaming to the south-west with a falling barometer in a fresh north-easterly wind with a change to strong south-westerly winds forecast in the next 12 hours it is advisable to stand in towards the coast so that when the wind changes the ship will be inshore of the 100 fathom line. The ship should remain inside the 100 fathom line until the wind and sea have moderated sufficiently to allow her to edge gradually out beyond the 100 fathom line.

Acknowledgements

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(Appendix follows overleaf.)

Appendix—Environmental Log

SHIP'S NAME	DATE AND TIME (SAST)	LAT °S TOPOGR. FEATURES	LONG °E FEATURES	WIND WAVES	FETCH OF SW'LY WIND AND DURATION	MOVEMENT OF COLD FRONT	POSITION OF DEPRESSION BAROMETRIC PRESSURE	REMARKS
1. <i>Gaasterkerk</i> (Damage unknown)	11.4.52 0120	31°8 Close outside 100 fm line near canyon	29°5 200 n mile for past 24 hours	SSW 4 Moderating	1200 n mile for past 24 hours	Passed thro' position of ship at time of encounter with freak wave	Marion Is. 1400/10 Lower than 996 mb	sw'ly force 10 at 1400/10 in vicinity
2. <i>Oranjerfontein</i> (Damage on deck)	7.9.53 0105	32°3 Close outside 100 fm line	29°0 200 n mile for past 36 hours	SSW 4 Moderating	1000 n. mile for past 36 hours	Passed thro' position at 1400/6, 11 hours before	Marion Is. 1400/6 Lower than 920 mb (sic)	Superficial damage sustained
3. <i>Jagersfontein</i> (Damage unknown)	18.12.59 0115	31°7 Close outside 100 fm line between 2 deep canyons	29°7 200 n mile for past 24 hours	SW 7	1200 n. mile for past 24 hours	Passed thro' position at 1400/17, 11 hours before	Marion Is. 1400/17 976 mb	Weather map shows fresh sw'ly winds during past 24 hours
4. <i>Edinburgh Castle</i> (Damage on deck)	21.8.64 About midnight 20/21	31°7 Close outside 100 fm line near canyon	29°8 200 n mile for past 24 hours	SW 6	1200 n mile for past 24 hours	Passed thro' position at 1600/20, 8 hours before	Marion Is. 1400/21 974 mb	Isobars on weather map indicate strong sw'ly winds during past 24 hours
5. <i>World Glory</i> (Broke in half)	13.6.68 1500	29°6 Close to reported shoal patch	32°3 200 n mile for past 24 hours	SW 9	800 n mile for past 24 hours	Passed thro' position prior to 1400/12	Lat 36°S, Long 42°E 1400/12 990 mb (600 n mile)	Depression almost stationary for past 24 hours. Geostrophic winds sw 7 for 48 hours on coast.
6. <i>Esso Lancaster</i> (Damage unknown)	5.8.68 1045	29°3 Close outside 100 fm line	32°0 200 n. mile for past 24 hours	SW 8	1200 n. mile for past 24 hours	Passed thro' position at time of freak wave	Marion Is. 1400/4 976 mb	—
7. <i>Clan MacIay</i> (Deck cargo damaged)	10.10.69 1126	30°6 Close outside 100 fm line	30°7 200 n. mile for past 24 hours	SW 3 Moderating	800 n. mile for past 24 hours	Passed thro' position at 1330/9, 22 hours before	37°S, 35°E at 1400/19 990 mb. 37°S, 40°E at 1400/10 (540 n. mile)	Depression moving slowly eastwards
8. <i>Southern Cross</i> (Steaming NE)	11.10.69 1900	32°0 Close outside 100 fm line near canyon	29°3 200 n. mile for past 48 hours	SW 7-8	800 n. mile for past 48 hours	Passed thro' position at 1430/11, 5 hours before	38°S, 31°E at 1400/11 (400 n. mile). 38°S, 37°E at 1400/12	Secondary depression caused a continuation of sw'ly winds
9. <i>Moreton Bay</i> (Damage unknown)	5.8.71 0900	33°6 In deep water	27°5 200 n. mile for past 24 hours	WSW 11	1200 n. mile for past 24 hours	Passed thro' position at time of freak wave	Marion Is. 1400/5 970 mb	At 1400/5 the depression centred at Marion Is. was extremely deep (970 mb) giving rise to gale force winds in the whole area
10. <i>Bencruachan</i> (Severe structural damage for'd)	3.5.73 0400	31°2 In deep water	31°2 600 n. mile for past 36 hours	SW 7	600 n. mile for past 36 hours	Passed thro' position at 1400/1, 38 hours before	35°S, 39°E at 1400/2 (600 n. mile) 1004 mb	Weather map for 1400, 3 May queried
11. <i>Steedland</i> (Severe structural damage for'd)	25.9.73 1647	33°0 1 n. mile outside 100 fm line	28°3 200 n. mile for past 24 hours	SW 9-10 9-12 m waves	1200 n. mile for past 24 hours	Passed thro' position at 2000/24, 21 hours before	40°S, 19°E at 1400/24 Marion Is. 1400/25	Sustained gale force winds in area since 2000/24. Storm force winds along the coast.

The Marine Society

BY DR RONALD HOPE, OBE

(Director, The Marine Society)

Some readers of *The Marine Observer* will have met Paul Horsman, a marine biologist currently working for The Marine Society, at sea. His job is to serve aboard merchant ships, spending from two to three months on any one ship. While on board he makes observations of marine life for the purposes of research and he also offers his services as a teacher to the ship's company. In this way many seafarers have learned more about plankton than they ever knew before.

Paul is also busy in two further ways. He is writing a book on marine fauna for the guidance of seafarers and it is hoped that the book will be published in 1985. He has already designed a full-colour wall chart, published by The Marine Society at £2, which is suitable for cabin bulkheads. This chart will help the seafarer to identify much of the animal life he is likely to see at sea.

Paul's other project is directly linked with the Meteorological Office; I drew his attention to the mass of marine biological material which has been published in *The Marine Observer* based on observations made over a period of more than 100 years, material which has originated in reports from seafarers. Paul is working on this archive at the Meteorological Office and from it he hopes to draw distribution maps and to derive other useful information which will serve seafarers of the future. Merchant seafarers have already helped in the production of a major scientific work, consisting of the two books edited by Captain Gerald Tuck called *A Field Guide to the Seabirds of Britain and the World* and *A Guide to Seabirds on the Ocean Routes*. The Marine Society can claim an interest in these since more than 30 years ago it arranged for merchant seafarers to be able to join the Royal Naval Birdwatching Society and thus stimulated the production of many of the reports used by Captain Tuck. Now it is on the basis of other seafarers' reports, made through the Meteorological Office, that Paul Horsman is carrying on his research in marine fauna.

Paul is not the only tutor employed by The Marine Society at sea. To the *Uganda* recently the Society supplied a musician, Malcolm Rudland, and musicians have been sent to sea before, including John Hawkins, a young composer with a splendid seafaring name who wrote a Sea Symphony commissioned by the Society which was played at three concerts and broadcast by the BBC in December 1982.

The Society's best-known experiment in this tutorial field is the employment of an artist, and artists have now been voyaging in merchant ships for over 15 years. Three of these artists—Grenville Cottingham, Peter Knox and Lincoln Rowe (who is currently at sea)—have developed into well-known marine artists, the only artists with an intimate knowledge of merchant ships who are painting pictures which will become valued works in the future.

Of course, these particular activities are no more than a small part of The Marine Society's work. They are merely an extension of the work of the College of the Sea which since 1938 has offered tuition by correspondence to seafarers, together with career and educational advice. The College arranges for GCE, Open University and other examinations to be taken at sea, and each year conducts a variety of literary and art competitions in which the prizewinning entries find a means of publication in The Marine Society's quarterly magazine

The Seafarer. In 1984 *The Seafarer* celebrates a half-century of publication and a Golden Jubilee book called *Sea Pie*, an anthology of contributions to the magazine, will be published in the early summer by Fairplay Publications.

No doubt the best-known of The Marine Society's activities is Seafarers Libraries—the provision to most deep-sea British ships, and to some others under other flags, of a library service where the books are regularly exchanged and requested books are supplied. Books may be borrowed on personal loan, and Seafarers Libraries also offers ships a hobby kit service with over 100 hobby kits always available on a sale or return basis. Enquiries are welcomed. In 1982 Seafarers Libraries sent a quarter of a million books to 1000 ships, though this is little more than half the library work that was being done in those happier days for British shipping 10 years ago. This activity first began in 1919 when the Seafarers Education Service, at one time an independent society founded by Albert Mansbridge (who also founded the Workers' Educational Association), was established. In those days there were still some seafarers who were unable to read.

Another familiar activity, which was once the work of an independent society but which is now carried on by The Marine Society, is Ship Adoption. The original British Ship Adoption Society was founded in 1936 by Edmund Watts, chairman of a now defunct shipping company called Watts, Watts, to bring 'a breath of sea air' into the classroom. Schoolchildren write to seafarers and seafarers write to schoolchildren, the seafarers writing with the object of explaining what they do at sea, where their ships go, and what the foreign places which they visit are like. Where Ship Adoption works well it can be an educational tool of considerable force. It is also good for the seafarer since it makes him think a little more closely about his job and brings him a circle of friends ashore. There are still about 300 schools in the scheme and the Society's central problem is to find enough seafarers willing to correspond with schools. It is not everyone's choice of a spare-time occupation though it can prove very rewarding for those suited to it. Two seafarers have even found their wives in this way!

Since the old Red Ensign Club in Dock Street closed, The Marine Society has also run the London School of Nautical Cookery, the only institution south of Liverpool which trains ship's cooks. The courses are full-time and visitors to The Marine Society headquarters may well have an opportunity to sample the wares, for a good three-course lunch is served for £1. It is also possible to stay at The Marine Society in self-catering accommodation, if it is not already fully booked. The charges are modest and the premises are only 10 minutes' walk from the House of Commons and three minutes' walk from the new IMO (International Maritime Organization) headquarters.

The Marine Society has many other maritime connections. As the British shipping industry has declined, the Society has amalgamated with or absorbed other bodies. The Seafarers Education Service and College of the Sea absorbed the British Ship Adoption Society in 1974, by which time it had also absorbed the remaining assets of HMS *Worcester*. The Marine Society, in its old form, took over the debts and assets of the Red Ensign Club in 1974 and thus acquired the London School of Nautical Cookery. In 1976 The Marine Society amalgamated with the Seafarers Education Service and received the remaining assets of the Merchant Navy Comforts Service Trust. Because of the *Worcester* connection the society owns the 34 acres of Kent on which Merchant Navy College, Greenhithe, has been built, and indeed inspired the building of the College. The site is now let at a peppercorn rent to the Greater London Council for a period of more than 100 years.

One of the Society's most notable achievements in the post-war period was the launching of the Nautical Institute. The Nautical Institute—the professional body for navigators—is a separate institution with its own membership exceeding 4000 officers, but it shares The Marine Society's headquarters. Also sharing

these headquarters are the Royal National Lifeboat Institution and, more recently, the International Federation of Shipmasters' Associations. If the Dreadnought Seamen's Hospital becomes a wing of St Thomas's Hospital, as is the intention, it is probable that the Seamen's Hospital Society will also move to The Marine Society headquarters.

So far I have said little or nothing about The Marine Society's history. It is the oldest maritime charity. It was founded in 1756, at the outbreak of the Seven Years' War, to provide the King's ships with sailors. Sir John Fielding, the 'blind beak of Bow Street' and brother to novelist Henry Fielding, was closely associated with Jonas Hanway, the man who introduced the umbrella to the City of London, in its foundation, but it is Hanway's influence which has lasted.

Fielding wanted to clear London's streets of the unemployed riff-raff of the day. (Magistrates were still suggesting that 'naughty boys' should be sent to sea as late as the 1950s.) Hanway wanted to educate such boys for the sea and from the start of The Marine Society he instituted some training. Subsequently he wrote a book advocating the setting up in each county of a nautical college—a 'stone frigate'. The only college which was built in consequence was Hull Trinity House School, in 1787, because Hanway was well over a hundred years before his time and local authorities did not have the power to put his suggestions into effect. However, in 1786, the year of Hanway's death, his Marine Society established the first training ship.

For a long time *The Marine Society*, as the merchantman *Beattie* was renamed, was the only training ship, but gradually, in the nineteenth century, more were established—*Akbar*, *Mercury*, *Arethusa*, *Unicorn*, *Exmouth*, and many more, including of course *Worcester*, *Conway* and *Warspite*. At one time there were nine training ships in the Thames alone and something approaching 30 round the British coast. For nearly 150 years this was the way seafarers were trained.

Altogether the Marine Society ran eight training ships, three of them named or re-named *Warspite*. *Warspite II* is the subject of the Society's 1983 Christmas card. By 1940, however, the Council of The Marine Society—well before some others running such ships—realized that the day of the training ship was over. After the Second World War the Society did not re-establish a training ship.

This did not mean that the Society lost interest in professional training. It still helped young men to make a career at sea, by paying fees at training colleges and, on a larger scale, by giving grants and loans for uniform. It took over and developed the College of the Sea scholarship scheme to help ratings become officers and it administers the Slater Award scheme, which is largely financed by the Merchant Navy and Airline Officers' Association. Over the years it has presented many boats to sail training organizations, as well as other equipment, and in recent years it has greatly increased the grants made for sail training, the sum thus being spent in 1983 exceeding £100 000. It very largely maintains the training ship *Foudroyant*, the oldest British ship afloat, and gives considerable financial help to the Sea Cadets.

The Marine Society has been able to increase such expenditure recently through the establishment of the Marine Adventure Sailing Trust (MAST) which was the inspiration of the Society's Honorary Treasurer, Richard Thornton. (The Thornton family has always provided the Society with its Treasurer, the first being the anti-slaver John Thornton, who was related by marriage to William Wilberforce, and today's Richard is a direct descendant of the eighteenth century John.)

MAST is an investment trust to which The Marine Society has subscribed £300 000 in loan notes. Through the Stock Exchange a further £750 000 has been subscribed by private investors. On the total £1 050 000 The Marine Society receives all the interest (currently over £60 000 a year) and at the end of seven years it will receive back its £300 000. At that time the investors, who

receive nothing in the meantime, will benefit from any capital gain. Because it does so much for seafarers and for those interested in the sea The Marine Society still needs support from those of goodwill, though it has no appeals organization and does not seek support direct from the general public. In 1982 the Society spent over £784 000 on libraries, books, grants, correspondence tuition, cookery tuition and its other activities and its own resources supplied only one-quarter of this sum. The rest came from those who know of and appreciate its work.

Visitors are welcome at The Marine Society headquarters. The premises are at 202 Lambeth Road, London SE1 7JW (Telephone 01 261 9535) and occupy what used to be the Archbishop of Canterbury's orchard. The office building faces Archbishop's Park and has its own attractive garden and car park. Quite often the sun shines on the sundial which was unveiled by HM the Queen when she opened the headquarters in 1979. Designed by Christopher Daniel, once a P & O officer and now Education Services Officer at the National Maritime Museum, the sundial combines the symbols of The Marine Society and the Nautical Institute. The Institute's armillary sphere, an ancient navigational instrument which remained popular until the nineteenth century, backs the Society's sea-dog bearing the torch of learning. The symbol epitomizes what the Society stands for.

Aurora Notes January to March 1983

By R. J. LIVESEY

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

In Table No. 1 are listed the observations made during the period and received from mariners up to the time of writing. In Table No. 2 are given the significant auroral reports reported, their locations, times and ranges of activity noted by

Table 1—Marine Aurora Observations January to March 1983

DATE 1983	SHIP	GEOGRAPHICAL POSITION	TIME (GMT)	FORMS IN SEQUENCE
10 Jan. ..	<i>British Norress</i> ..	54° 50' N, 04° 38' E	0345	mhB
10 ..	<i>Resolution Bay</i> ..	47° 28' S, 45° 45' E	1200-1430	R ₁ R, RA
6 Feb. ..	<i>Starella</i> ..	56° 03' N, 18° 12' W	0215	N
7 ..	<i>Botany Bay</i> ..	41° 30' S, 150° 54' E	1200-1230	hA, RA, hA, pmRR
8 ..	<i>Jumbo Challenger</i> ..	01° 53' N, 92° 11' W	0155	G(peculiar)
8 ..	<i>Esso Dalriada</i> ..	53° 09' N, 00° 45' E	0015-0400	fR, RR, RA, RR, hA, phA
12 ..	<i>Kimberley</i> ..	38° 31' S, 137° 55' E	1300	qG, RS
3 Mar. ..	<i>Cumulus</i> ..	57° 00' N, 20° 10' W	0005-0200	p ₂ mSR, RA

KEY: f=fragmentary, G=glow, hA=homogeneous arc, hB=homogeneous band, m=multiple, N=unidentified auroral form, p=active, q=quiet, RA=rayed arc, R₁R=medium-sized rays, RS=rayed surface, S=surface.

observers. The number of observers reporting on a given night acts as an index of the intensity and spread of the storm. On the other hand, owing to cloudy weather or other reasons, significant auroral activity is sometimes noted by isolated observers of known experience and integrity and thus included in the table. Unconfirmed glows or unidentifiable forms are normally excluded.

Radio aurora effects were noted by British radio operators as follows:

January: 16, 17, 29.
 February: 4, 5, 6, 7, 12, 13, 15, 23.
 March: 1, 2, 3, 5, 11, 12, 13, 18, 19, 20, 25, 28, 31.

Table 2—Auroral Observations January to March 1983 (significant sightings only reported)

DATE (NIGHT)	LOCATION OF OBSERVERS	NUMBER OF OBSERVERS	RANGE OF ACTIVITY*	TIME (GMT)	NOTES
9/10 Jan.	USA, Canada, Norway, Scotland, Finland	9	2-6	1745-0420	
10/11	Norway, Finland, Australasia	3	4-6	1200-1255	
15/16	Central Scotland	1	2	1903-2000	Reliable observer
18/19	South Scotland, south Norway	3	1-4	2035-2200	
4/5 Feb.	USA, Canada, Scotland, Norway, Finland	12	3-7	1615-0600	
5/6	Scotland, Norway, Finland	9	1-6	1625-0215	
6/7	Scotland, Norway	3	1-2	1550-0155	
7/8	Shetland, Norway, Australasia	5	1-5	1200-0400	
9/10	Shetland	1	4	0058-0150	Reliable observer
11/12	South Norway	2	4	1935-2040	
13/14	Scotland, Norway	5	1-4	1950-0150	
14/15	Scotland, Norway	3	1-2	2000-2225	
19/20	Norway, Scotland	3	1-4	1940-2330	Reliable observer
20/21	South Finland	1	5	2108-2111	
1/2 Mar.	USA, Canada	2	3-4	0045-0520	
2/3	Orkney, North Norway	3	5-6	1745-2320	
3/4	Orkney, Shetland, North Norway	5	4-6	2040-2314	
5/6	Canada, Scotland, Finland	4	4-5	2100-0130	
11/12	Norway, Finland	2	4-5	1855-0400	
14/15	Scotland	2	2	2050-2100	
18/19	South Norway	1	4	1945-2245	Reliable observer
19/20	South Norway	1	4	2000-2225	Reliable observer

* Range of activity code: 1=Glow, 2=Homogeneous arc, 3=Rayed arc, 4=Ray structures, 5=Active moving forms, flaming or flickering, 6=Corona, 7=All-sky aurora.

A most interesting report was received from the Dutch ship *Jumbo Challenger* passed to us by courtesy of the Royal Netherlands Meteorological Institute. As will be seen in Table No. 1, the vessel was close to the Galapagos Islands when at 1955 local time the ship was suddenly lit up by a bright greenish glow for about 15–20 seconds together with the whole sky from horizon to horizon. The glow was bright enough for the Captain to see it inside his cabin and to cause him to repair to the bridge. The sky was clear but isolated distant lightning was noted 10 minutes later. The Radio Officer had reported difficult radio communications on the previous day and on the day concerned.

The writer is inclined to the view that, notwithstanding the coincidence with a period of substantial auroral activity, the glow might have been caused by the entry of a large meteor into the atmosphere in view of the suddenness and shortness of the apparition. The writer has seen two such apparitions in Scotland. Furthermore the disturbance of the earth's magnetic field at the time was by no means as intense as on 13/14 July 1982, when the aurora pushed down to the Bahamas and Malta (see *The Marine Observer*, July 1983). The Galapagos Islands are much further south magnetically speaking. No final conclusion can be arrived at with respect to this isolated observation from that area.

During the period under discussion the biggest aurora was that of the night 4/5 February when considerable activity was reported along the eastern border between Canada and the USA. The storm extended over Scotland and gave all-sky conditions in southern Finland. There was a second storm on the following night, 5/6 February, of lesser extent mainly reported as glows and unspecified forms by the *Starella* and by observers all over Scotland and across southern Finland.

It should be remembered that as a storm develops and declines, the earth is rotating from west to east beneath the auroral oval in the outer atmosphere and it is thus not surprising that the Finns began reporting activity at 1800 GMT while the American observers were observing it in their evening up to 0500 GMT. As an auroral event frequently consists of a series of sub-storms, each building up and declining, with a gap of an hour or so in between, the Americans are not seeing the same sub-storms as the watchers in north-west Europe.

ICE CONDITIONS IN AREAS ADJACENT TO THE NORTH ATLANTIC OCEAN FROM JUNE TO AUGUST 1983

The charts on pages 46 to 48 display the actual 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).

JUNE

Pressure was below average in the vicinity of the North Pole, resulting in a weak anomaly for south-westerly winds west of Greenland and a stronger anomaly for south-westerly winds east of Greenland. Temperature anomalies were rather small (over Canada temperatures were near normal in marked contrast to the colder than usual weather during May). Break-up was earlier than usual in the east of Hudson Bay but ice was slow to clear in the north-west. Over Baffin Bay the 'north water' area cleared much as usual but very close ice persisted in Lancaster Sound where normally only small amounts of ice are reported. In the Davis Strait and over the Labrador Sea ice conditions were more severe than normal so that break-up was delayed. The ice edge remained about 50 n. mile further west than usual. Old polar ice persisted around southern Greenland and presented some navigational problems to shipping. East of Greenland the marked tendency for deficits of ice during recent months continued. There was evidence of further disintegration over the Greenland Sea and large areas of open water developed south of Franz Josef Land. Ice conditions in the Kara Sea were near normal.

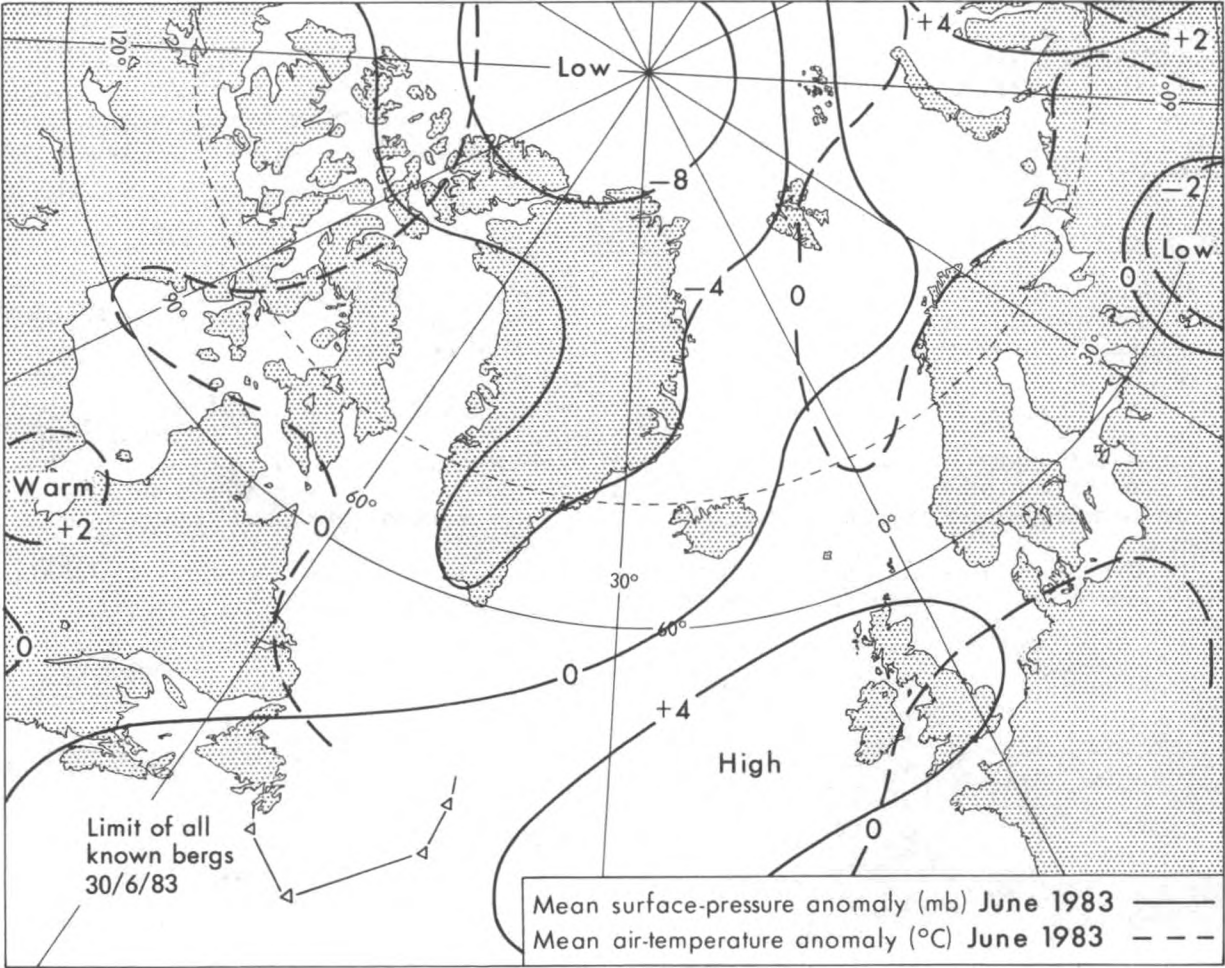
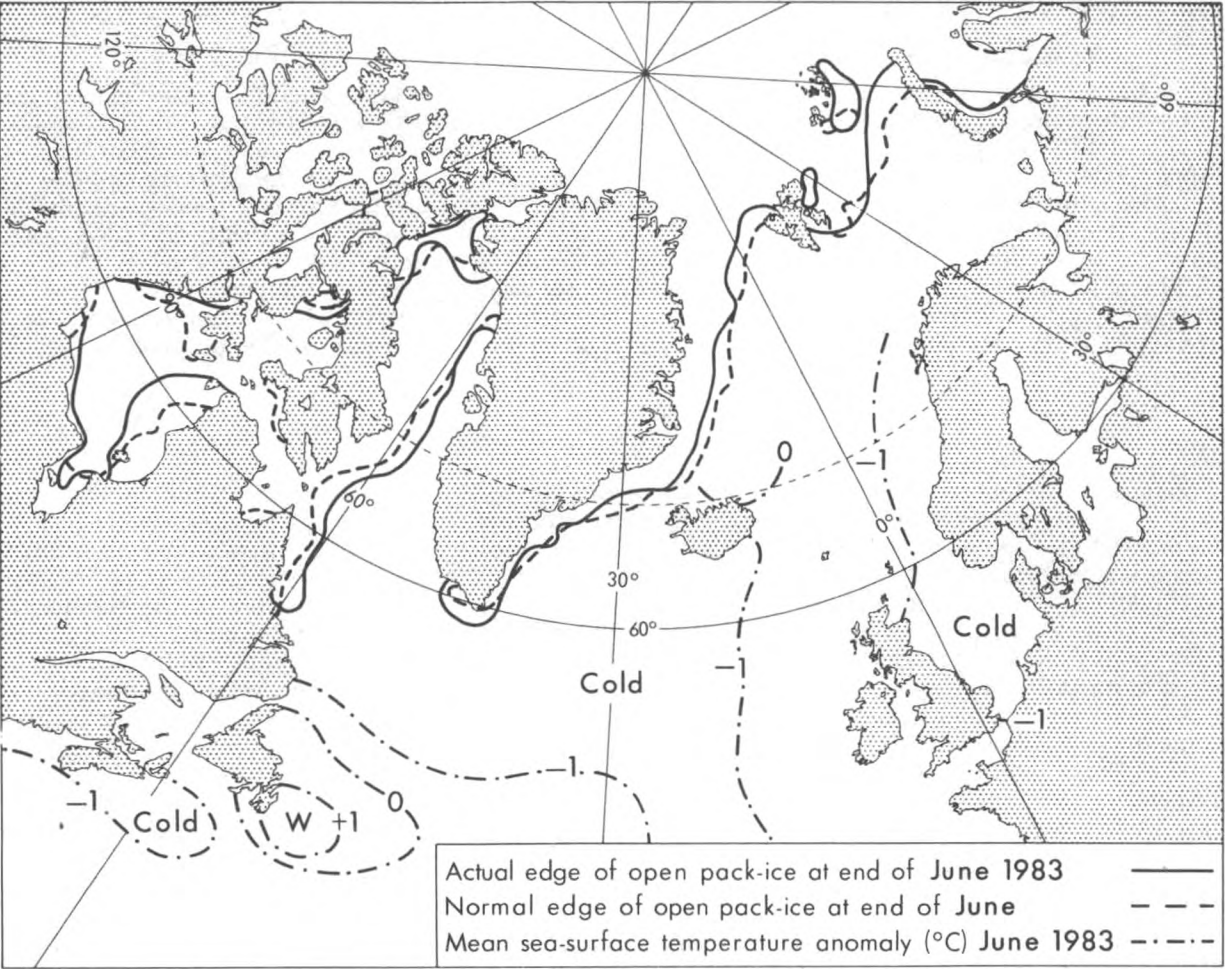
JULY

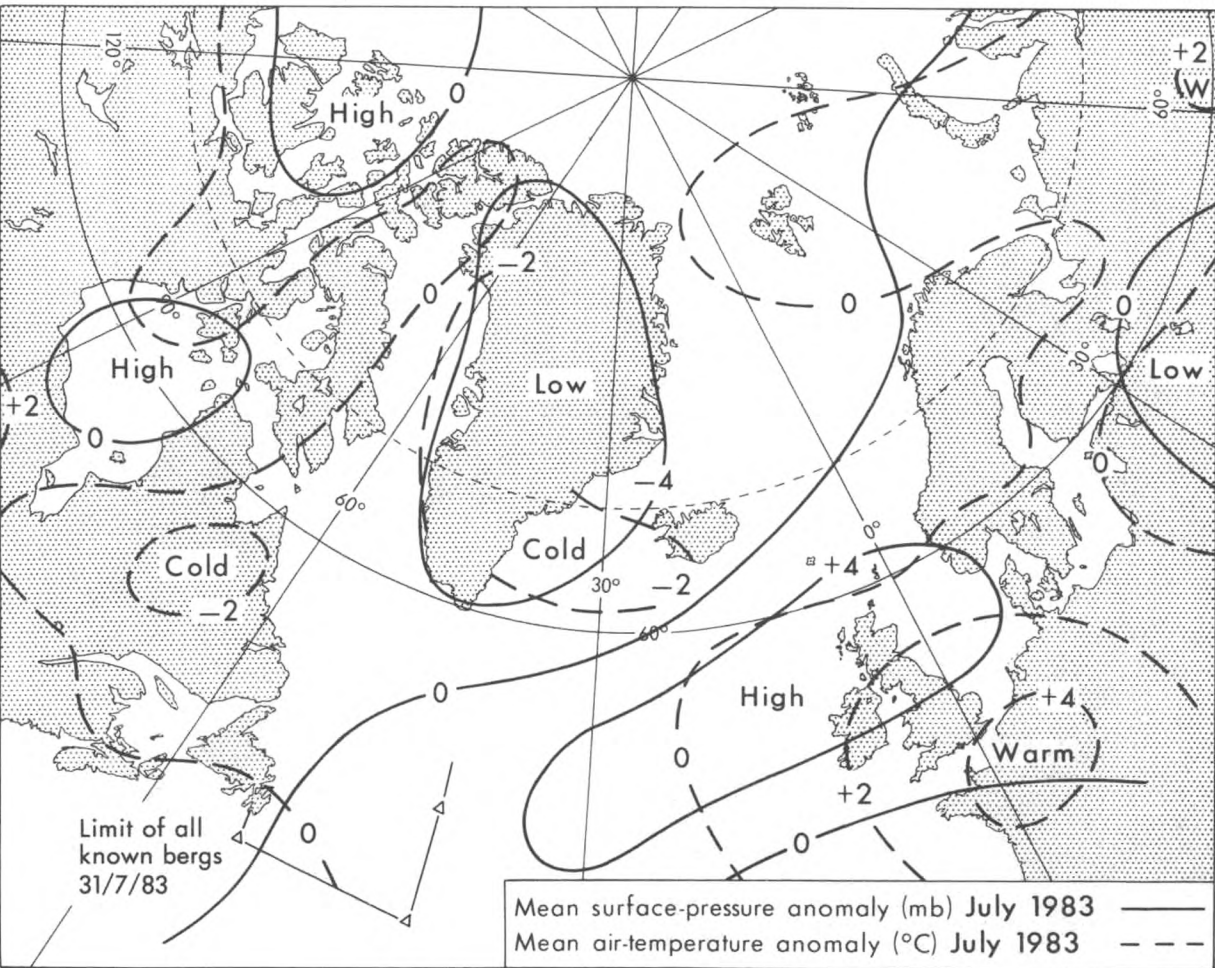
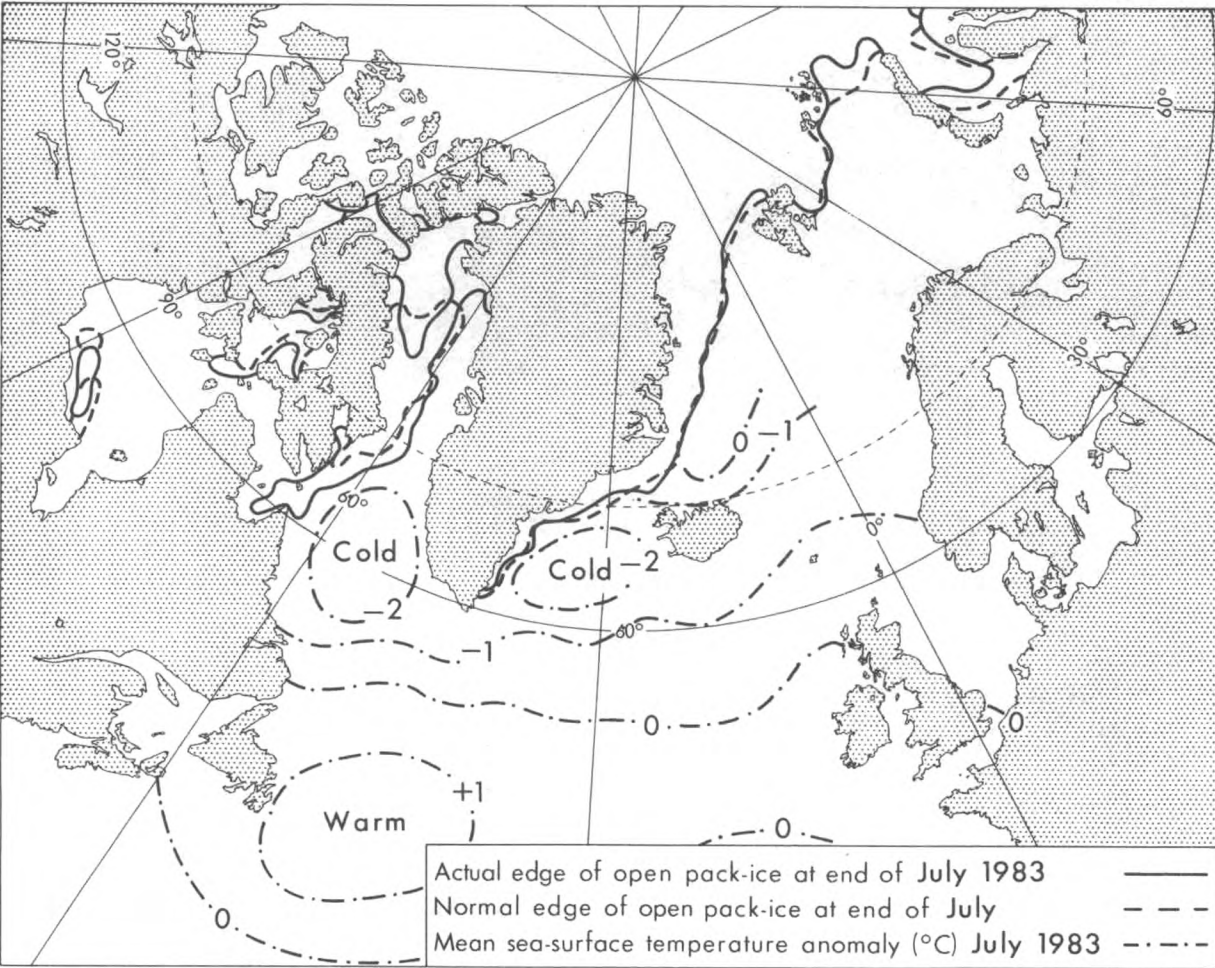
Pressure and temperature anomalies were rather small with lower pressure than usual over Greenland. West of Greenland the weak anomaly for north-westerly winds continued but east of Greenland the previous anomaly for south-westerly winds over the Barents Sea became weaker. The excess of ice in Lancaster Sound persisted and off Baffin Island ice was again slow to clear. By the end of the month ice was still blocking the approaches to Hudson Strait. However, over Baffin Bay and in the north of Foxe Basin break-up was near normal. Off east Greenland there was little change in the position of the ice edge. The deficits of recent months were reduced to near normal. Over the Barents Sea ice cleared much as usual but break-up was earlier than normal east of Franz Josef Land and over the southern Kara Sea.

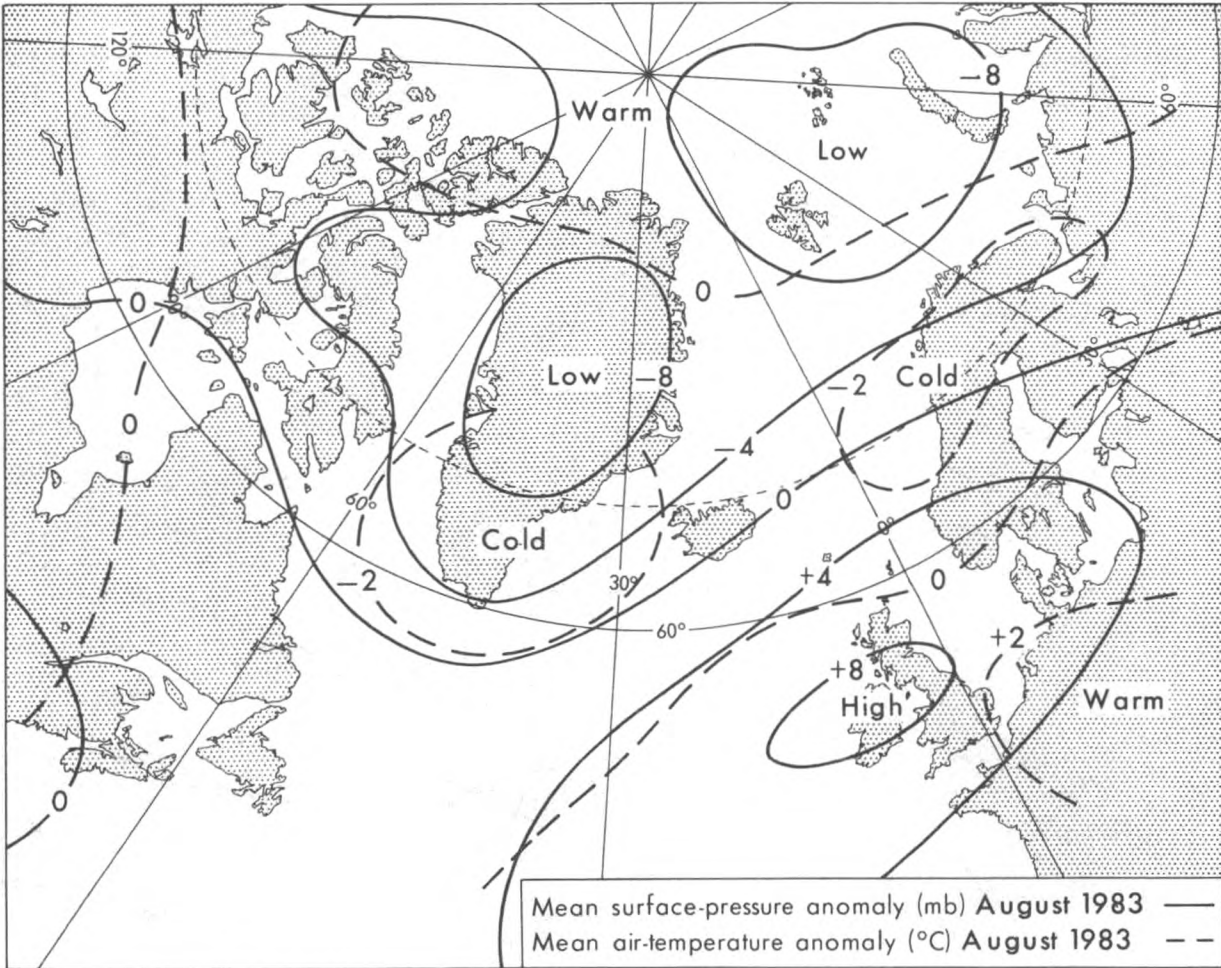
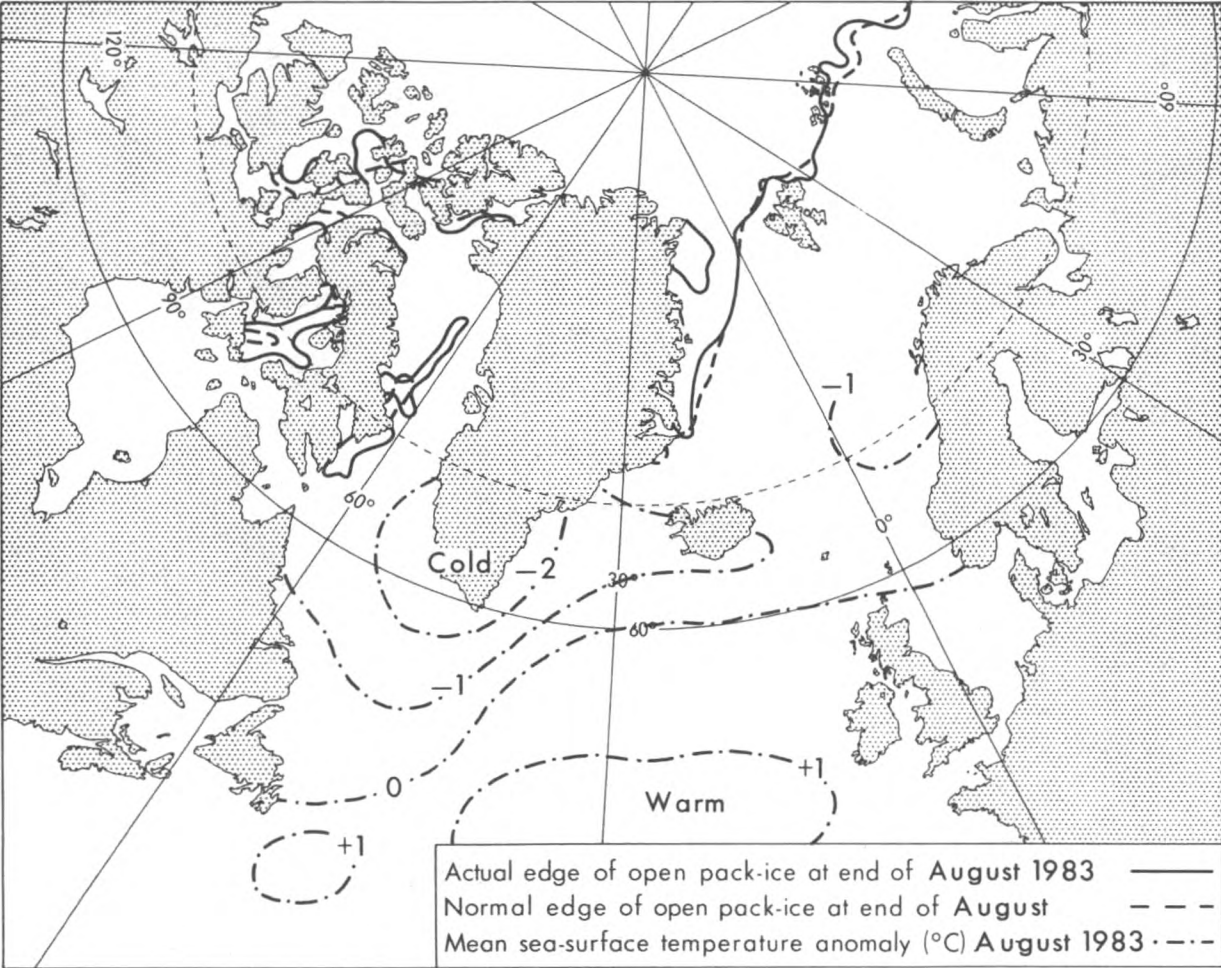
AUGUST

Pressure continued to be lower than normal over Greenland and lower pressure than usual developed over the Barents Sea. In the vicinity of ice fields temperatures remained near normal. The anomaly for north-westerly winds around Baffin Island persisted and ice was again slow to clear. Ice conditions in Foxe Basin and along the east Baffin coast were more severe than normal. However, in the Canadian Archipelago areas of open water developed but patches of old ice persisted in some of the northern sounds. The anomaly for south-westerly winds east of Greenland became stronger. Although the ice edge remained near normal, large areas of very open ice developed within the pack ice. East of Franz Josef Land there was an anomaly for southerly winds and here the previous deficits of ice continued with the ice edge becoming north of its usual position over the Kara Sea.

The International Ice Patrol ceased operations on 26 August, bringing to a close probably the worst iceberg season for shipping since the heavy years of 1972-74.







APPOINTMENTS OF NEW DEPUTY MARINE SUPERINTENDENT AND PORT METEOROLOGICAL OFFICER

Captain Robert Craig Cameron, until recently the Port Meteorological Officer for South-east England, has been promoted and appointed Deputy Marine Superintendent in the Marine Division at Meteorological Office headquarters at Bracknell.

Captain Cameron left HMS *Conway* in 1949 to serve his apprenticeship with Blue Star Line. He remained with Blue Star Line after obtaining his 2nd Mate's Certificate and was subsequently promoted to Master in 1968. In 1970 he joined the Ocean Weather Service of the Meteorological Office and two years later was transferred to the Ship Routing Service in Bracknell. In 1975 he was promoted to Senior Nautical Officer and appointed Port Meteorological Officer for London, later to be designated Port Meteorological Officer, South-east England, which post he held until his present appointment.

Captain C. R. Downes has been promoted and appointed Port Meteorological Officer, South-east England. Clive Randolph Downes left HMS *Conway* in 1951 and then served his apprenticeship with the Shaw Savill and Albion Company and remained with them for the whole of his sea-going career, being promoted Master in 1966. He joined the Marine Division at Meteorological Office headquarters in 1975 and since then has been chiefly concerned with the preparation, printing and issue of marine meteorological publications, which assignment has included the Deputy Editorship of this journal. His name will also be familiar to ship's Officers and to Port Meteorological Officers overseas, it having been his part to assess the bulk of the meteorological logbooks submitted in recent years, and to liaise with the Port Meteorological Officers.

Retirement

CAPTAIN F. G. BEVIS retired from the sea on 5 August 1983 after serving his entire career of 40 years with the P & O Group.

Frederick Graham Bevis received his pre-sea training at the Nautical College, Pangbourne and in June 1943 was indentured to the New Zealand Shipping Company Ltd to serve on the *Tongariro* as an apprentice. Captain Bevis obtained his Master's Certificate in December 1951 and was promoted to Master in August 1956. His first command was the coasting ship *Orari*, followed by the foreign-going *Nottingham*, of which ship he was Master for 3 years.

During the Second World War he was involved in both the Atlantic and Pacific spheres of operation. Between 1964 and 1971 Captain Bevis was based ashore as Assistant, and later Deputy, Marine Superintendent of the New Zealand Shipping Company, before returning to sea in a previous command, the Company's Cadet Training Ship *Otaio*. He was promoted Commodore of the P & O General Cargo Division in June 1980.

We received the first meteorological logbook bearing Captain Bevis's name from the *Suffolk* in 1947, and since then he has sent us a further 43 logbooks. He received eight Excellent Awards, the first being in 1949 and the final award in 1982. In the latter year he was presented by the Director-General of the Meteorological Office with a barograph in recognition of his long and meritorious voluntary service (*see The Marine Observer*, **LII**, No. 277, July 1982, p. 149).

Now that Captain Bevis has acquired some land in Argyll which he proposes to farm, we wish him a long and successful retirement.

Notice to Marine Observers

As foreshadowed in the October 1983 edition of this journal, the telephone number of the Meteorological Office at Bracknell has been changed to 0344 420242.

Fleet Lists

Corrections to the list published in the July 1983 edition of *The Marine Observer*. Information regarding these corrections is required by 30 September each year. Information for the July lists is required by 31 March each year.

GREAT BRITAIN (Information dated 9.9.83)

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

NAME OF VESSEL	MASTER	OWNER/MANAGER
<i>Authenticity</i>	B. J. Gillett	F. T. Everard & Sons Ltd
<i>B.P. Warrior</i>	F. Watts	B.P. Oil Ltd
<i>Eastgate</i>	W. Alexander	Rowbotham Tankships Ltd
<i>Fredrick M</i>	I. Spencer	Coe Metcalf Shipping Ltd
<i>Helmsman</i>	A. Mackinnon	Rowbotham Tankships Ltd
<i>Irishgate</i>	S. J. Mahoney	Rowbotham Tankships Ltd
<i>Jubilence</i>	M. Wood	Crescent Shipping Co. Ltd
<i>Malling</i>	A. Bourn	Stephenson Clarke Shipping Ltd
<i>Millitence</i>	G. Herbert	Crescent Shipping Co. Ltd
<i>Northgate</i>	A. P. Shenton	Rowbotham Tankships Ltd
<i>Rogate</i>	J. Williams	Stephenson Clarke Shipping Ltd
<i>Shell Explorer</i> ..	N. J. Maclean	Shell Tankers (U.K.) Ltd
<i>Storrington</i>	N. Ramsay	Stephenson Clarke Shipping Ltd
<i>Westerence</i>	T. E. Uden	Crescent Shipping Co. Ltd
<i>Wheelsman</i>	A. W. Duffin	Rowbotham Tankships Ltd

The following vessels have been deleted:
Dallington, Free Enterprise V, Martindyke.

GREAT BRITAIN (contd)

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

NAME OF VESSEL	DATE OF RECRUITMENT	MASTER	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGER
<i>Amber Pacific</i> ..	4.5.83	C. J. Ball ..	G. Shaw, G. Appleyard, D. Randell ..	T. Pinto ..	Seahorse Ship Management Ltd
<i>Arctic Freebooter</i> ..	12.8.83	B. Wharam ..	J. A. Scannell ..	J. A. Scannell ..	Boyd Line Ltd
<i>Atlantic Star</i> ..	15.4.83	J. K. Cooper ..	T. Turvey, P. Bailey, A. Tweedie, B. J. Garside ..	M. Rossiter ..	Cunard Shipping Services Ltd
<i>Avondyke</i> ..	1.7.83	D. Goulding ..	J. Sullivan, - Wilson ..		North British Shipping Ltd
<i>Binsnes</i> ..	5.4.83	W. G. Richie ..	R. Avenin, S. Clarke, - Milne ..	B. Hansen ..	Jebsens Ship Management Ltd
<i>British Skill</i> ..	25.4.83	R. H. Bell ..	P. F. Armitage ..		B.P. Shipping Ltd
<i>British Trueed</i> ..	20.5.83	J. A. M. Taylor ..	D. Robinson, J. Murray, D. Philps ..	T. Holter ..	B.P. Shipping Ltd
<i>Cast Muskox</i> ..	31.5.83	M. Cameron ..	W. T. Woods, R. Spence, A. McLean ..	D. Busveids ..	Denholm Ship Management Ltd
<i>Cast Otter</i> ..	14.3.83	R. Frater ..	R. Gribden, W. Munro, R. Huyshe ..	T. Walton ..	Denholm Ship Management Ltd
<i>Dallington</i> ..	1.6.83	- Adair ..	K. Whittaker, J. N. Wilde ..	K. Whytock ..	Stephenson Clarke Shipping Ltd
<i>Farland</i> ..	13.4.83	T. F. Jones ..	P. Hamlin, M. King, A. S. Reed ..	J. Seymour ..	Ropner Management Ltd
<i>Festival</i> ..	20.4.83				Gulf Shipping Lines Ltd
<i>Firmnes</i> ..	7.7.83				Jebsens Ship Management Ltd
<i>Fort Macleod</i> ..	8.6.83	C. Beck ..	M. C. Hadley, M. A. Jones, F. E. Brown ..	R. E. Haviland ..	Canadian Steamships Ltd
<i>Fort Resolution</i> ..	3.8.83	P. Atkinson ..	R. Morgan, C. Riches, S. Johnson ..	M. Cook ..	Canadian Pacific Steamships Ltd
<i>Free Enterprise V</i> ..	7.1.83	M. Edward ..	J. Nixon, D. A. Parsons, N. R. Vardy ..	E. S. Scott ..	Townsend Thoresen Car Ferries Ltd
<i>Larkfield</i> ..	23.5.83	P. T. Hodge ..	T. Forrest, S. Butler ..	T. Lowe ..	Buries Marks (Ship Management) Ltd
<i>Leicesterbrook</i> ..	25.5.83	J. Hindmarsh ..	A. Hennell, G. Smith ..		F. T. Everard & Sons Ltd
<i>Lycaon</i> ..	9.6.83	H. K. Timbrell ..	J. Ryan, G. W. Williams, M. Kilbrowne ..	D. Ray ..	Ocean Transport & Trading P.L.C.
<i>Maersk Angus</i> ..	7.4.83	C. W. Parven ..	A. Jablowski, G. Whitehead ..	P. Skidmore ..	Maersk Co. Ltd.
<i>Maersk Buchan</i> ..	14.4.83	G. E. Daykin ..	L. E. A. Martin ..	S. Spendlove ..	Maersk Co. Ltd
<i>Manistee</i> ..	5.5.83	R. Cumbers ..	S. Hooper, C. Bunt, D. Browne ..	A. Grant ..	Fyffes Group Ltd

GREAT BRITAIN (contd)

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

NAME OF VESSEL	DATE OF RECRUITMENT	MASTER	OBSERVING OFFICERS	SENIOR RADIO OFFICER	OWNER/MANAGER
<i>Martindylke</i> ..	30.6.83	G. Davies	D. Stevenson, D. Wright		North British Shipping Ltd
<i>Melton Challenger</i>	23.5.83	C. Hurst	J. E. Brown, J. Beck		Melton Shipping Co. Ltd
<i>Port Quebec</i> ..	~4.83	A. G. Moat	R. Young, R. Smith, J. Whiteley	G. Bell ..	Canadian Pacific Steamships Ltd
<i>Rounten Grange</i>	23.5.83	J. Ditchburn	D. Smith		Furness Withy (Shipping) Ltd
<i>St Nicholas</i> ..	7.6.83	~. Wilkins			Sealink (U.K.) Ltd
<i>Salmonpool</i> ..	15.4.83	T. F. Jones	P. Hamlin	I. Foster ..	Ropner Management Ltd
<i>Scandia Team</i> ..	18.4.83	G. Anderson	N. D. W. Donaldson, T. Tait, I. Main	D. F. O'Halloran	Denholm Ship Management Ltd
<i>Sea Princess</i> ..	13.4.83	J. King	M. Green		P. & O. Cruises Ltd
<i>Stena Ionia</i> ..	24.5.83	B. C. Preece	J. Pope		Swedish Caledonian Marine Management Ltd
<i>Suavity</i> ..	17.3.83	J. Young	H. A. S. Palmer, H. Beasley		F. T. Everard & Sons Ltd
<i>Telnes</i> ..	13.4.83	V. Taylor	P. Lloyd, J. Wilson	J. Driscall	Jebsens Ship Management Ltd
<i>Tribulus</i> ..	22.7.83				Shell Tankers (U.K.) Ltd
<i>White Billow</i> ..	4.7.83	P. H. Dathan	V. Bhandari, C. Bryson	B. J. de Melo	Salen U.K. Ship Management Ltd
<i>White Cascade</i> ..	26.7.83	G. Hogg	J. White, V. Singh, J. Dennis	H. Correa ..	Salen U.K. Ship Management Ltd

The following Selected and Supplementary Ships have been deleted:

Anco Challenger, Astronomer, Baron Napier, Bencomo, British Normess, C.P. Discoverer, Cedarbank, Celtic Endeavour, Celtic Crusader, Esso Hibernia, Esso Ulidia, Firbank, G. A. Chau, Helenus, Ibn Majid, King Alfred, London Pride, Makkah, Malcolm Miller, Manaar, New Westminster City, St George, Shackleton, Shonga, Star Ming, Streambank, Swifines, Texaco Brussels, Trongate, Voreda

BRITISH COMMONWEALTH

AUSTRALIA (Information dated 1.9.83)

The following ships have been recruited since the list published in the July 1983 edition of *The Marine Observer*:
Eastern Enterprise, Havjo, Iron Kirby, Key Biscayne, Oceanic Crest, Raslan, Silver Hawk, Sprightly, Soela, Townsville Trader, TNT Altrans.

The following ships have been deleted:

Advara, Andros, Baron Maclay, Clearwater Bay, Curtis Oceanic, Doha, Iron Kerry, Khalij Express, Sea Princess, Tombarra.

CANADA (Information dated 31.8.83)

The following ship has been deleted:

Orana

NEW ZEALAND (Information dated 1.8.83)

The following ships have been recruited since the list published in the July 1983 edition of *The Marine Observer*:
Arrow, Otago Galliard, Spirit of Free Enterprise

The following ships have been deleted:

Adi Viti, Bulkness, James Cook, Aramoana.

Ngahara should read *Ngapara*.

There are now 12 Auxiliary Ships currently reporting.

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