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The Marine Observer

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THE MARINE OBSERVER

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

VOL. 58 **No. 300** **APRIL 1988**

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COVER PHOTOGRAPH of sunset over the Gulf of Mexico, taken by Mr G.R. Armstrong, 3rd Officer on m.v. *Dacebank*, on 27 June 1987.

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

LONDON: HER MAJESTY'S STATIONERY OFFICE

Report of Work for 1987

(MARINE DIVISION OF THE METEOROLOGICAL OFFICE)

1. Voluntary Observing Fleet

On 31 December 1987 the United Kingdom Voluntary Observing Fleet (VOF) consisted of the following:

(a) 415 Selected Ships.
(b) 5 Supplementary Ships.
(c) 49 'Marid' vessels.
(d) 5 Light-vessels and 1 light-tower.
(e) 3 Auxiliary Ships.
(f) 23 Oil Rigs and Platforms.

Selected Ships and Oil Rigs and Platforms are equipped with a complete set of Meteorological Office instruments and stationery with which to observe and transmit coded observations every 6 hours when at sea or, in the case of offshore units, when operational. The instruments, consisting of precision aneroid barometer, marine barograph, dry- and wet-bulb thermometers, sea temperature and bucket, and sometimes electronic distant reading equipment, are valuable items and must be returned to the Meteorological Office if a ship is sold or compelled to cease making weather observations for other reasons. Observations are made every 3 hours under special circumstances.

Due to the automation of light-vessels now being carried out by Trinity House, their numbers making observations have decreased. The light-vessels and the light-tower observe wind, waves, visibility and temperatures; R/T reports are transmitted via the Coastguard stations at varying intervals throughout the day. Supplementary Ships use the full ship's meteorological logbook but are issued with a smaller set of instruments on loan with which to make observations in a reduced code. Auxiliary Ships make use of the equipment already on board to provide abridged coded data on voyages made over routes where weather information normally available is sparse. Oil rigs and platforms supply an increasing amount of valuable information from the North Sea and Continental Shelf.

Port Meteorological Officers based at 7 major United Kingdom ports are available to recruit ships willing to undertake voluntary marine observing. They can also provide guidance and assistance to ships not belonging to the Voluntary Observing Fleet but which may require advice on any aspects concerned with the weather or with ship routeing. Details can be found in *Admiralty List of Radio Signals Volume 3*, the October edition of this journal and in the *Weather Bulletins for Shipping* leaflet (formerly *Leaflet No. 3*); the latter is available free on request. The same information and full instructions for voluntary observers are contained in the *Marine Observer's Guide*, supplied to all observing ships and presently undergoing revision for a reprint. This publication also contains addresses and telephone numbers of Port Meteorological Officers around the world from whom ships can obtain supplies or assistance. The number of ports providing liaison of this kind has increased during the year, enhancing the willing co-operation existing amongst member states of the World Meteorological Organization (WMO).

The endeavours of Port Meteorological Officers in recruiting volunteers have resulted in the decline in total numbers observing being much smaller than

expected. The number of reports received at Bracknell during the year is also slightly reduced, as shown in the table following.

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

	1986	1987
Direct reception from:		
British ships	240	239
Foreign ships	174	165
Rigs, platform and buoys	232	222
Total	646	626
Total number of reports received by geographical locations:		
Eastern North Atlantic	1030	824
Western North Atlantic	696	723
Mediterranean	107	98
North Sea	587	572
Arctic Ocean	119	165
North Pacific	1206	1327
All other seas	675	578
Total	4420	4287

A total of 21 observing ships had been equipped with the Meteorological Observing Systems for Ships (MOSS) by the year's end, with the installation programme of this equipment continuing in 1988. MOSS enables the observer to enter the coded data onto a VDU in a pre-arranged format, from whence it is transferred to a Data Collection Platform for automatic transmission via geostationery satellite. Besides aiding observers in carrying out their part, when fully operative it can ensure receipt of the vital data in real time on a regular basis, a contribution not usually possible in ships with conventional radio equipment. MOSS-equipped ships are also requested to make additional observations every three hours when east of longitude 30° W in the North Atlantic.

Three ships plying the North Atlantic routes are now equipped with the Automated Shipboard Aerological Programme (ASAP) containers and a supporting meteorologist. The *Manchester Challenge* and *CanMar Europe* have U.K. installations and *CanMar Ambassador* is equipped with a Finnish Meteorological Institute unit; valuable upper-air soundings are made by radiosonde packages launched from the ships twice daily. The attendants also provide assistance with the regular observations on the synoptic hours.

Semi-submersibles and oil platforms are equipped with a full set of instruments and publications with which to make complete observations in various offshorc locations. Further data are received from fixed and drifting buoys deployed in the North Atlantic for automatic transmission by satellite. Useful assistance was provided by the Master and ship's staff of the *CanMar Ambassador* in launching some of these drifting buoys whilst on passage from Felixstowe to Montreal.

2. Ocean Weather Ship Programme

Under the North Atlantic Ocean Stations (NAOS) agreement the United Kingdom continued to man station 'Lima' in position 57° 00'N 20° 00'W with Ocean Weather Ship *Cumulus*. The former Netherlands weather ship was based on station for monthly stays, returning to her Greenock base every five weeks for replenishment and crew changes. Managed for the Meteorological Office by J. Marr & Son of Hull, *Cumulus* made hourly surface observations and 6-hourly upper-air soundings as well as several other oceanographical and scientific experiments, both as routine and on behalf of other organizations. For about six months of the year a special multi-purpose programme was carried out from the ship by scientists from the Admiralty Research Establishment, Portland, in conjunction with personnel from University College, Swansea, and from the Institute for Marine Environmental Research. Measurements of the atmospheric turbidity were taken on behalf of the United States National Climatic Center; the Institute of Oceanographic Sciences held anemometer and wind-vane trials with instruments fitted to a specially installed mast on the fore deck. Met. Office Scientific Officer Miss Valerie J. Maltby became the first woman to make a voyage in a United Kingdom weather ship when, at her own request, she made a 5-week round trip in *Cumulus* from Greenock to station 'Lima' in March and April. Despite a severe bout of seasickness suffered in her first week on board she recovered sufficiently to appreciate various aspects of the weather ship life, enjoying most the sight of whales and dolphins and the break from the normal monotony provided by the excellent food served on board.

3. Ship Routeing

The services of METROUTE, the Met. Office Ship Routeing Service, were increasingly in demand for various types of vessel on passages in many parts of the globe. The Cunard liner *Queen Elizabeth 2* became a recent convert to METROUTE after meeting with unusually heavy weather associated with a deep depression in the North Atlantic. She joins another trans-Atlantic liner, *Norway*, in being regularly routed by the service, which provides guidance to shipmasters on the safest and most economical means of achieving their marine endeavours. Tropical cyclone advisories were also issued to assist clients' vessels in timing their departures from China Sea ports. Nearer home, weather advice was provided throughout the towage of H.M.S. *Warrior* on her last voyage after refit at Hartlepool, to her final resting place as a floating museum at Portsmouth.

The sea-ice service maintains weekly situation charts for potentially ice-bound areas of the Baltic Sea, Baffin Bay and the North Atlantic. Charts are mailed to individual clients on request and regularly to institutional users in the United States, Canada, Japan and the Scandinavian countries, as well as to Lloyd's of London Casualty Department for publication.

4. Services to Shipping

Weather bulletins and gale warnings for shipping continue to be broadcast by British Telecom International, the BBC and by NAVTEX, by means of W/T, R/T and telex.

The 'Marineline' service was replaced by a new telephone service provided by Telephone Information Services Ltd. 'Marinecall' offers the latest coastal weather conditions forecast for a distance of up to 12 miles off the coastline of the United Kingdom. The forecasts are updated three times daily for southern areas,

twice daily for other coastal regions and include sea state information, relevant high water times and a time check.

5. Marine Enquiries and Consultancies

The specialist Marine Advisory Group within the Marine Division provides information derived from historical data to assist with design and planning of many marine activities including hydrocarbon exploration and exploitation. Advice was given during the year to Government departments with responsibility for regulating commercial activities, e.g. the Department of Energy. Specific occurrences which were the subject of litigation were investigated and expert testimony provided, the object being to ensure that the weather was the culprit rather than a convenient scapegoat. The Marine Advisory and Consultancy Service also played a role as a data collection point for the 10-year Tropical Ocean and Global Atmosphere (TOGA) programme, an international activity designed to provide a co-operative effort to obtain global fields of information about the relevant atmospheric and oceanic variables.

6. Awards to Voluntary Observers

Long-service barographs were presented to four shipmasters in recognition of their long and valued service to the cause of marine observing.

Three hundred Excellent Award books were presented to Masters, Principal Observers and Radio Officers as a token for those making the best efforts in shipboard observing and weather message transmission. The books chosen for distribution in 1987, for co-operation provided in 1986, were *Ship in the Wilderness* by Snyder and Shackleton, *Philip's University Atlas* and *Chambers Twentieth Century Dictionary* with thumb-indexing.

7. Miscellaneous

As part of the 2-year WMO initiative, the Operational World Weather Watch System Evaluation — North Atlantic (OWSE–NA), evaluation was made of the operational use of data received from all types of marine observing units. The project includes an analysis of random data received from ships of the VOF and from fixed and drifting buoys in as much detail as possible to provide an assessment of the impact of the resulting data on forecasts.

With the reprint of several Marine Division publications becoming necessary, the opportunity was taken to make revisions to the *Marine Observer's Guide* and the Meteorological Logbook. The new editions are not expected to be in circulation immediately.

J.F.T.H.

April, May, June

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

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

TROPICAL CYCLONE 'ZUMAN'

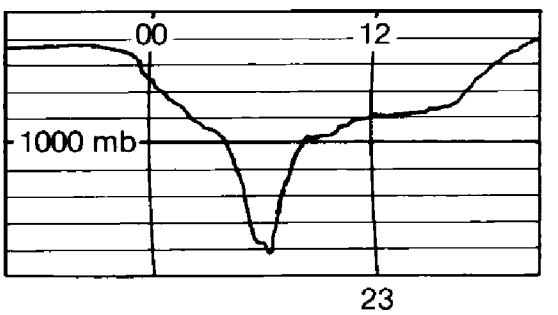
South Pacific Ocean

m.v. *Willowbank*. Captain P.J. Elder. Long Beach to Melbourne. Observers: the Master and ship's company.

21–24 April 1987. On the 21st weather reports were received concerning a tropical depression located approximately 450 n.mile north-east by east of the Samoa Islands. With due regard for these, it was decided to alter course at 1922 GMT and re-route the vessel such that her passage would be between Western Samoa and American Samoa, instead of the originally planned passage west of Western Samoa. After taking action to avoid an encounter with the tropical depression, it was down-graded to a 'low' of 1004 mb, and was no longer listed as a 'warning' on weather reports and forecasts. However, at 2100 on the 22nd, Tropical Cyclone Zuman was reported to be centred near 12° S, 171.5° W, and intensifying some 220 n.mile west-south-west of the vessel's position at that time. The following observations were made as Zuman passed.

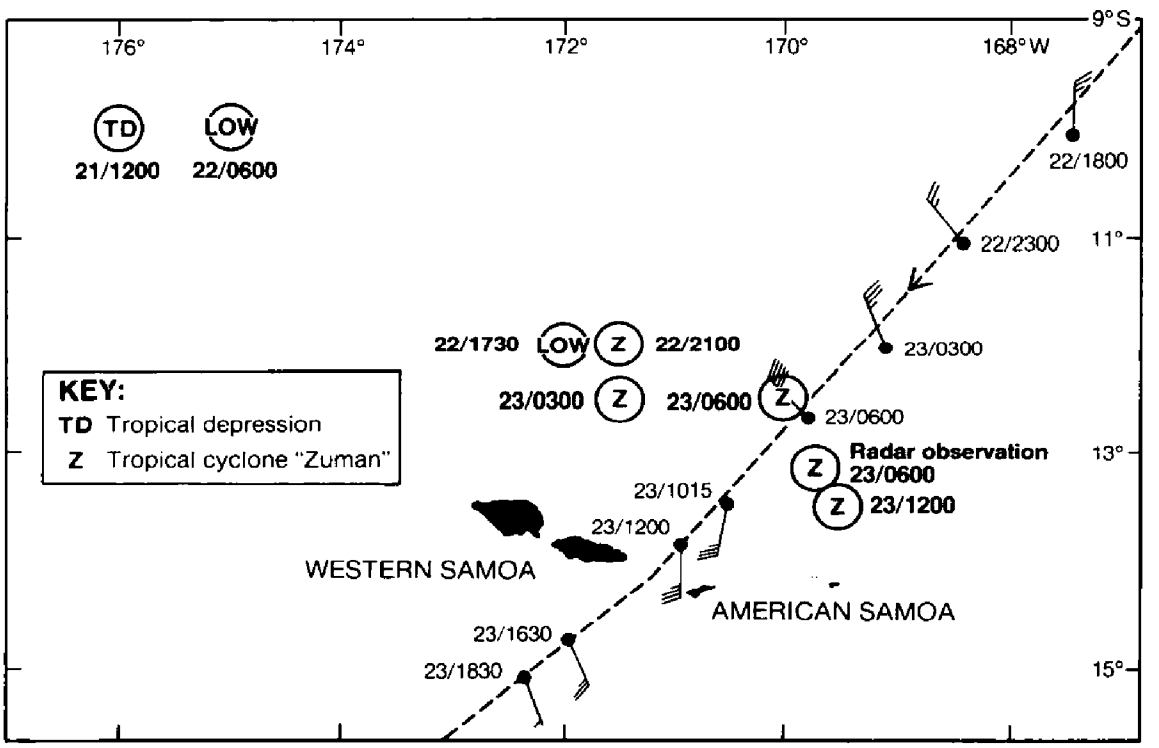
Date and Time (GMT)	Wind Dir'n	Force	Dry Bulb (°C)	Pressure (mb)	Remarks
22nd 1200	NNW	5	27.8	1006.1	Frequent heavy rain showers. Prolonged at times, with poor visibility.
1800	N	6	26.8	1006.4	Intermittent moderate/heavy rain.
2300	NW'N	6	27.5	1004.9	Frequent periods of prolonged moderate/heavy rain. Pressure falling quite rapidly.
23rd 0300	NNW	8	28.5	999.1	Frequent periods of prolonged moderate/heavy rain.

0600	NW	10	27.2	989.9	Wind backing rapidly. Vague circular shape observed on radar, centred 13.2° S, 169.7° W, direction uncertain, radius 1.5 n.mile. Violent rain showers. Radio communications lost for 20 minutes due to heavy static.
0700	SSW	10/11	27.2	995.9	Pressure risen 4 mb in thirty minutes (see barogram). Swells confused.



0815	SSW	7	25.8	1000.4	Rain easing.
0915	SSW	7	27.7	1000.8	Rain ceased at 0900.
1015	S'W	7/8	26.8	1001.7	Frequent light/moderate rain showers.
1110	S'W	7/8	26.0	1002.5	Frequent moderate rain showers.
1200	S	8	27.5	1002.8	Heavy swell. Too dark for other observations.

Although the track of Zuman was forecast to be astern of the vessel, radar and weather observations showed that it did in fact cross some 20–30 n.mile ahead of the ship, as indicated on the chartlet. The vessel came through the experience



extremely well, suffering only minor damage to the starboard gangway caused by the heavy beam swell.

Position of ship at 1800 GMT on the 22nd: 10° 06'S, 167° 24'W.

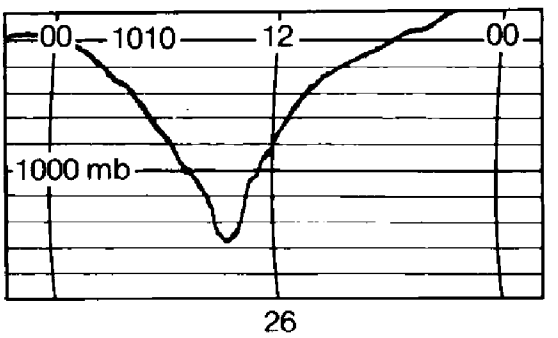
Position of ship at 1200 GMT on the 23rd: 13° 54'S, 170° 54'W.

HEAVY WEATHER

Eastern North Atlantic

m.v. *Havdrott*. Captain C.A. Hatcher. Algeciras to Savannah. Observers: the Master and ship's company.

26 April 1987. Between 0400 GMT and 1600 GMT the vessel experienced rapidly changing and rough weather due to the passage of a depression to the south. The following observations were made during the period, and the barogram shows the pressure changes associated with the passage of this depression.



26

Time (GMT)	Wind Dir'n	Force	Temperature (°C) Air	Wet	Pressure (mb)	Cloud (oktas)
0400	SE'S	5	15.0	10.8	1009.7	3
0500	SE'S	7			1008.0	
0600	SSE	8			1005.3	8
0700	S'E	8			1003.1	
0800	S	8	14.6	13.0	1001.1	8
0900	ESE	8	14.0	13.0	997.8	
0930	Var	4				5
1000	NE	8	14.6	13.3	999.5	7
1100	N'W	9	14.9	13.1	1003.3	
1200	N'W	10	14.6	13.6	1005.4	7
1400	NNW	8	15.9	13.8	1007.3	
1600	NNW	7	16.0	13.5	1011.9	6

At approximately 0930, when the pressure was at its lowest point, the wind decreased noticeably to force 4. The sea dropped considerably before becoming very choppy as the wind started to increase again. It took only a short time before the waves re-established their height and direction. The period of calm lasted from about 0915 to 0945. Rough seas and winds of force 7 then 6 continued for another fourteen hours.

Position of ship at 1200 GMT: 35° 13'N, 21° 56'W.

LINE-SQUALL

Eastern North Atlantic

R.M.S. *St Helena*. Captain R.H. Wyatt. Avonmouth to Tenerife. Observers: the Master, Mr J.F. Harrison, 3rd Officer, Mr R.A. Wilson, Radio Officer and Mr D. Bowers, SG1A.

9 May 1987. At 2100 GMT the vessel encountered a severe line-squall, the likes of which had not been observed for quite some time by those on board. The wind

was originally S'ly, force 3, and an occasional flash of lightning could be seen in the distance during the preceding hour, the lightning seemed to be increasing. The cloud cover had gradually increased from 1 okta of stratus to 4 oktas. Suddenly, the wind veered to SW'ly, and increased to force 6–7, whilst the cloud quickly increased to 8 oktas. This was coupled with very heavy rain and some spectacular lightning displays of both sheet and forked types. The initial onslaught of the wind caused the vessel to heel over to port where she settled at an angle of 5°. When the automatic sea clutter was disengaged on the 3-cm radar, practically the whole screen became a solid, white mass on the 12-n.mile range; even with the ASC on, there were still some quite strong returns 'tracking' across the PPI. By radar it was estimated that the squall was some 18 n.mile deep, and stretched for approximately 32 n.mile in a band lying from 290° to 110°.

At 2145 the squall passed and the wind backed to S'ly, force 3–4, whilst the rain gradually eased off. The lightning continued with thunder for some time afterwards. By 2200 the sky had cleared and the squall with its lightning could be seen astern, the latter lighting up the cloud interiors rather spectacularly.

Position of ship: 40° 13'N, 11° 22'W.

CORPOSANTS

North Atlantic Ocean

m.v. *B.P. Vigour*. Captain J.L.W. Dwight. Delaware Bay to Cabo Maracaibo. Observers: Mr J.P. Dunne, 2nd Officer, Mr M. Velasco, A.B. and Mrs Dunne.

22 June 1987. Between 0650 GMT and 0735 GMT, directly after a heavy squall during a night and early morning of almost continuous lightning activity, the foremast was observed to be illuminated by a whitish glow from about two-thirds of its height up to the top. At its extremity could be seen two small but distinct luminous globes, very pale green in colour.

Simultaneously, the derrick samson posts were illuminated in a like manner, although only the top 3 m were affected. At the extremities, luminous green/white globes were observed, two on the port samson post, and three on the starboard one. On the monkey island, two whip aerials also radiated a luminous glow at their tips. These were much closer to the observers, and although the phenomenon was plainly visible, the outline of the illumination was very fuzzy and indistinct. During the entire period, the ship's main wire aerials were watched closely, but showed no sign of any similar luminous activity.

After about twenty minutes all the luminous globes had gone, but the structureless glow on the foremast and derrick samson posts persisted for a further twenty-five minutes; thereafter, it gradually dissipated.

Weather conditions at the time of observation were: air temperature 26.5°C, wet bulb 25.6, pressure 1012.1 mb, falling slowly, wind ESE'ly, force 5, frequently gusting to force 10 in squalls; cloud cover was 6 oktas cumulonimbus with 2 oktas cumulus.

Position of ship: 17° 30'N, 68° 25'W.

CETACEA

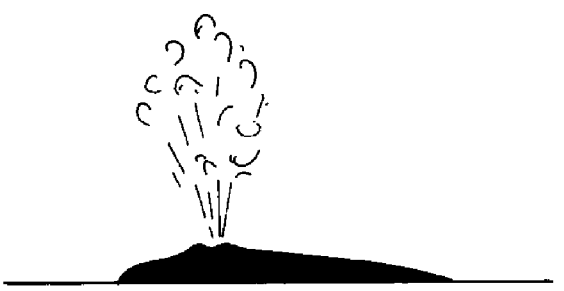
Mediterranean Sea

m.v. *British Trent*. Captain F.W. Wilkinson. Fos to Cagliari. Observers: the Master, Mr W.K. Vick, Chief Officer, Mr A.M. Smith, 2nd Officer, Mr T.J. Ashby, 3rd Officer and ship's company.

9 June 1987. Between 1100 GMT and 1200 GMT whilst the ship was drifting off the east coast of Sardinia, a school of five mature whales was observed close to the ship. These same whales had paid an earlier visit about three hours previously. During the hour of their second visit, they circumnavigated the ship, maintaining a distance from the ship of between 10 m and 100 m before disappearing from view.

The opportunity was taken to study them closely. Each whale was ascertained to be 20–25 m in length, and they were identified as being Fin or Razorback Whales by their characteristic dark-grey topsides, and white undersides, flippers and flukes. The position of the relatively small fin about two-thirds of the way down each individual's back, the ridge between the fin and the flukes, and their behaviour on the surface assisted in the positive identification of the species (with reference to *The Seafarer's Guide to Marine Life* by Paul V. Horsman).

During the period of observation, the group stayed mainly just below the surface, but occasionally broke the surface to vent off air through the prominent blow-holes. It was noted that this venting would be completed prior to the appearance of the fin as each animal arched into a shallow dive. The characteristic ridge between the fin and the flukes could be clearly seen above the surface during the dive, but at no time rose above the surface. The sketches show the observed movement.



(1)

(2)

(3)

(4)

With reference to the above publication, it was noted that this particular species has only occasionally been sighted in the western Mediterranean.

Position of ship: 39° 56′N, 10° 25′E.

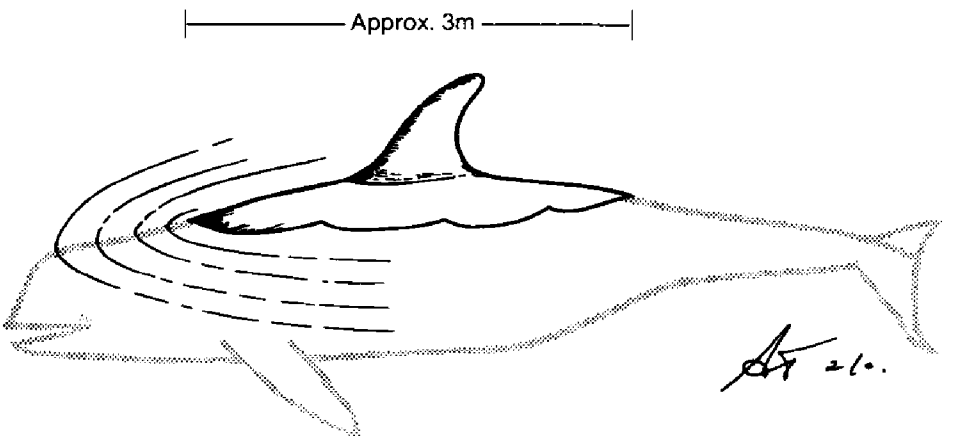
Note. Mr D.A. McBrearty, of the Dolphin Survey Project, Department of Anatomy, University of Cambridge, comments:

'It is most useful to have this detailed account of Fin Whales in the western Mediterranean. Whether or not there is a permanent Fin Whale population in the Mediterranean is still not clear. Certainly they are seen in most months, and while it is likely that the majority are annual migrants from the North Atlantic Ocean, some could be at least semi-permanent residents. On the other hand, the regular sightings may be explained by an overlap in the early and late movements of migrants.'

Indian Ocean

s.s. *ACT 1*. Captain J.F. Rowe. Fremantle to Suez. Observer: Mr A. Tibbott, 2nd Officer.

8 May 1987. At 0645 GMT a dark-brown whale with a prominent dorsal fin as shown in the sketch, was seen from for'ard, swimming just below the surface of the sea, and about 100 m ahead of the ship. When only 40 m away, it took evasive



action by diving, its flukes remaining below the surface throughout. No blow was observed. Although no positive identification was possible, the prominent dorsal fin and dark-brown colouring suggest the sighting was of the Alula Whale.

At the time, the sea was calm with a low swell, and the sea-water temperature at 0600 was 30.8°C.

Position of ship: 02° 09'S, 62° 28'E.

Note. Mr D.A. McBrearty comments:

'The "Alula Whale" mentioned by the observer has not been recognised scientifically and is a name given to a large number of unknown cetacean species seen on a number of occasions off Cape Guardafui. It was originally described by Captain W.F.J. Mörzer Bruyens as being approximately 6–7 m in length, with a rounded head similar to but not as round as a Pilot Whale's, and with a large dorsal fin not unlike that of a Killer Whale. The colour was seen to be sepia brown with some white scarring of the body. Sightings were made in April, May, June and September.

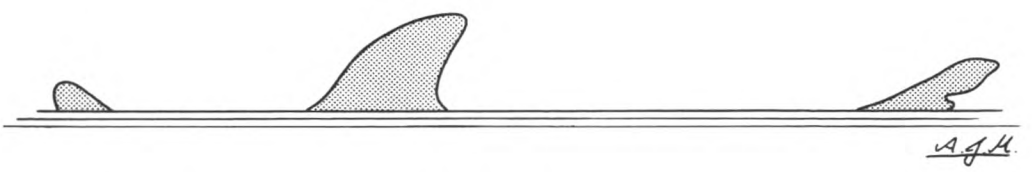
'In the absence of any examined specimen, the true identity of the "Alula Whale" is simply conjecture. It has been suggested that it is related to the Killer Whale (*Orcinus orca*).'

SHARK

Western Mediterranean

m.v. *British Forth*. Captain B. Wardman. Lavera to Skikda. Observers: Mr T.A. Wood, Chief officer and Mr A.J. Milhench, Cadet.

22 May 1987. At about 1730 GMT, a shark as shown in the sketch was seen. It was first spotted fine off the starboard bow, its dorsal fin and the tip of its tail above the surface. It seemed quite unaffected by the presence of the ship, and continued to swim in lazy circles as it passed very close down our starboard side. The estimated distance between the dorsal fin and the tip of the tail was about 6 m, and it was first thought that the shark was a small whale because of its size. However, as it came abeam of us, its outline could be clearly seen.



Observed at close range through binoculars, its colour was dark grey overall with a slight green tinge. The dorsal fin was broad and blunt, whilst the tail had a characteristic notch out of it just below the tip. The body was quite stubby and rounded. As the shark swam, the dorsal fin appeared to flop over from side to side.

Just as the shark passed the beam, its rounded bulbous nose broke the surface; this, combined with its size and the lazy circles in which it swam, led us to believe that it was some kind of basking shark. At no time did the dorsal fin disappear under the surface.

Position of ship: 42° 06′N, 05° 20′E.

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

'Yes, this may be firmly identified as a Basking Shark, (*Cetorhinus maximus*), which grows to a length of 13 m and more. It is easily the largest shark of temperate waters, and is exceeded only by the more tropical Whale Shark. It is well known as a plankton feeder, having very small teeth, and is quite harmless to man. The drawing gives a good impression of the basking stance, with the huge dorsal fin held clear of the water. Swimming gently among a mass of plankton, with its large mouth wide open, the shark takes in quantities of water with the contained life. The water is forced out through the tall gill clefts, leaving the food adhering to the inner walls of the gills and to the sieve-like gill rakers.'

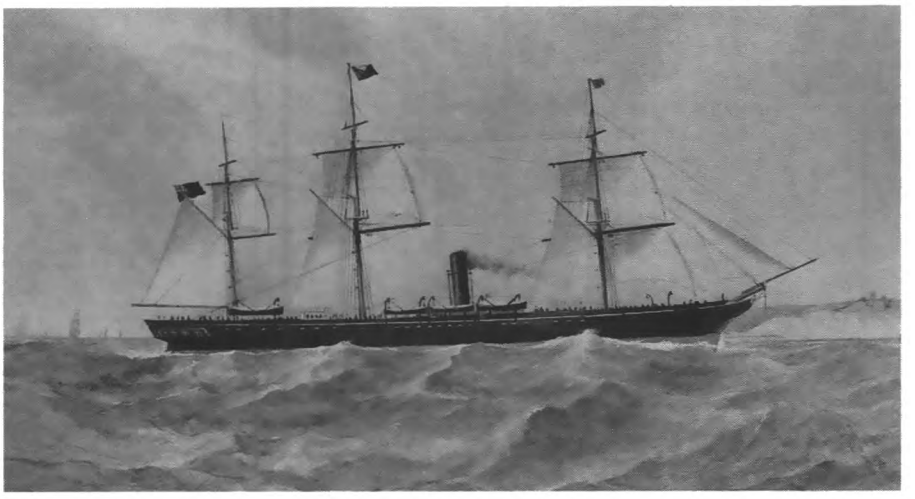
MARINE LIFE

North Atlantic Ocean

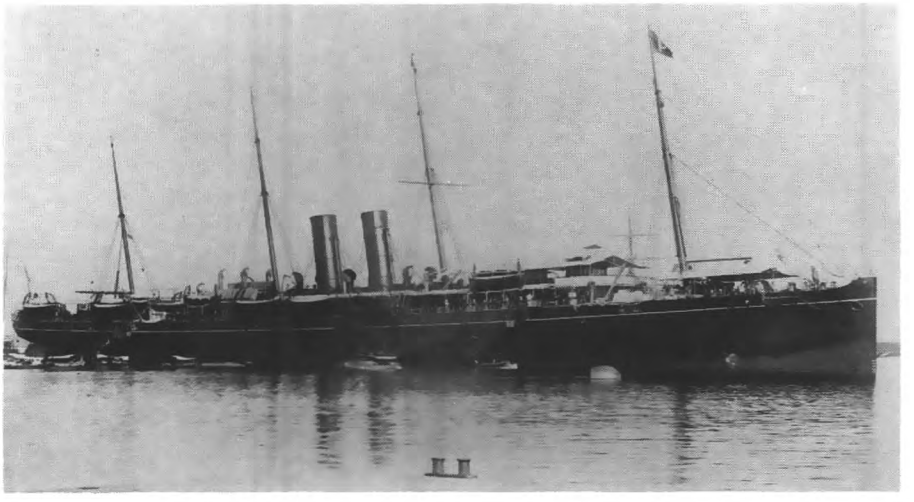
o.w.s. *Cumulus*. Captain G.F. Kay. At station 'Lima'. Observer: Mr J.P. Hargreaves, Meteorologist.

12–14 June 1987. For three nights, between the hours of 0000 GMT and 0400 GMT, plankton samples were taken using two nets trawled from the stern. The 'squid light' night searchlight was in use each time, as attempts (unsuccessful all week) were also being made to catch squid.

Opposite page 60



s.s. *Himalaya* (1853), 3,438 tons



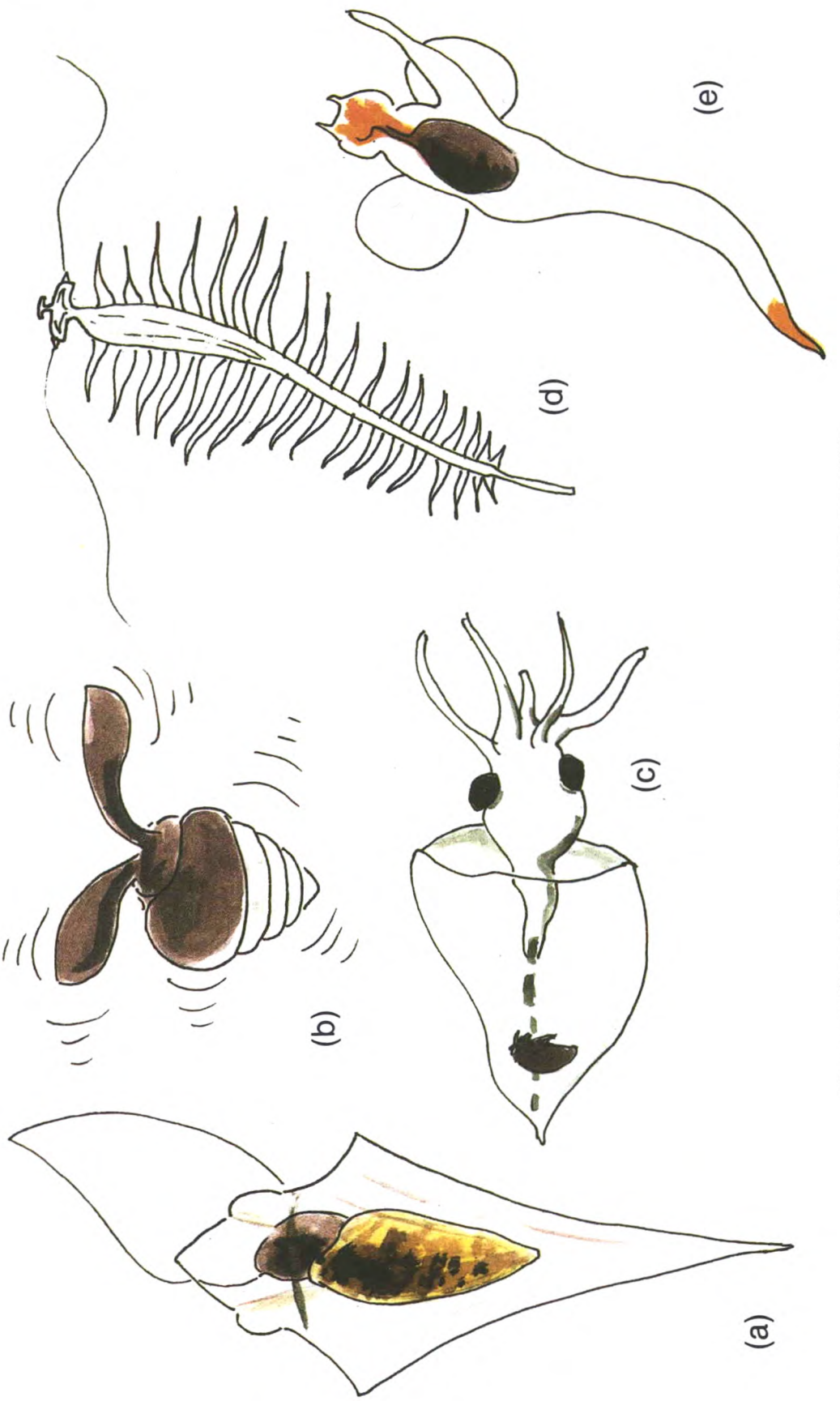
s.s. *Himalaya* (1892), 6,898 tons

Photographs by courtesy of P. & O.

s.s. *Himalaya* (1949), 27,955 tons

VESSELS OF THE PENINSULAR AND ORIENTAL STEAM NAVIGATION COMPANY (see page 82.)

Opposite page 61



Some specimens of plankton caught from O.W.S. *Cumulus* (see page 61.)

Illustrations by J.P. Hargreaves

Examination of the zooplankton was made using a hand magnifier, and identifications were made with the limited information available, and through the help of an oceanographic scientist on board. Illustrations of some of the specimens caught are reproduced opposite page 61.

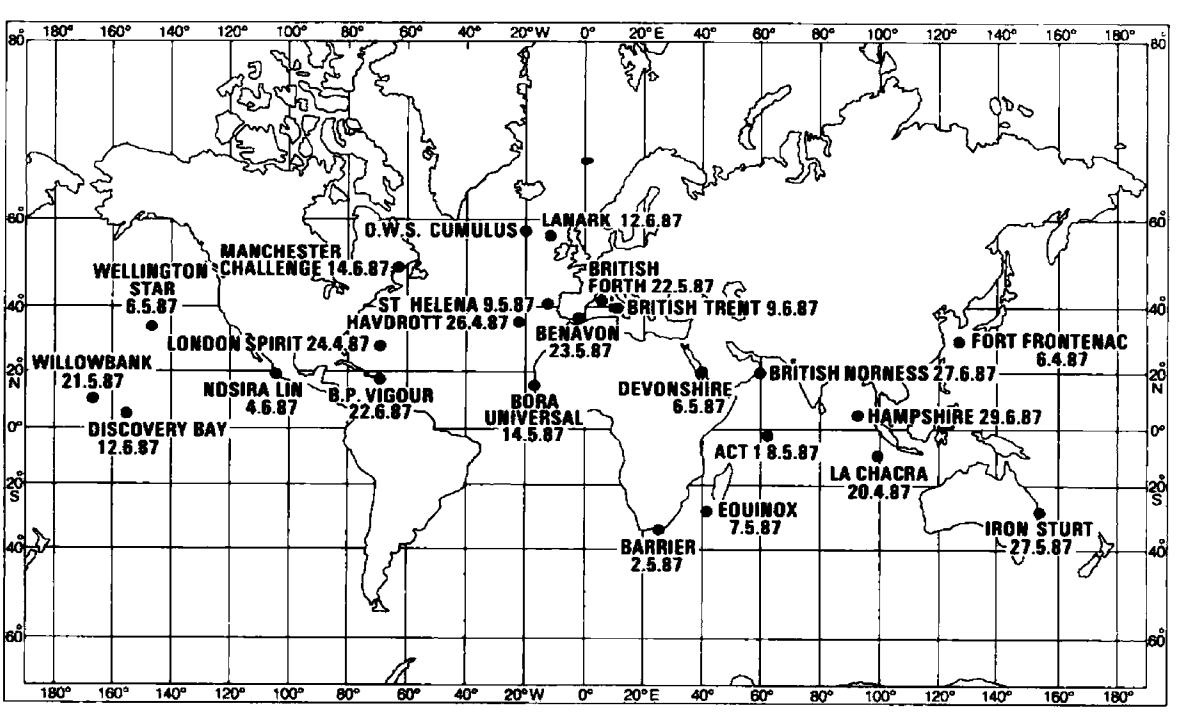
A pteropod is shown in (a) with a hard and fluted outer shell which measured 17 mm. The creature in (b) was identified as *Limacina reversa*, these were abundant in the catches, with many swimming actively. Two squid/cuttlefish larvae were found (c), measuring 22 mm; one specimen contained zooplankton in its body sac. Three specimens identified as *Tomopteris* (d) were found, measuring 20 mm and which were quite active. Three types of *Clione limacina* were caught, one is shown in (e), it too swam quite actively.

Summarized, the weather conditions were: dry bulb 8.7–10.0°C, sea temperature 10.5–11.0, wind N-NW'ly, generally force 4.

Position of ship: 57°00'N, 20°00'W.

Note. Dr F. Evans comments:

'What a delightful series of drawings. Has the observer considered abandoning meteorology for biological illustration? Without the specimen, it is not always possible to be exact, but (a) shows the shelled sea butterfly or pteropod *Clio*, probably *C. pyramidata*. Another sea butterfly is shown in (b) *Limacina retroversa* (not "*reversa*" as stated). I feel that (c) shows squid rather than cuttlefish. Yes, *Tomopteris* (d), and from the drawing most probably *T. Helgolandica* which has a "tail" as shown. Yet another sea butterfly is shown in (e) but without a shell *Clione Limacina*. It, by the way, lives on a diet of *Clio*.'

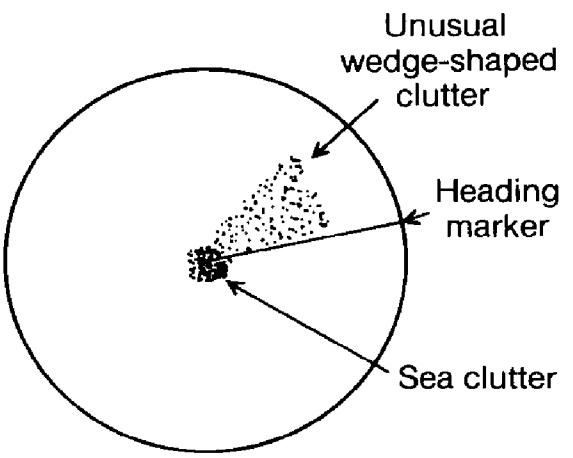


Position of ships whose reports appear in *The Marine Observers' Log*

South African Waters

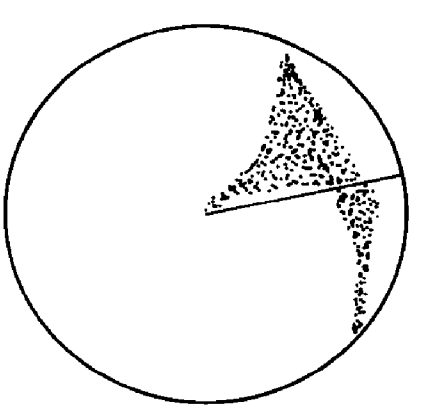
m.v. *Barrier*. Captain R.R. Walker. On passage in southern coastal waters. Observers: the Master, Mr P. Rugg, Chief Officer, Mr J. Hammer, 2nd Officer, Mr H. Westwater, 2nd Officer and Mr N. Houart, Cadet.

2 May 1987. At about 2000 GMT an unusual pattern of clutter was noticed on the 3–cm radar. This was soon picked up by the 10–cm radar and appeared as in sketch (a).



(a)

Both radars were on the 12 n.mile range, but also picked up the clutter on both the 24 and 6 n.mile ranges. The wedge kept growing, and then spread out to cover the screen from port bow to starboard bow, as shown in sketch (b).



(b)

It being dark at this stage, the Aldis lamp was used to shine on the surface; the water had a milky appearance, and large shoals of small fish could be seen in the water. As there was no rain at the time, the only explanation for the clutter on the radars was that the milky colour was caused by plankton, giving rise to a density change in the water and so causing it to be picked up by radar.

No sample of the water could be obtained owing to the ship's speed and the height of the bridge above sea level. About an hour later, the same clutter was

noticed on the starboard side, on the 24 n.mile range, but the ship did not sail through this.

There had been fog throughout the day, clearing at the time of observation, and light airs for most of the day, becoming E'ly. No rain fell during the period.

Position of ship: approximately 34° 15'S, 25° 10'E.

VELELLA

North Pacific Ocean

m.v. *Wellington Star*. Captain T.C. Black. Honolulu to Tacoma. Observer: Mr P.J. Neve, 3rd Officer and members of ship's company.

6 May 1987. Whilst on a north-westerly course, countless 'particles' were sighted floating on the sea surface. On examination, it became apparent that these were in fact concentrations of *Velella*, in this particular sighting, being in the region of 30–50 per square metre. At this time, it was assumed the vessel was passing through a patch of *Velella*. We had no idea that two days later we would still be surrounded by concentrations of these animals, enough to be very noticeable on the sea surface.

The density of the organisms throughout this period was very variable, with frequent gaps where none were observed at all, most noticeably during a period of several hours around 44° N, 132° W; but in some areas, the density must have reached several hundred per square metre, in which cases, the organisms were in clusters which gave the appearance of a solid, gelatinous mass. The size of these areas was again very variable. On at least one occasion, when in winds of force 4, a solid mass of *Velella* had become lined up along the wind in an ESE/WNW direction; this particular patch gave the impression of an intense blue/green colouration, presumably resulting from the pigmentation in the organism itself. Although this colour was visible to a lesser extent in other areas of high concentration, it could not be said to be very noticeable in lower concentrations or in individuals (although despite the high density, and many attempts, we never did manage to catch any for closer examination).

By the time the vessel reached the coast of North America, the concentrations were very much less, only three or four per square metre, but still very uniform. No *Velella* were seen in the Strait of Juan de Fuca, but on departure from there, to head south along the coast, the occasional one could still be seen in the, by then, calm seas.

In the sightings, individual animals were certainly as large as 12 cm in diameter, but these were by no means common. The average diameter was about 4 cm, with some as small as 2 cm across not infrequently seen.

Coinciding with nearly all the observations of *Velella* were low concentrations (about one per fifty square metres) of another, 'unidentified' object. About 12 cm in diameter, these round objects were a pale brown/grey in colour, with many 'divisions' across their surface. They gave the impression of being the product of some organism, rather than being creatures themselves.

The only vaguely analagous objects of which any comparative experience was held were the reproductive 'cases' produced by some European gastropod molluscs, and for this reason, it was thought that these may have been a product of the snail *Janthina* which is known to be a predator of *Velella*.

Position of ship: 33° 30'N, 146° 54'W.

Note. Dr F. Evans comments:

'I was very pleased to receive this full account of *Velella* to add to my growing list of records of this animal. I am sure the observers will have seen my note in *The Marine Observer*, April 1986, on *Velella* in the North Pacific Ocean, which is very relevant to the present observation. As to the accompanying organisms described as resembling the egg cases of gastropod molluscs, I am inclined to agree that they were the product of the snail *Janthina*. In fact they were most likely the bubble rafts of this snail. The snail's foot spins a float by secreting mucus to entrap air bubbles. The bubbles harden and the egg capsules are then attached to the underside of the float.

'It is odd, however, that in the many other reports of *Velella* from this part of the world, there is no mention of these curious objects. One would suppose that where *Velella* was so prolific, its predator would be breeding freely and so would be generating many floats.'

BIRDS

Red Sea

m.v. *Devonshire*. Captain J.A. Corcoran. Singapore to Yanbu. Observers: the Master, Mr M.J. Hume, 3rd Officer, Mr G.J. Simpson, Radio Officer and Mr A.P. Carter, Cargo Engineer Officer.

6 May 1987. At 0600 GMT the bird shown in the photograph opposite page 76 was spotted flying around the vessel. At first sighting, the bird dived past the port bridge wing, turned into the sun and was lost to sight. All that could be determined at first glance was that it was a bird of prey and not a seabird. For the next half-hour only fleeting glances were seen of the bird as it followed in the wake of the ship.

At 0730 it suddenly flew in through the port bridge wing door, and landed on the port fold-down table. It quite happily sat there for twenty minutes without any signs of distress or discomfort, not trying to fly off even when approached close to. When called, it even turned to have its photograph taken.

However, as the navigational duties of the ship were being slightly disrupted by our feathered visitor, it was decided to try and coerce it into flying back to its natural habitat. After much flapping of arms by those present to try and induce some form of response from the bird, to which all that was given were looks of consternation and the regal 'We are not amused', the Cargo Engineer walked over and gently picked the bird up with all the skills of a dedicated pigeon fancier; even in the hand the bird showed no signs of distress. It was then given a gentle push up into the air from the starboard bridge wing and was never seen again.

The bird was thought to be a mature, female Lesser Kestrel (*Falco naumanni*) as it had the same colouring and was about the right height, it measured 28 cm from tip of tail to crown of head.

Position of ship: 20°42'N, 30°00'E.

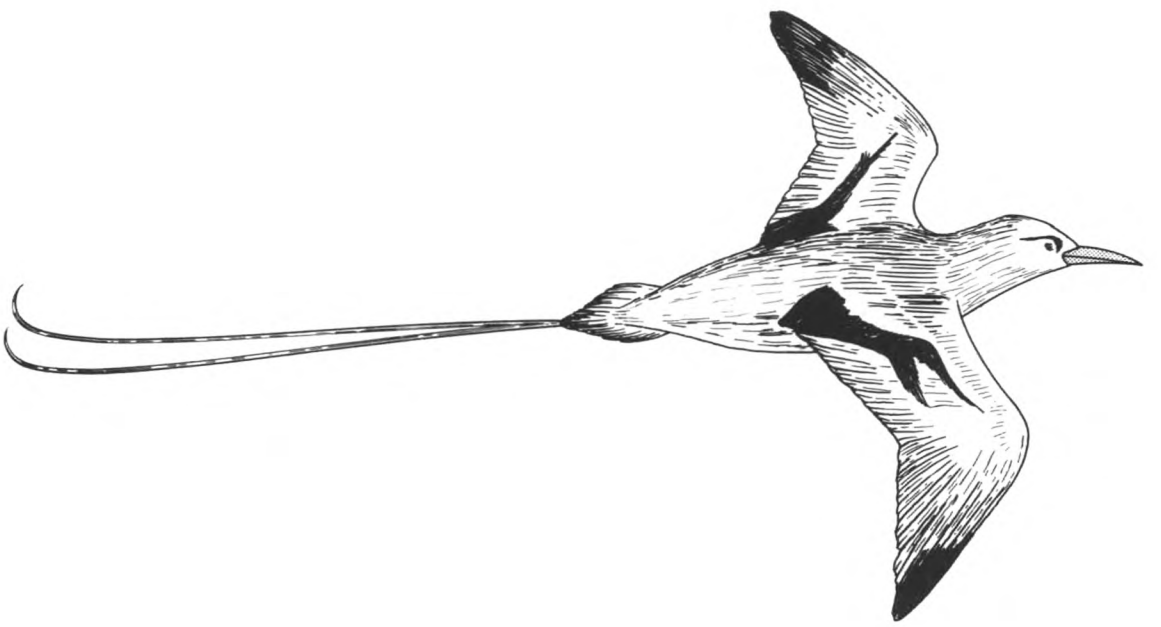
Note. Captain P.W.G. Chilman, of the Royal Naval Birdwatching Society, comments:

'After careful studying of the photo, I think that it is a female Kestrel (*Falco tinnunculus*) and not a Lesser Kestrel (*Falco naumanni*). The moustache stripe is long and definite as opposed to slight, and the claws are black, while in the Lesser Kestrel they are white.'

Indian Ocean

m.v. *Hampshire*. Captain C.O. Thomas. Ras Tanura to Singapore. Observers: the Master, Mr G.N. Penry, 1st Officer, Mr I. Cousins, 3rd Officer, Mr B.J. Foley, Radio Officer and Mrs Penry.

29 June 1987. At about 0600 GMT a most remarkable-looking bird (see sketch) was sighted flying around the vessel and in the wake.



The bird was a striking gold colour, with a black band running before and over the eye. Its whole body was gold apart from black bands on the upper wings and outer wing tips; it had a stout, yellow bill which was pointed and curved slightly downwards. Another striking aspect of the bird was its extremely long tail, comprising golden feathers which were approximately 50–60 cm long. Although the bird did not land on the vessel, or come near enough for accurate measurements to be made, its body length was in the region of 40 cm from the bill to the start of the tail feathers, and the wing-span was 35–40 cm.

Staying with the vessel for three or four hours, the bird was flying around the accommodation and swooping over the decks in a most graceful flight. From the information on board, namely *A Field Guide to the Seabirds of Britain and the World* by Tuck and Heinzel, the bird was thought to be a Christmas Tropic-bird (*Phaethon lepturus fulvus*).

Position of ship: 06°00′N, 91°48′E.

Note. Captain P.W.G. Chilman, comments:

'Certainly a Christmas Tropic-bird (*Phaethon lepturus fulvus*), a race of the White-tailed Tropic-bird. The Christmas Tropic-bird breeds only on Christmas Island in the Indian Ocean; they are said to have a limited range but I have seen them in this area. Another ship reported one about 300 n.mile east of this position four days before your sighting. A very splendid-looking bird.'

BIOLUMINESCENCE

Eastern North Atlantic

m.v. *Bora Universal.* Captain A.G. Cruickshank. Port Elizabeth to Antwerp. Observers: Mr J. Jones, 2nd Officer, Mr R.E.D. Liley, 3rd Officer and Mrs Jones.

14 May 1987. At about 0100 GMT the ship's bow wave began to appear outlined by a faint, green light. By 0130 this light had become very bright green and was observed as bright flashes in the wind waves as they broke periodically, although the presence of the vessel did not seem to be the instigator of the flashes.

At this time, a small sample of the water was taken by rubber bucket. The water, when agitated in the bucket whilst taking the sea temperature (22°C), also appeared to flash, and when some was spilt on the deck, small specks of luminescence were seen. The sample was poured into a clear glass, and it was revealed that the luminescent flashes came from small creatures less than 0.5 mm in diameter, which were essentially round in shape, and also opaque, except for a small, thicker 'blob' in the middle. In overall appearance, they were reminiscent of very small, whitish fried eggs and when irritated by a pencil, the creatures would again flash.

A sample was retained, and in the absence of preservative, surgical spirit was tried, but this turned the water a milky white; compass spirit was also used, but this seemed to attack the organisms, finally breaking them down to small, white flecks like dandruff.

The ship's radars were turned off briefly, to no apparent effect; the Aldis lamp, when shining on the sea and at the glass of water also made no difference. By 0200 the luminescence had faded, and had disappeared by 0230.

Position of ship: 16° 26′N, 17° 35′W.

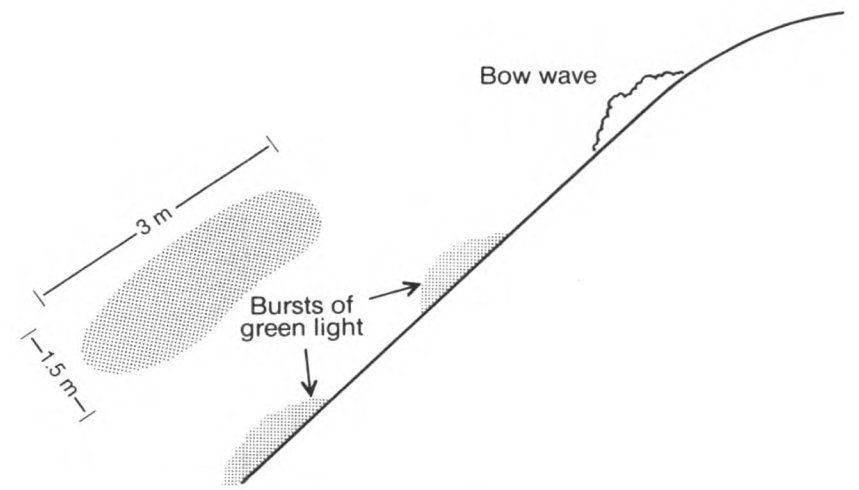
Note. Dr P.J. Herring, of the Institute of Oceanographical Sciences, comments:

'The water sample contains several specimens of the large dinoflagellate *Noctiluca scintillans*, which, as its name suggests, is frequently responsible for luminescent phenomena at sea. As the report describes, these organisms are rather less than 0.5 mm in diameter, and look like tiny fish eggs with a denser spot near the centre. The description of the flashing of the organisms in the water sample is typical of dinoflagellates in general. This is one of the largest species, and preys on smaller organisms; it can affect fish numbers by consumption of the free-floating eggs before they hatch.'

Arabian Sea

m.v. *British Norness.* Captain T.T. Nixon. St Croix to Hormuz. Observer: Mr A.A. Facey, 3rd Officer.

27 June 1987. At about 1800 GMT, in the vicinity of the ship, bioluminescence was observed in the form of sporadic light-green bursts as the sea was agitated in the vessel's wake. It was also noted as a green glow in the bow wave and along the ship's side, and there was a fishy smell in the air. Suddenly, a shape roughly like a sausage was noticed, being about 3 m long and 1.5 m wide, see sketch. It glowed for about five seconds and then vanished. This phenomenon occurred several



times, but after ten minutes, the 'sausages' were not seen again, although the glow in the bow wave remained. Shining the Aldis lamp on the water had no effect.

Weather conditions were: air temperature 27.5°C, wet bulb 26.5, sea 27.0, wind variable, force 2, slight sea and clear skies.

Position of ship: 20°40′N, 50°43′E.

Note. Dr P.J. Herring comments:

'The bursts of greenish light are attributed to dinoflagellates which are abundant in this area, and are frequently reported to be associated with a fishy smell. The larger shapes I believe may have been shoals of fish or shrimp, and their disappearance may have been caused by the animals diving deeper, out of the layer of dinoflagellates. I would have expected the glow to have lasted considerably longer than is reported, but I know of no single animal that might have caused such a large patch.'

East China Sea

m.v. *Fort Frontenac.* Captain J. Currie. Prince Rupert to Singapore. Observer: Mr R.O. Jolliffe, 3rd Officer.

6 April 1987. At 1235 GMT bioluminescence was noted in the ship's wake, and a sample of water was taken for inspection. The sample, when agitated, produced bursts of activity which increased with gentle warming by the hands. It was estimated that the density of the organisms was about 100 to each third of a litre.

Having obtained a sample, attempts were made to collect individual organisms using a syringe; however, this was akin to looking for a needle in a haystack. Eventually, about a litre of water was strained through strips of bandage and even a teabag, and the collection of organisms was placed in a bottle to which was added 40 per cent formalin.

Following the observation, quite vivid bioluminescence remained visible in the ship's wake and small waves for some hours. Weather conditions at the time were: air temperature 16.0°C, wet bulb 16.0, sea 15.0, wind variable, force 1, ship in fog.

Position of ship: 29°44'N, 125°24'E.

Note. Dr P.J. Herring comments:

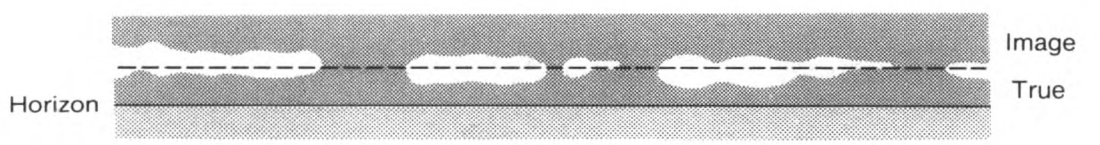
'The sample contained numerous dinoflagellates, particularly species of *Peridinium*. These are brightly luminous, and no doubt accounted for the bioluminescence observed. The report of activity in the sample is also typical of water containing luminous dinoflagellates. I am impressed by the ingenious use of bandages and teabags as filters. Many luminous dinoflagellates are very small and easily go through a coarse filter. Silk is an excellent fine filter if available, but it does take a lot of patience to filter a reasonable volume of water (at least 500 ml should be used).'

ABNORMAL REFRACTION

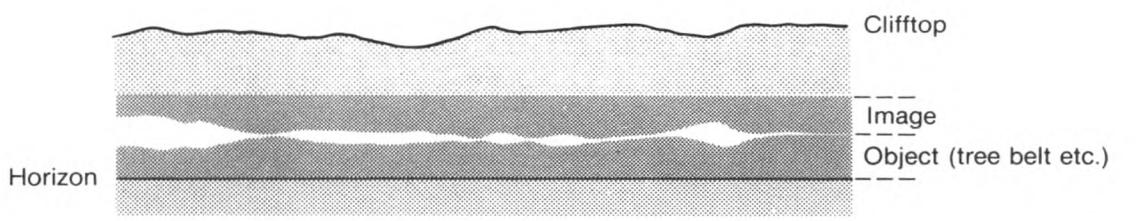
Western North Atlantic

m.v. *Manchester Challenge*. Captain C. Sturcke. Montreal to Felixstowe. Observers: the Master and Mr G.R. Jackson, 2nd Officer.

14 June 1987. At approximately 1800 GMT, it appeared to the observers that the vessel was 'landlocked'. Where land was naturally visible, an inverted image was observed sitting atop it, this image being slightly deeper than the true object, see sketch (a). A similar phenomenon was also observed in the foreground of the

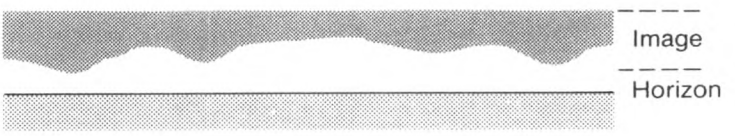


(a) Distance to land: 18 n.mile



(b) Distance to land: 8 n.mile

200-m cliffs of Anticosti Island, as shown in sketch (b). Where land would not normally be visible, an inverted image of it was observed above the horizon, see sketch (c). The distance to visible land was between 5 n.mile and 18 n.mile. Throughout the observation there was no radar interference or associated phenomena.



(c) Distance to land: 25 n.mile

Weather conditions were: air temperature 12.6°C, wet bulb 10.0, pressure 1007.8 mb, falling, wind E'ly, force 4. Cloud cover was 5 oktas cirrostratus, increasing and above 45° elevation.

Position of ship: approximately 50°00'N, 63°00'W.

LOOM OF LIGHT

Coral Sea

m.v. *Iron Sturt*. Captain C.P.R. Moore. Newcastle (N.S.W.) to Hay Point (Queensland). Observers: Mr J. Foord, 1st Officer, Mr M.A. Slater, 3rd Officer, Mr C. Cosgrove, Radio Officer and Mr T. Curphey, A.B.

27 May 1987. At 1000 GMT the Lookout reported the loom of a flashing light abaft the starboard beam. This caused some consternation as the coastline was on the port side, and there was meant to be nothing on the starboard side. Cape Byron light was at the time forward of the port beam.

From observations, the 'loom' was seen to have the same characteristics and to flash at the same instant as Cape Byron light. It was also observed to be on the reciprocal bearing of Cape Byron light. As Cape Byron light drew abaft the port beam, the loom moved to forward of the starboard beam such that its bearing always remained reciprocal to that of Cape Byron light.

A similar report appeared in *The Marine Observer*, January 1985 edition, and our observations were exactly the same in all details (apart from the weather conditions and ship's position, of course).

The only explanation of such a phenomenon is that it was due to refraction in some way. Weather conditions at the time were: air temperature 15.5 °C, wet bulb 12.5, pressure 1014.6 mb, wind WSW'ly, force 8.

Position of ship: 28°36'S, 153°43'E.

Note. The *Iron Sturt* is a Selected Ship of the Australian Voluntary Observing Fleet.

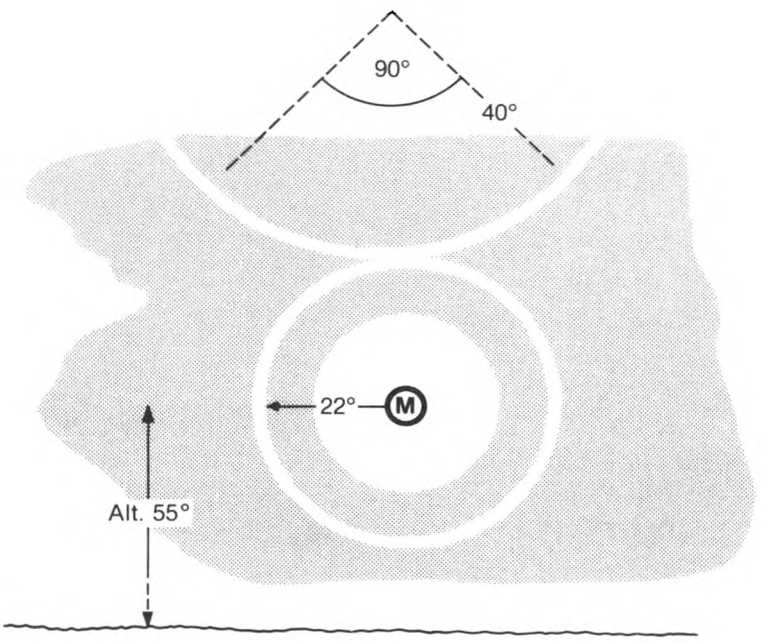
LUNAR HALO

Equatorial Pacific

m.v. *Discovery Bay*. Captain A.J. Fee. Auckland to Oakland. Observers: Mr N.P. Woodhead, 3rd Officer and Mr B. Carroll, SM1.

12 June 1987. At 1000 GMT, the sky appeared to be slightly hazy overall with 3 oktas of cumulus and stratocumulus near the horizon, when a halo of radius 22° was observed surrounding the moon. The moon itself could be clearly seen through the haze, and was at an elevation of 55°, bearing 160°.

Later, a secondary arc was observed above the halo, see sketch. The bottom of the arc was, or appeared to be in contact with the top of the halo, and curved upwards, having a radius of approximately 40°, and its total angle measured approximately 90°.



After half an hour the cloud (presumably cirrostratus) appeared to thicken, becoming uneven, and the halo complex was no longer visible.

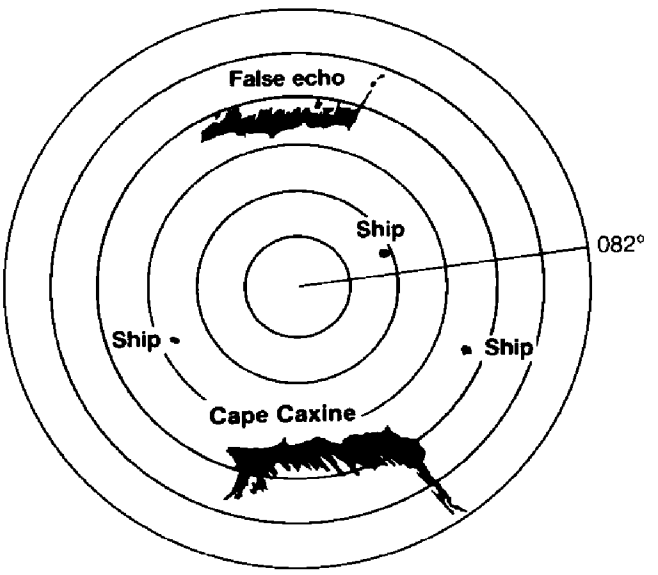
Position of ship: 04° 25′N, 155° 15′W.

RADAR ECHO

Western Mediterranean

m.v. *Benavon*. Captain A.S. Hamilton. Southampton to Port Said. Observer: Mr R.G.C. Noble, 3rd Officer.

23 May 1987. At 1100 the vessel was proceeding on a course of 082°, at a speed of 20 knots 6.5 n.mile north of Cape Caxine, when a false radar echo of the land was observed. It was noticed on the 3-cm radar screen and initially looked like a 5-mile long island to the north of the vessel. Later however, it was possible to make out the mirrored coastline down towards Algiers. The false echo mirrored exactly the features of the coastline around Cape Caxine. Originally, the phenomenon was seen on the 12-n.mile range, see sketch, but was equally strong on both the 24 and 48-n.mile ranges, lasting for about ten minutes.



The weather at the time was lightly overcast with a slight horizon haze. Other variables were: air temperature 23.8 °C, wet bulb 19.0, pressure 1011.2 mb, wind W'ly, force 2–3, visibility 10 n.mile.

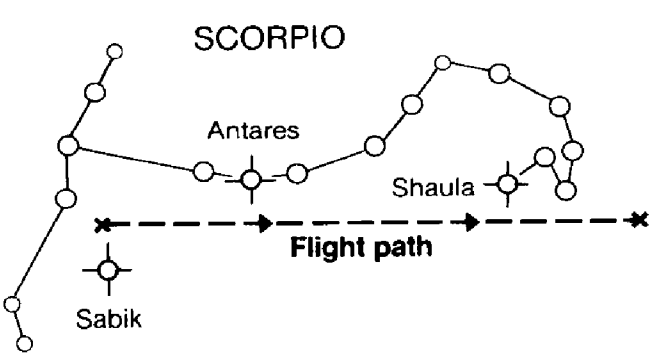
Position of ship: 36° 56'N, 02° 58'E.

METEORS

Indian Ocean

m.v. *La Chacra.* Captain J.M. Waller. Narvik to Cigading. Observers: Mr C.A. Bates, 3rd Officer and Mr K. Allen, Lookout.

20 April 1987. At 1500 GMT a burning star was observed for 3–4 seconds on the starboard side of the vessel. The trajectory was quite shallow, being about 4° or so. When first seen, its bearing was approximately 120°, appearing just above the star Sabik at an altitude of about 12°, from where it moved in almost a direct line toward the star Shaula in Scorpio, where it disappeared at an altitude of about 8° or so. The sketch shows the path taken.



There were two or three secondary nuclei behind the main body, and these appeared to be slightly darker than the brilliant white of the trail. The main body was observed to be nearly blue or green, fading to the white colour of the trail.

Position of ship: 10° 16'S, 99° 01'E.

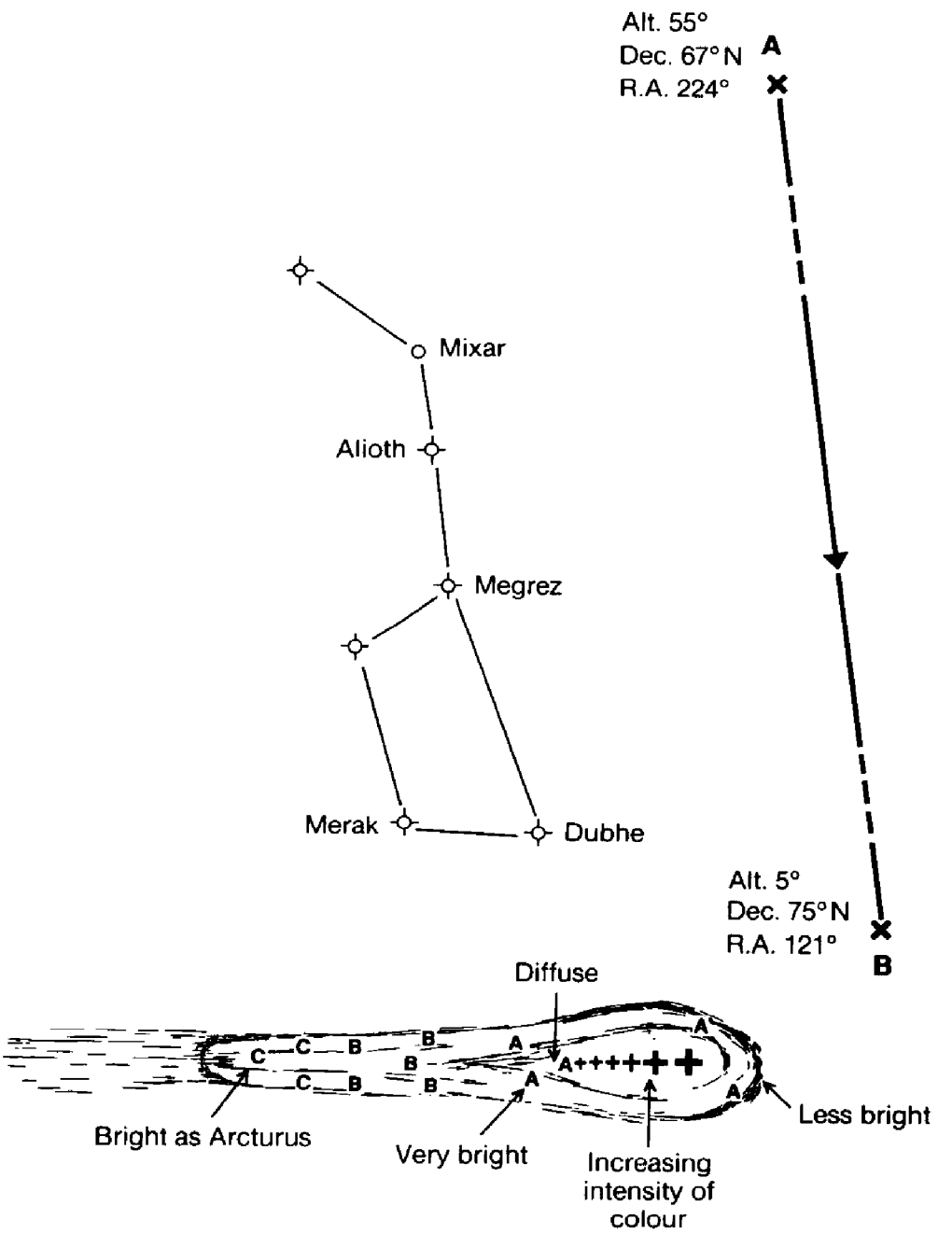
Note. Mr H. Miles, Director of the Artificial Satellite Section, British Astronomical Association, comments:

'This appears to have been quite a spectacular fireball. The observers should be congratulated on the detail reported. It was a natural object entering the atmosphere, and breaking up into smaller fragments as it was ablated.'

Eastern North Pacific

m.v. *Nosira Lin*. Captain I. Woodier. Panama Canal to San Diego. Observers: Mr R.K. Harding, 3rd Officer and Mr M. Desmond, Seaman.

4 June 1987. At 0430 GMT, the phenomenon shown in the sketch was observed. It was extremely bright, and easily comparable with the half-moon in



brightness. The length of the object and its tail could be compared to the distance between the stars Merak and Dubhe, for an indication of size.

The body of the object was elongated, mainly a very bright, intense blue in colour, with a hint of green, and was surrounded by a less bright edge of blue/green (turquoise). The proportion of green in the colour decreased from the tail towards the head as the brightness increased.

During the flight of 2.5 seconds between points A and B on the diagram, there was a luminous trail left by the object. This was of the same blue/green colouration as the main body, but its brightness decreased quickly. It appeared almost to be part of the tail for a short time, although the tail itself remained clearly visible. The luminous glow did not appear to have a sharp outline, and was also diffuse, but it still remained bright for about 1 second after the object had disappeared.

Position of ship: 18° 50′N, 104° 45′W.

Indian Ocean

m.v. *Equinox*. Captain T.E. Wilson. Dalrymple Bay, Tasmania to Ijmuiden. Observers: Mr I.G. Robertson, 2nd Officer and Mr Sin Seong Dae, QM.

7 May 1987. At 0015 GMT a bright, meteor-like object burnt up in the sky to the west of the vessel. It was in the approximate position of Spica, and originated almost overhead, travelling to roughly 10° above the horizon. The object was particularly bright, appearing as white with a tinge of bright green. During the five minutes either side of the observation, there were a dozen or so meteors observed, all travelling in the same direction.

Position of ship: 29° 04′S, 41° 18′E.

Note. Mr H. Miles comments:

'It is thought that the bright object and the dozen or more meteors seen around the same time all belonged to the η Aquarid meteor stream. This stream is the best of the Southern Hemisphere streams. The peak period of activity occurred about the time of the observation, although maximum activity is spread out and not sharply defined. The shower is associated with Comet Halley. The predicted hourly rate at maximum activity was 40, so the observed rate of 12+ in five minutes indicates that the shower was more active than usual this year.'

AURORA BOREALIS

North Atlantic Ocean

m.v. *Lanark*. Captain I.C. Mackintosh. Tela to Gothenburg. Observers: Mr P.J. Brown, 2nd Officer and Mr C.A.W. Slater, 3rd Officer.

12/13 June 1987. At 2315 GMT on the 12th an orange glow was noticed between the horizon and the base of the horizon cloud. The glow spanned an arc of the horizon of 20° between the bearings of 000° and 020°, and was of weak to moderate brightness. It was assumed that this was an auroral display, although from its continuous glow with no movement or brightness variation, it was very quiet.

At 0000 on the 13th the display seemed to be fading, but at 0120 it was noted that there was still an orange glow on the horizon, this time spanning an arc of 10° between 345° and 355°. At this stage, above the orange glow there was a moderate to bright greenish-white glow spanning an arc of the horizon between

340° and 005°. The greenish-white glow extended to an altitude of 3° above the horizon. Between the hours of 0136 and 0150, a weak bluish-green glow was observed around the orange one, and in all, the display was observed until sunrise at 0353.

Position of ship: 57° 15'N, 12° 00'W.

ROCKET DEBRIS

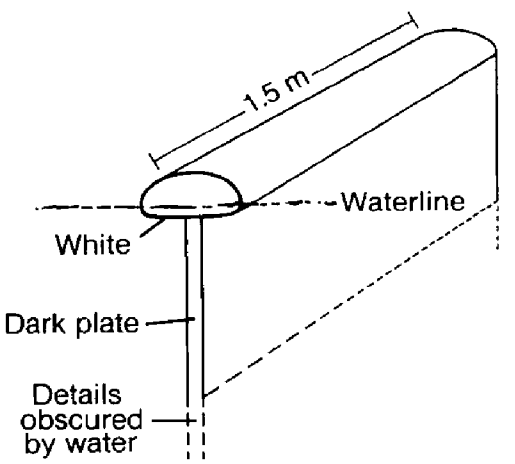
North Atlantic Ocean

m.v. *London Spirit*. Captain R.B. Tarbuck. New York to El Palito, Venezuela. Observers: the Master and most of ship's company.

24 April 1987. At 2100 GMT a large, white object was sighted low in the water, just visible at the top of the swell close to the ship's path. The course was adjusted to enable a close view to be made, in case it was an upturned boat.

As the ship drew closer and passed the object, it was seen to be cylindrical in shape, about 4 m long and 2.4 m in diameter, floating about two-thirds submerged, see photograph opposite page 76. In large, black script reading vertically down the length was 'UNITED' and also a '66' around the circumference. Above the 'UNITED' was a black band. There was some smaller script at either end too, but was too small to read. To one side of the '66' was an inspection hole/flange. The upper end of the debris had notches in it, whereas at the lower end, below the water-line were two ribs each protruding about 1 m from the main body, there were four ribs in all on the cylinder's surface. Around the circumference of the lower end of the debris was a row of rivets. There appeared to be moderate barnacle growth below the water, indicating that the object had been in the water for some time. No signs of burning or other damage could be seen.

In addition to this object, another one was sighted about a quarter of a mile away, and when passed, turned out to be a white tube about 1.5 m long, having a 'plate' hanging from it, the depth of which into the water was unknown, see sketch.



The United States Coast Guard was contacted by Telex, and was sent the time, position, description of the object and also a simple sketch. The ship was also asked for details of weather, seas, visibility, cloud cover and drift. The USCG was

in contact with another organisation, and seemed to be relaying other questions to the observers relative to the description and length of *London Spirit*, and further details about the object itself. Specific instructions were given that the object should not be towed or lifted.

In all, the object was passed three times in order to obtain as much detail as possible. The vessel was requested to contact the USCG two hours later, at which time the message passed on was, 'NASA says, "Thanks for all your help" '.

Position of ship: 27° 44′N, 60° 12′W.

Note. Following a subsequent enquiry from the *London Spirit* as to the source of the debris, the National Aeronautics and Space Administration (NASA) at the Lyndon B. Johnson Space Center in Houston, Texas, replied:

'We have ascertained that the objects you observed on April 24, 1987 were pieces of the upper stage protective panels of the Atlas Centaur 66, launched on December 4, 1986, 9.30 EST, to deploy FLTSATCOM F–7, a U.S. Navy communications satellite.

'It is not uncommon for such materials to return to Earth since they are jettisoned when the dynamic atmospheric pressure falls below approximately 150 pounds per square foot at roughly 178 seconds after lift off. Since inertial velocity at that time is in the range of 6000–8000 feet per second, these objects are suborbital and fall on a ballistic trajectory back to Earth.

'The fairings are fabricated of fiber glass honeycomb and some foam insulation. Because of the low density of the materials they are not considered a hazard to ocean-going vessels.

'Because jettisoned parts of launch vehicles rarely float and are not tracked during entry, no record is made of the eventual disposition of such material. There is a notice to mariners as to planned launches so that traffic can avoid drop zones at critical times.'

Proof of Poldhu

By S. Crabtree*

News of the first wireless signals to cross the Atlantic in December 1901 was received with scepticism by the Press and scientific hierarchy. The cable companies were dismayed by visions of lost revenue in the future if the news were true. The public in general were inclined to accept the report. The question really boiled down to whether it was feasible to believe the word of one Guglielmo Marconi and his assistant without any corroborative evidence.

The sceptics had cause for doubt. The alleged wavelength of Poldhu transmission of 366 m (820 kHz) was later the subject of much deliberation and argument. Considering the power used and the fact that, at the time of the transmission the entire signal path was in daylight, it is understandable that the transmitted wavelength should be questioned. At that time there were no reliable instruments that could ascertain the frequency of such tuned units as were in use. The aerial was considered the most important resonant element and this was later quoted as 370 m long.

Marconi himself was conscious that his experiment was unsubstantiated. Such was his reputation that a large following was prepared to accept his feat as fact. But he knew he needed to confirm his earlier tests and with this intention he set sail in the liner *Philadelphia* from Cherbourg on 22 February 1902, less than three months from the date of the first transatlantic signals.

Marconi was on friendly terms with the America Line owners. It was on their vessel *St Paul* that he had conducted an earlier experiment. In November 1899 he had achieved the then remarkable distinction of exchanging signals with the Alum Bay station at a range of 57 n.miles and initiating the first 'telegram' from ship to shore. After hurried negotiations, the America Line agreed to an extension to the *Philadelphia*'s main 46 m mast to support a 4-wire cage aerial. The result was an effective receiving antenna of some 60 m above sea level. A standard receiving coherer was installed, feeding a paper-tape inking machine, which reproduced the morse characters. Marconi also fitted his new multiple coupler to tune the aerial circuit.

Accompanying Marconi was assistant R.N. Vyvyan (later to become Engineer-in-Charge of the Company). Vyvyan had recently married and his new bride travelled with him on the voyage. In addition there were two wireless operators. One of these, C.S. Franklin, was later to be principal architect of the beam aerial system and other wireless inventions.

Once in the English Channel the *Philadelphia* established contact with Alum Bay on the Isle of Wight and, using the ship's standard equipment, maintained communication for some 60 n.miles, which was the limit of the coast station's range. Thereafter the tuning apparatus was adjusted to receive Poldhu. The Cornish station transmitter had undergone some improvement in the intervening weeks and a better keying system had been installed. The questionable wavelength of 366 m was still in use.

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* Reproduced from *Ocean Voice*, July 1987. Stan Crabtree is an ex-Radio Officer who was associated with at least two meteorological logbooks from the *Kenilworth Castle* in 1953, and is now a marine correspondent.

Opposite page 76

Photo. by G.J. Simpson

Kestrel photographed on board m.v. *Devonshire* (see page 64.)

Photo. by M.C. Littlewood

Rocket debris photographed from m.v. *London Spirit* (see page 74.)

Opposite page 77

Photo. by Tom Rayner

m.v. *Durham*, New Zealand Shipping Co. Ltd (see page 78.)

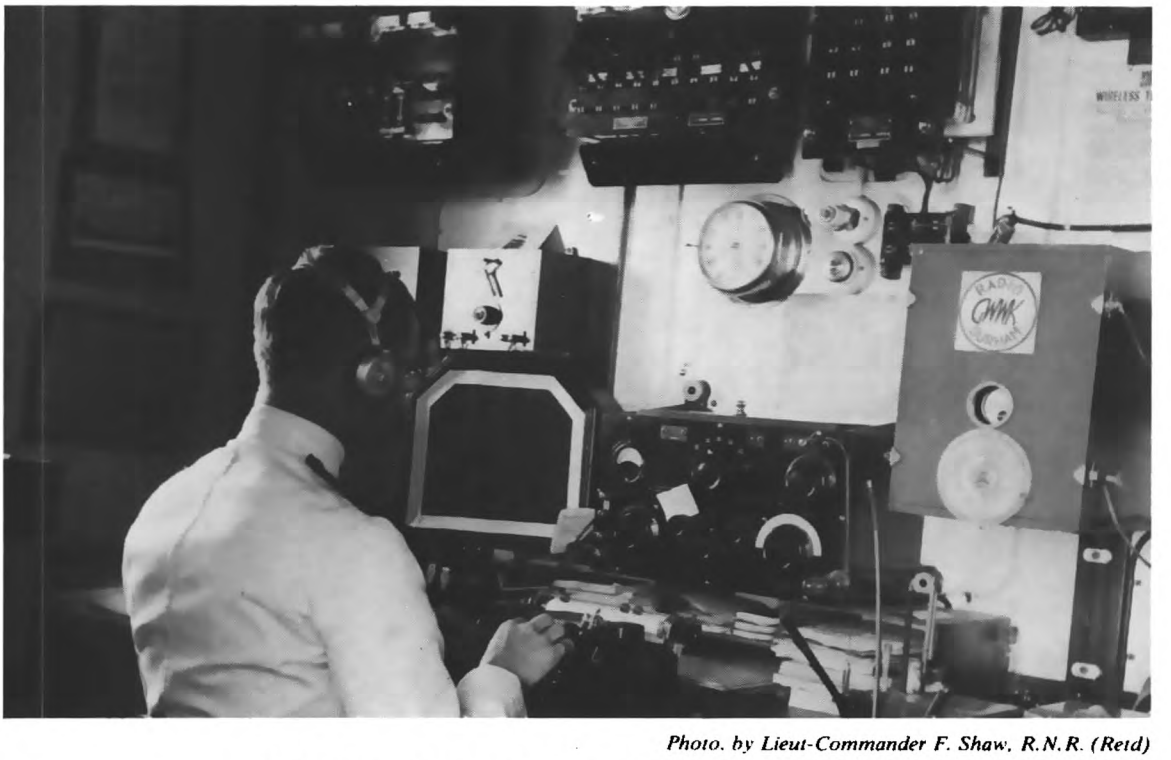

Photo. by Lieut-Commander F. Shaw, R.N.R. (Retd)

The Wireless Office of m.v. *Durham* (see page 79.)

Marconi's plan was to retain tapes containing received messages and, in addition, have the ship's position endorsed on the tapes by the ship's Master. These would be handed to reporters upon arrival in New York and prove irrefutably that the tests were authentic.

Good signals were received for the first two days of the ship's passage to New York. The first tape to be retained contained a message received at a distance of 216 n.miles from Poldhu. This was endorsed together with the ship's position with the signatures of Captain A.R. Mills and his Chief Officer, Mr C. Marsden. A special chart was also used and a note of signals received was marked on the line traced by the ship's course. News of the tests inevitably reached the passengers and a few got into the habit of calling regularly at the wirelesss cabin.

All on board were pleased with the results. The fixed aerial provided stable signals, which contrasted with the conditions on the earlier Newfoundland site where kites had been used as aerial supports. Although providing more height, their continual movement in the high winds had meant an erratic change of wavelength, resulting in a varying received signal level.

A new type of self-restoring coherer developed by the Italian Navy, refused to respond to signals at a range of 600 n.miles and was replaced by the standard model, which continued to function to the end of the tests. The third tape confirmed the reception of messages at just over 860 n.miles from the transmitter.

It was fortunate that transmission periods from Poldhu had been scheduled to cover a wide time spread. On the fourth day, transmissions were indecipherable but messages received during the following hours of darkness were copied complete at much greater strength. This phenomenon was inexplicable at the time but served to extend the receivable range of 1,340 n.miles at night. As the distance from Poldhu increased, the messages, even during the night, became slowly indecipherable. But interspersed between message texts the operators at Poldhu had been instructed to send strings of the letters 'S' — the same character used for the inaugural transmission in December 1901. At a longitude of 47° 23'W, Marconi marked what was to become his fifth and final tape. This still bore the distinctive 'S' and was endorsed by the Master and Chief Officer as being received at a distance of 1,813 n.miles. By coincidence this was also the approximate distance between Poldhu and the original receiving station at Signal Hill, Newfoundland.

Marconi and his colleagues had cause for celebration. The first transatlantic transmission had been proved to be possible by current tests, authenticated by responsible ship's officers. In addition, hertzian wave knowledge had increased with the discovery of 'night effect'.

But perhaps the most satifying thought passing through Marconi's mind at this time was that his aspiration to see wireless telegraphy used as an effective means of communication at sea was one step nearer to being fulfilled. He had proved that it was now possible for suitably equipped vessels crossing the Atlantic to remain in wireless contact with land stations throughout the voyage.

A Day in the Life of a Radio Officer in the 1930s

By Lieutenant Commander F. Shaw, R.N.R. (rtd)

I am very interested in the lives and jobs of other people and I thought I would write about the life of my younger brother, Frederick Gustavus Shaw, who was the Chief Radio Officer in the New Zealand Shipping Company's Cadet Ship *Durham*. (See photograph opposite page 77).

He told me that his day usually started at about 0600 with the cheery voice of his Irish steward, James Walsh, saying 'Top of the morning to ye, Sir: will ye be after seeing the bottom of a taycup of tay?' After this cheery start it was not hard to turn out, do a few vigorous stretches, slip on a pair of shorts and the running shoes and go out into what he called his 'garden'. This was the after end of the boat deck, a space measuring about 30 feet by 50 feet and ideal for morning exercises. Already in his 'garden' he found his colleagues assembled for morning exercises — usually the Doctor, the Purser, Schoolmaster, Padre and the energetic Third Officer — and for ten minutes they played their medicine ball, which was like deck tennis but played with a twelve-pound ball, 2 feet in diameter, instead of the usual 12-ounce quoit.

'This was a serious game', he said. When he first started it his only desire was to lie down and die. But they soon got used to it as every week was 'Physical Fitness Week'. A few setting-up exercises followed and a sprint round the boat deck for a couple of dozen times and then it was time for a plunge into the swimming pool.

The hours of duty of the Wireless Department differed from the other departments of the ship, because the wireless watches were kept according to Greenwich Time and consequently no two days were alike, as the ship's time changes each day as the voyage progresses. I think this is one of the few jobs in the world where the working hours were different each day and yet are fixed by law according to location. All ships with wireless keep the same hours so it does not matter whether they are British or Brazilian, Peruvian or Portuguese, Chilean or Chinese; they are all on watch at the same time. The International Telecommunications Bureau has fixed eight hours per day in periods of two hours on and two hours off (for freight vessels), commencing at 0530 at the earliest and finishing at 0100 at the latest.

This timekeeping is a very complicated business and if anybody would like further detailed information and has three or four hours to spare, my brother said he would be glad to explain everything about GMT, which was Greenwich Mean Time, and about Ship's Time, Sidereal Time, Astronomical Time and opening and closing time. He said he would take a day where the wireless work commenced at 0800. Consider that we were in a ship bound from New Zealand for home via the Cape Horn route and that this ship was three days out from Wellington in approximately latitude 50° S and longitude 165° W. The day's work was just commencing. He remembered there was a ship called *Fort Cheviot*, three days ahead of us and bound for London from Lyttelton. He would ask *Fort Cheviot* what sort of weather she was having. The other ship replied that she was having wind NW Force 7, sea rough, barometer 29.60 inches, falling, temperature 39° F; this information was sent along to the Officer of the Watch.

My brother went on: 'At 0830 we broadcast our own weather to CQ, the international signal for "All Stations". This broadcast was made three times daily and could be heard by all ships within range — a radius of about 1,000 n.mile in

daylight and much further at night'. Now he said it was time for some breakfast which tasted very good after all the morning exercises — an orange, a big plate of porridge, a kipper, bacon and eggs with fried potatoes, toast and coffee. So back to work, switching off the automatic alarm which keeps a watch-out for any distress calls when the Radio Officer is not on duty. Not much is going on in the wireless world at this time of the morning, so a few minutes are spent on the clerical work and the accounts. Then a few minutes more on examination of the batteries which work various instruments. All in order.

The time has now arrived for more walks around the boat deck for fresh air if the weather is suitable. If not, a visit to the Smoke Room for a gossip and the passing of caustic remarks to the Officers off watch having a game of darts, or perhaps to annoy somebody having a quiet read, often followed by disastrous results. Noon soon arrives and the next period of watch is on, but beyond the exchange of noon positions with the *Fort Cheviot*, nothing more is heard in the watch. Lunch time comes around 1300 and of course all are ready for it. Pea soup, cold beef and salad followed by fruit tart, and then back on duty. The watch ends at 1400 and as it has just started to rain, no chance for a further walk on deck and so a 'little folding of the hands to sleep' is indicated.

Tea time soon arrives at 1530, with the Irish steward knocking on the door, his cheery voice saying, 'Sir, the tay's wetted and the victuals is in', so down to the Smoke Room again for a couple of cups of 'tay' and a few minutes gossip; shortly afterwards eight bells sounds 1600 hours, and so back to the Wireless Office for the next watch. (See photograph opposite page 77). Soon it is getting dark and then the wireless world starts to wake up a bit, but it is not until the evening at about 1800 when darkness has fallen over the world that distant stations can be heard very loud and clear. One can hear New York calling with a list of ships for which the station has messages. New York is 7,000 n.mile away and we are in another ocean, so we are not interested. There is a storm warning from Fiji but that is astern and so it does not concern us. My brother told me that on board they published a daily news sheet of about two pages of foolscap, so they picked up the principal items of news of the day for this daily news sheet. It was a matter of patience to listen to the stations all over the world and pick out suitable items from New York, Vancouver, San Francisco, Sydney, Wellington and from around Europe. Messages of all kinds were passing through the ether; greetings to loved ones and absent friends, messages of instruction to brokers to buy and sell, a call from a freighter without a surgeon on board for advice about treatment for a member of the crew with internal pains and possibly a distant hurricane report. It was now around midnight — not a very exciting day, just 'the daily round, the common task'.

A final word to the *Fort Cheviot* asking about the weather ahead. All was well, and so to the end of another day.

'We do have some interesting experiences, though, and I would like to tell you about some of them', said my brother.

'The first', he said, 'was an awful warning of what comes of trying to be too clever ...'. He was lent to the Italian Government just after World War I, and whilst on passage from Naples to New York he was on watch one afternoon, when a man came into the Wireless Office and asked if he could be shown the wireless equipment. 'I showed him all around the office and showed him the spectacular sparks jumping between the two copper balls on the old induction coil which we used as an emergency transmitter, and then explained that we left

scuttles of port holes open so that the ether waves would have a better chance of getting out of and into the Wireless Office. He seemed very interested and smiled at me with a huge smile and as he was leaving he gave me an envelope which he said was a souvenir of his visit. When he had gone I opened the envelope and found inside it an American ten-dollar bill and a card; on looking at the name on the card, I was horrified to read GUGLIELMO MARCONI! He was on his way to visit his old friend John Campanoli, but as his yacht *Elettra* was under repair he had travelled by the White Star Line. When next I met Senator Marconi he gave me another quiet smile and patted me on the shoulder and walked away.' Frederick said he had never forgotten the episode and was careful not to tell yarns in the future.

Finally, Frederick told me that he had found in an old cupboard a copy of *Wireless World* for 1913 in which he found a poem (with great respect to Rudyard Kipling's *If*):-

If you can keep your nerves when all about you
Are jamming stations hard and blaming you;
If you can 'hold the air' though others flout you,
Until you get your longest message through;
If you can send and not grow weary sending.
Nor overtire the man who has to read;
If your mistakes are rare but prompt their mending,
If you believe that haste is never speed.

If you can calmly contemplate the chatter
Of greenhorn operators fresh from school;
If you can wait with messages that matter
And wait until they've finished — and keep cool.
If you can read through half a dozen stations
The weaker signals that were meant for you
And pick 'em out with few interrogations
Yet never feel ashamed to ask those few.

If you're a Jack-of-all-Trades — Tinker, Tailor,
If there is scarce a job you cannot do,
If you're an Electrician and a Sailor
Telegrapher, Accountant, Lawyer too;
If you're propelled by energy that's tireless,
If you don't fear a job that's never done,
Then, take my word — you're fit to work at WIRELESS —
And ANYTHING YOU GET YOU'LL EARN, MY SON!

Note. Lieutenant Commander Shaw tells us that his brother was with the New Zealand Shipping Company from 1937 to 1942 and had a great interest in the weather. F.G. Shaw's name appears in the Fleet Lists in *The Marine Observer*, 1937 to 1939, as Chief Radio Officer of the *Durham*. The journal was not published during the war years. The author was himself a deck officer for many years and has written regular articles for the *Nautical Magazine* and *Sea Breezes*, describing incidents in his 'Eighty years of travel and adventure' to all corners of the globe.

The father of the current Port Meteorological Officer at Hull, also Ocean Weather Ship Officer, Captain Albert Britain, was serving as Chief Steward on the *Durham* at about the same time as Frederick Shaw was aboard.

LONG ASSOCIATION WITH SHIPOWNERS — PENINSULAR AND ORIENTAL STEAM NAVIGATION COMPANY

How runs the old indictment? 'Dear and slow';
So much and twice so much. We gird but go.
For all the soul of our sad east is there,
Beneath the house flag of the P. & O.

From *The Exile's Line*
By Rudyard Kipling

Much has been written recently about the P. & O.'s 150-year history and our annual account will therefore deal mainly with the Meteorological Office association with several of that respected company's ships in peace and in war.

The P. & O. may not run ships from Blighty to the East as seen by Kipling, any longer, but this great shipping concern continues to thrive under the same house flag that Kipling must have known. The red, white, blue and gold quartered banner has been brought to the fore once more, playing its part in bringing to the public's attention the many facets of this large organisation. The house flag remains unchanged from the time 150 years ago when the company was granted the right to incorporate the colours of the national flags of Spain and Portugal into its own flag. The two countries formed the Iberian Peninsular, remembered in the company's name, formulated when it was given the first contract to carry Her Majesty's mails on a regular weekly basis from London and Falmouth to the Peninsular ports. This historic contract was signed in 1837, the first year of Queen Victoria's reign, and 3 years later the company's experience and reputation led to a further contract for carrying the mails on from Gibraltar to Egypt and overland to the Red Sea, then on by sea to India; the company's name was then changed to Peninsular and Oriental Steam Navigation Company.

The P. & O. fleet expanded rapidly and by the end of 1855 the company had 40 ships. One of these was the *Madras* under the command of Captain George English and it was from her that the oldest existing 'meteorological register' from P. & O. ships, and still residing in the Bracknell archives, was received at the 'Meteorological Department of the Board of Trade' in its first full year of existence. Several logbooks received earlier were apparently not considered good enough and were disposed of soon after receipt. Two such logbooks from P. & O. ships are recorded in the original registers, which alone remain as proof of the existence of the books: the earliest was received from the *Alma* on 8 November 1855 and was started on 6 April of that year on a voyage from Portsmouth to the Black Sea under Captain R.W. Evans. The other, although received in the office at a later date, was started on the *Ballarat* on 21 March 1855, some two weeks before the *Alma*'s, and held the records of a voyage from London to Port Phillip (Melbourne).

The *Madras* logbook was number 222, received on 19 February 1856, opened as the ship was about to sail from East India Docks, London, on 25 March 1855 for Madras. This log provides an excellent record of the methods of the day and was a deck log as well as a meteorological record, written by the fine hand of the Captain throughout. Civil time was used and in addition to navigational information the weather observations had to be made regularly in order to fulfil previously agreed conditions. To assist in this the even-numbered hours were printed in the log and the special hours for observation were in larger type. These hours were 0400, 0900, 1200, 1500 and 2000. There were no measurements of

waves or records of past and present weather in code as there was no radio to transmit them, but some additional elements compared to today's records were entered. These included the specific gravity of the sea water, temperature of the sea at different depths, magnetic variation, soundings at depth, submarine currents, tidal observations and records of ripples in the sea. Printed at the front of the log was the note that 'contributors' names will be distinguished as such in the Mercantile Navy List and will be supplied by the Board of Trade with the results of their own and other Officers' observations, when published'. The *Madras* logbook is well kept and contains a number of remarks about the sighting of birds, flying fish and luminescence. The ship returned to London on 29 December 1855.

Another ship from which a meteorological register was received in 1855 was the *Colombo*, an iron screw steamer, barque-rigged with a single funnel, built in 1853 by Robert Napier on the Clyde. On her maiden voyage in January 1854 she carried the Indian mail on the first occasion that it had come the whole way to Suez by screw steamer; previously the mail contract had required that paddle steamers be used. The *Colombo*'s first logbook covered a voyage to the Black Sea from September to December 1855 under Captain R. Methuen as Master. In July 1854 she had been requisitioned as a Crimean War transport and in December of that year she had reached Sebastopol with provisions for the wounded of that war.

A total of 11 P. & O. ships were engaged in trooping during the Crimean War and one of these was the first *Himalaya*, built in 1853, and carrying troops to Gallipoli and Constantinople. The second *Himalaya*, built in 1892, served in the First World War as an armed merchant cruiser and was equipped with an aircraft deck in 1915. In June 1940, the second year of the Second World War, German planes attacked the harbour of Portland on the south coast of England, bombing and gunning the small shipping that lay there. The toll was not heavy; some barges and a few yachts were sunk — and an old naval coal-hulk, then in her eighty-sixth year, the first *Himalaya*. The first passenger ship that P. & O. built after the war was the third *Himalaya*, of 27,955 tons gross, completed in 1949, and a symbol of returning luxury and normality after the horrors of the war years. She was recruited as a voluntary observing ship near the end of her first year of service and remained in the forefront of marine observing on her voyages from England to Australia and on cruises in both hemispheres, until she was sold for demolition in October 1974. (See photographs opposite page 60.)

The P. & O. has not lacked experience in war, from the *Lady Mary Wood* carrying troops from Madras to Ceylon in 1848 to quell a rebellion in the island, to the trooper *Empire Fowey* taking support to the allies in the Korean War 102 years later. Losses during the Second World War amounted to 19 ships, over half the total fleet, as well as many others amongst the Group companies. By the beginning of 1951, however, recovery was sufficient to show a fleet of 30 ships, evenly divided between passenger liners and cargo ships. Although weather observing had to be suspended during war time, the majority of the company's ships have participated in the voluntary observing scheme to mutual benefit.

Most of the history of this long-established company is now well-known and P. & O. today owns 73 ships including passenger ferries and container ships. The group, whose activities also include road haulage, property investment and development, construction, house building and a wide range of service industries, has a turnover of £2.6 billion and employs 42,000 people of whom

more than 5,000 are overseas. The P. & O. Group had many great achievements to celebrate in its 150th year, with Sir Jeffrey Sterling currently at the helm, and the Meteorological Office is gratified to have been associated with the ships of the Group for 133 of those years. We wish the P. & O. continuing success in all its plans for the future and hope that we can maintain the expedient liaison which has existed between our two ventures for so many years.

J.F.T.H.

SPECIAL LONG-SERVICE AWARDS

The Director-General of the Meteorological Office is pleased to select the following shipmasters for the award of inscribed long-service barographs for their meritorious service in the cause of voluntary marine observing:

1. CAPTAIN D. DICKSON, MNI, Denholm Ship Management Ltd, whose first meteorological logbook was sent from the *Baron Fairlie*, Hogarth Shipping Company, in April 1952. Up to the end of 1986, the period in question, Captain Dickson had provided 54 logbooks compiled over 24 observing years.
2. CAPTAIN D.M. MCPHAIL, MNI, Blue Star Ship Management Ltd, now retired, was associated with weather observing during 23 of his many years at sea and during that time sent in 48 meteorological logbooks. The first came from the *Brisbane Star* in May 1948.
3. CAPTAIN J.O. SPENCE, MNI, P. & O. Ship Management Ltd, has provided 50 meteorological logbooks in 24 observing years. His first logbook came from the *Tregenna* (Hain Steamship Company Ltd) in May 1954.
4. CAPTAIN J.D. THOMSON, P. & O. Containers Ltd, first appeared in a meteorological logbook in February 1956 when he was Fourth Officer of the *Durham* (Federal S.N. Co.). He has since been associated with a total of 48 logbooks in 21 years of voluntary observing.

In order to be considered for these special awards nominees must have sent in at least one logbook in 1986 and to have recorded a minimum of 18 years in which weather observing took place. The first such award was made in 1948 in recognition of voluntary observing service made up to the end of the previous year, and was introduced by the Director of the Meteorological Office at the time, Sir Nelson Johnson, who held that post from 1938 to 1953.

J.F.T.H

AURORA NOTES APRIL TO JUNE 1987

By R.J. Livesey

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

In Table 1 are listed the observations which we have received from our marine observers up to the time of writing. The general pattern of auroral activity during the period was low, as reflected in Table 2. Sunspot minimum has been

Table 1 — Marine Aurora Observations April to June 1987

Date	Ship	Geographic Position	Time (GMT)	Forms in Sequence
20/21 Apr. ..	*Southland Star*	23° 42'N, 152° 35'W	1250	HA
(This observation thought to be an atmospheric effect.)				
12/13 Jun. ..	*Lanark*	57° 15'N, 12° 00'W	2315–0353	G, mP
17/18 ..	*Shell Explorer*	54° 12'N, 05° 30'W	0220	N

KEY: mP = multiple patches, G = glow, HA = homogeneous arc, N = unspecified form.

Table 2 — Activity reported April to June 1987 (excluding doubtful observations).

Date (Night)	Location and Number of Observers	Geomagnetic Latitude Lowest	Highest	at Storm Peak	Maximum Storm Activity code*	Time (GMT)
3/4 Apr.	Alberta, Finland (2)	60	64	64	5	1825–1000
4/5	Alberta, Finland (2)	60	64	64	6	1830–0800
8/9	Finland (1)	61	—	—	5	2015–2040
9/10	Finland (1)	61	—	—	2	1940–1955
15/16	Alberta (1)	64	—	—	2	0500–0900
24/25	Alberta (1)	64	—	—	2	0500–0900
25/26	Finland (1)	60	—	—	5	2100–2130
22/23 May	Alberta (1)	64	—	—	5	0715–0900
10/11 Jun.	Alberta (1)	62	—	—		0130
12/13	Alberta, Atlantic (3)	61	64	62	5	2315–0630
13/14	Manitoba (1)	59	—	—	6	0644
17/18	Irish Sea (1)	57	—	—	1	0220
23/24	Alberta (1)	64	—	—	3	0715–0730
24/25	Alberta (1)	62	—	—	1	0120

*Storm Activity Code: 1 = Glow or unspecified form, 2 = Homogeneous arc, 3 = Rayed arc, 4 = Ray bundles, 5 = Active, pulsating or flaming forms, 6 = Corona or half-sky, 7 = All sky storm.

calculated to have taken place in September 1986, and solar activity is again increasing. However, geomagnetic minimum tends to follow sunspot minimum so that it is not surprising to find that activity was at a low ebb in the period January to June 1987. As the report for the next period will show, activity thereafter started to rise again.

Although the advent of satellite surveillance can give a better overall picture of the aurora from above the Earth's atmosphere than can a random group of

surface observers subject to problems of weather windows and availability, the ground based observation still has its part to play. For example, in a recent French investigation, Dr J-P. Legrand and Dr P. Simon have made use of the data available for the past 115 years to show that aurorae occurring equatorwards of geomagnetic latitude 56 degrees were caused by explosive type transient activity of the sun. Our own investigations into the statistics of the observations received from our marine and land based correspondents confirm the presence of the two families of quiet aurorae seen in north Scotland and the more powerful aurorae seen in the mid-latitudes such as down into England and the English Channel. So please keep the observations coming for you never know what use they might be to somebody.

In any scientific pursuit an observation is an observation, if properly recorded, even although the explanation of the observation may not be readily forthcoming. There are times when we receive observations of suspected aurorae which do not comply with the accepted theories and cannot be accepted as auroral in origin. However, something did happen to cause the observed event even if we cannot put an immediate explanation to the apparition. Nevertheless, the observation should be logged to await future study rather than be rejected out of hand.

On 20 April 1987 at 1250 GMT, at geomagnetic latitude 26 degrees north or thereby, the Second Officer on board m.v. *Southland Star* reported the presence of what appeared to be an auroral arc touching the horizon at 310° and 340°. The observer had his leg pulled as to the state of his eyesight, but the observation was authenticated by the Master. The magnetic record showed no reason to believe that aurora could have formed this far south, and there were no other observations of aurora that night. Relative to the direction of the magnetic meridian, the position of the arc appeared incorrect if it was a true aurora. The point we want to make is that something was seen, it was properly recorded and the report sent in for assessment. Having checked the report against the international geomagnetic record, it was also sent to Aberdeen University for a second opinion. It is generally concluded that the phenomenon was atmospheric and related to the rising moon; but as Dr Gadsden commented, rejection of unacceptable auroral observations builds a selection process into the study of observational data by accepting only what one believes to be true, which is not a way of advancing knowledge. So the report remains on file as an observation, as do all of the other inexplicable observations which are received from time to time, for future reference.

A most interesting group of observations has been received during the summer of 1987, beginning in June, when on three occasions, Mark Zalcik, an observer in Edmonton, Alberta, reported and photographed the presence of noctilucent clouds (NLC) coincident with the aurora. On another night, Peter Brown, observing from Fort Murray in Alberta, reported aurora side by side with NLC. Although strictly related to the next report period, for completeness, we would note that in July, Zalcik in Edmonton on one night saw NLC coincident with aurora, while on another night, Alastair McBeath in Morpeth, England saw NLC followed by an aurora. These are very important observations, and we would be very grateful to receive reports of any such sightings in future summer periods. Details of the above observations are given in Table 3.

One hypothesis as to NLC production suggests that these clouds form when the polar upper atmosphere is cool, and do not form if the high levels of rarified

Table 3 — Presence of Aurora and Noctilucent Cloud.

Date (Night)	Observer	Geographic Position	Geomagnetic Latitude	Time (GMT)	Apparition
10/11 Jun.	Zalcik	53° 30'N, 110° 00'W	62	0130	QRA + NLC
12/13	Zalcik	53° 30'N, 110° 00'W	62	0245	P_3N + NLC
23/24	Brown	56° 39'N, 111° 13'W	64	0715–0730	RA east of NLC
24/25	Zalcik	53° 30'N, 110° 00'W	62	0120	QN + NLC
17/18 Jul.	Zalcik	53° 30'N, 110° 00'W	62	0000–0100	QN + NLC
28/29	McBeath	55° 10'N, 01° 42'W	58	0123–0131	a_4m_2RR, a_3mRA following NLC display.

KEY: a = active, a_3 = horizontal ray movement, a_4 = forms fade quickly, replaced by others, m = multiple, m_2 = two forms, p = pulsating, p_3 = flickering, N = unspecified form, NLC = noctilucent cloud, Q = quiet, RR = rays, RA = rayed arc.

air are warmed by magnetic storms and the resultant heating caused by incoming auroral particles. There is no doubt that on occasions, NLC are seen in conjunction with the aurora as this present group of reports from widely spaced, experienced observers has confirmed.

An interesting situation arose in 1976 during the period when the organisation of observers was being transferred from the Balfour Stewart Auroral Laboratory to the British Astronomical Association. At that time, there was a marked fall-off in auroral activity reported, more so than was expected at sunspot minimum. The majority of reports came from ships, which were continuing to observe normally. The low minimum was thus attributable to a lack of land observers.

Reviewing the activity in solar cycle number twenty-one from 1976–1986 (see *The Marine Observer*, October 1987) it would almost appear as if the aurora went through a minimum in magnetic activity at the same time. There was no lack of observers, and discussion with Dr Legrand confirms that there was indeed a magnetic minimum associated with the sunspot maximum in 1980.

Space scientists have been trying to predict what the new sunspot cycle, number twenty-two will do, how active it will be, and when maximum will take place. Different criteria are giving a variety of answers, and Dr Legrand notes that peculiarities are such that this forthcoming cycle may have some interesting sides to it. We would therefore encourage all of our observers to keep looking for aurorae and noctilucent clouds in summertime in the Northern Hemisphere. We shall be very glad to read your reports and find out what cycle number twenty-two has to offer us.

From *The Marine Observer* 40 years Ago

SAND STORM

Mouth of Amazon

The following account was received from M.V. *Chinese Prince*. Captain F.S. Thornton, O.B.E. Observer, Mr H.E. Jennings, 2nd Officer.

The morning of Sunday 13th April, 1947, opened with very good visibility and sky about 5/10 cloud, mainly Cu. Wind N × E, force 3. By 0300 S.M.T.(0600 G.M.T.) in lat. 01.8 N., long. 46.9 W., cloud had increased to 7/10; 2/10 Cu. 5/10 Ac. Temperature: air 78°, sea 82°, wet bulb 76°. Wind NNE, force 3. The barometer had fallen 3.2 mb. to 1010.1 mb. (diurnal range). At 0400 sky was overcast and a bank of low cloud on the horizon appeared to threaten rain. Visibility had deteriorated slightly and wind was NE, force 4. By 0500 visibility was poor, passing showers were being experienced and radar watch closed up. At 0900 in lat. 02° 8′N., long. 48° 1′W., visibility was considerably under 5 miles and cloud appeared to be 10/10 St. Wind NE, force 4. Temperature: air 80°, wet bulb 76°, sea 81°. Barometer had risen to 1013.6 mb. At 1330 visibility was checked by radar bearing of a passing vessel. At 5,000 yards the vessel was just visible, and at 6,000 yards only an occasional flash of her propellor wake was visible. At 1500 in lat. 3° 7′N., long. 49° 2′W., wind was still NE, force 4. Visibility no better, cloud apparently 10/10 with Ac. the only cloud type visible. Temperature: air 82°, wet bulb 74°, sea 82°. I had suspected that the poor visibility might have been caused by the mist due to difference in temperature of the Amazon water and the sea water. These temperatures, however, seemed to disprove this. Shortly after he went on watch at 1600 the Chief Officer, Mr M.E. Musson, noticed that his new paintwork was being coloured with a golden dust. The signal halyards showed similar effects. At 1700 when taking an azimuth with the sun's altitude approximately 20°, the Chief Officer observed the phenomenon of a double sun. Visibility had by then improved slightly. At 2100 in lat. 4° 7′N., long. 50° 4′W. Wind NE, force 4. Visibility 7. Cloud 7/10; 5/10 Ac., 2/10 Cu. Temperature: air 79°, wet bulb 73°, sea 82°. Barometer 1013.9 mb.

At 0000 on the 14th, visibility increased to about 10 miles. Sky 10/10 cloud, mainly Ac. and As. By daybreak, visibility was very good, although at 0950 I could not take a meridian altitude of Venus because of an apparent haziness in the upper atmosphere. Course throughout these observations was 310°, speed about 16 knots. It was assumed we experienced the effects of a Harmattan carried across the Atlantic Ocean on the NE Trades.

Note. — It is not possible to say with certainty whether the dust observed on M.V. *Chinese Prince* came from Africa. Observations of dustfall at sea appear to be almost wholly eastward of longitude 30° W., though a German wartime publication states that African dust has fallen at Natal (Brazil). On the other hand dust haze has been observed over a large part of the trade wind region, especially in December to May, and this belt of haze may reach the Amazon region, especially in December to February.

The coast between the Amazon and Cape St. Roque is covered by haze which is partly due to dust blown from the interior of Brazil during the dry season, July to November. It is said, however, to be prevalent near the mouth of Rio Parniaba for 9 months of the year.

The observation of a double sun is a remarkable one, in view of the sun's relatively high altitude. Such observations are usually confined to low altitudes near the horizon. A coloured sketch of this phenomenon and the surrounding sky made by the Chief Officer, was sent, but it is unfortunately impossible to reproduce it.

LETTERS TO THE EDITOR

From Mr Gordon C. Grey, Second Officer, m.v. *New Zealand Pacific.*

'In response to your request in *The Marine Observer* for colour slides for possible publication as cover photographs for *The Marine Observer*, I enclose a few which may be appropriate for consideration. A few comments on some of them follow:

'Cyclone Gavin, 6 March 1986; aboard New Zealand Line's 1,500 tonne vessel *Fetu Moana*, bound from Auckland to Nine Island. At the time I took the photograph, the ship was on an easterly course; the cyclone being about 450 miles to the north, and heading southeastwards (the forecast had been for southerly movement, hence our easterly course).

'Cumulonimbus with anvil. m.v. *Forum New Zealand* in December 1986. Good weather conditions off north-eastern Papua New Guinea, between Cape Vogel and Cape Nelson.

'Southerly Buster. Melbourne, aboard Nauru Pacific Line's *Rosie D* (the former British Phosphate vessel *Triaster*). Date uncertain, but between January and July 1973. A very marked cold front, with accompanying sharp wind and weather changes.

'Sunsets. No doubt you will get plenty of these! German container ship *Concorde Tide* at Port of Spain, Trinidad, in about March 1984 (from m.v. *New Zealand Caribbean*); Arabian coast (from United Arab's *Al Khalidiah* in September 1978); Sydney (while I was ashore studying for Mate's Certificate, October 1968).

'I hope that these may be of some use to you, either now or at some time in the future. However, I would appreciate their return to me by airmail to the address above when you have finished with them — particularly the *Fetu Moana* slide; the others are less important but I would like them back just the same. Many thanks.

'While writing, I would like to raise a point concerning a report of mine which was published in the April issue of *The Marine Observer*. Upon reading the report as it appeared in the journal, I realised that it had been somewhat edited and abridged from the original: my original wording had been considerably changed, and no mention was made of the facsimile weather map which I enclosed, and which was relevant to my report. I realise that available space in *The Marine Observer* may mean the editing of some longer reports (and perhaps the shortening of some "long-winded" ones) but I feel that it might be a courtesy to the contributor if a note were placed at the end of the report stating that the report had been shortened or edited. Also, it would account for the apparent omission in the report as published, of additional information — as in my report quoted above — which the observer had sent in to you. I feel that this small point would be much appreciated by observers — as are the limits on contribution length imposed by the physical size of *The Marine Observer*.

'The above is in no way intended as any criticism of your excellent magazine (I have my own personal contribution to it), but just a point made as a suggestion for clarifying apparent omissions in reports.

'I trust that the slides will be of some use to you, and look forward with interest both to your reply, and to receiving future copies of *The Marine Observer*. Best wishes to all for the New Year.'

Mr Grey's letter is reproduced above in full, and the following is the reply sent to him.

Thank you very much for your letter of 29 December 1987 and the collection of your excellent colour slides sent in response for material for publication in *The Marine Observer*. We would like to hold on to them whilst we consider which one is most suitable for printing on the front cover of a future edition, and we will certainly return them to you after use. We do receive a few pictures of sunset as you suppose, but you may be surprised to know that we are not inundated with suitable quality photographs such as yours, and we could always do with more than we presently receive.

We accept your point that we had to edit your report sent from the *New Zealand Pacific* concerning the South Pacific depression of 22–26 June 1986, and fully understand your concern that reported material should be printed as accurately as possible. You will realise that we receive a large number of ships' reports on various subjects, either entered in the ship's meteorological logbooks or, as in your case, a personal report sent direct to the Met. Office. All of them are subject to revision to conform with the house style of our journal, and most of them require editing by our Sub-Editor, to put them in acceptable form for our readership. You are correct in thinking that space is limited in *The Marine Observer*, and it is necessary to reserve the right to extract parts of reports that we think are relevant and of interest, otherwise many of them would be far too long and we think would be ignored by readers. Since all reports are treated in this way, it would be superfluous to add an explanatory note at the end of each item.

While most of the reports contained in meteorological logbooks are very well written, I am sure you will realise that many of them would be totally ignored by readers if they were printed exactly as presented to us, and therefore some editing is always considered necessary.

Many thanks for bringing this to our attention, and we hope you will continue to provide us with the benefit of your experience with pen and camera in the future.

From Mr R.B. Webb, Third Officer, m.v. *Drupa*, Shell Tankers (U.K.) Ltd.

'This vessel's trading pattern calls for the use of deep-water routes, and on very few occasions do we use traditional, coastal routes. Dolphins and porpoi are generally few and far between in these "blue water" areas, the occasional Common Porpoise near the Brent Oil Field is about the sole sighting. However, I do not think that this generally indicates the lack of such animals around our coasts, as before this ship, I was 2½ years on coastal tankers, and sightings of them were abundant, especially around the Tyne, chasing salmon perchance.'

The relative abundance of various wildlife species around our coast is the subject of much discussion at present. If there is a decline in numbers of cetaceans around our shores, and even this is not agreed by all, there could be many reasons for that decline. Pollution is an obvious factor, not only chemical pollution caused by the run-off from land and from industry, but there is also ever increasing noise pollution and other disturbances in the sea around the coast which is changing the habitat of all sea-life. Optimum fishing practices will tend to remove the food supply of those species at the top of the chain. Whatever the reason may be for the decline in numbers, no one factor can be the cause. A serious re-think on attitudes and practices within the environment is long overdue. Seafarers can make a positive effort towards protecting sea-life by taking extra care and by not losing plastic rubbish over the side. It has been estimated that the world's merchant fleet disposes of over 600,000 items of plastic debris every day. Discarded items such as net fragments and line, packing bands and sheeting are lethal to dolphins and seals. An ordinary 'six-pack' ring can drown seabirds which become entangled in them. Many seabirds collect pieces of plastic debris for nesting material which can, unfortunately, strangle both chicks and parent. Let us start 1988 with a **no dumping** rule for plastic rubbish at sea.

D.A. McBrearty
Dolphin Survey Project
University of Cambridge

Personalities

(Readers are invited to notify the Editor of observing officers retiring from the Navigating and Radio Departments.)

OBITUARY — CAPTAIN R.A.G. SIMMONS died while at home on leave on 20 November 1987, aged 59 years.

Rex Alan George Simmons was born in April 1928 at Welwyn Garden City; at the age of 17 he joined the Clan Line of Steamers as a Cadet and he remained with that company (subsequently British and Commonwealth Shipping Company) until the demise of that fleet in June 1984. He obtained his Master's Certificate in October 1956 and his first command, the *King Alexander*, in April 1970. He was promoted to Commander, R.N.R. in December 1969 and awarded the Reserve Decoration.

After leaving British and Commonwealth, Captain Simmons was employed by Neptune Shipping, Bermuda, a manning agency supplying Masters and Officers to Cayzer, Irvine Shipping. He served with Neptune Shipping until the time of his death, which occurred suddenly at his home in Bognor Regis, a few days after relinquishing command of the *Bora Universal.* His final two meteorological logbooks in a total of 42 were received in the Office from the *Bora Universal* a few days later still. His first logbook came from the *Perthshire* in July 1953 and he was involved in recording 20 such books rated as 'Excellent'. He received Excellent Awards in 1969, 1970 and 1979 and was presented with an inscribed long-service barograph by the Director-General at Bracknell Headquarters in 1983.

Captain Simmons was a widower and is survived by a daughter to whom we extend our sincere sympathy for the loss which we shall also feel, having lost a devoted and keen weather observer.

RETIREMENT — CAPTAIN A.B. OSBORNE spent 38 of his 39 years at sea with the Bank Line before retiring in October 1987.

Alan Bruce Osborne was born at Portishead on 4 April 1932 and educated at Horfield Parish Church School, Bristol, followed by 4 years pre-sea training at the School of Navigation at Bristol. By the time he joined the *Tenchbank*, his first Andrew Weir and Company ship as an Apprentice in August 1949, he had already spent 12 months awaiting the moment when he could sign indentures, 'during which time I was employed by a local towage company and rose rapidly through the ranks from Deck Boy to Fireman to Mate and then back to Deck Boy again', as he says.

Captain Osborne obtained his Master's Certificate in January 1960 and was promoted to command in September 1963, joining the *Garrybank* at Hong Kong in the same month. His first meteorological logbook came from the *Clydebank* in December 1957 and this was followed by 21 further logs, 2 of which were assessed as 'Excellent'.

Following his retirement on 1 October 1987 Captain Osborne maintains his interest in Pacific Island philately and discovering Britain; we would like to wish him well in all pursuits undertaken in the future.

RETIREMENT — CAPTAIN L.R.W. PORTET retired on 31 August 1987, having spent the latter 11 years of his 45 years at sea as Master of the Cunard liner *Queen Elizabeth 2*.

Lawrence Raoul Wreyford Portet was born in August 1925 and educated at the Liverpool Institute School. He later attended the Outward Bound Sea School at Aberdovey for pre-sea training before joining the Blue Funnel Line, Alfred Holt and Company, and sailing as Midshipman in the m.v. *Priam* in November 1942. Soon after obtaining his Second Mate's Certificate he left Blue Funnel and joined Cunard Line in May 1946, being appointed Third Officer of the *Georgic*. From that ship he sent the Met. Office his first meteorological logbook in August of the same year, being also the first of 8 logs to be rated 'Excellent' during his observing career.

Captain Portet obtained his Master's Certificate in November 1951 and continued to provide weather observing data as Chief Officer of many Cunard passenger ships, being appointed Master of the *Cunard Ambassador* in July 1973. He was in command of the *Queen Elizabeth 2* from November 1976 up to the time of his retirement and sent in a total of 30 meteorological logs in all.

He was made a Commander, RNR in 1965 and holds the Reserve Decoration with Clasp; he is also a Younger Brother of Trinity House and a Freeman of the City of London. Captain Portet has always been a keen environmentalist and marine meteorology supporter and says that the North Atlantic, on which ocean he has spent much of his working life, is probably the most unpredictable and the most arduous in the world and requires a degree of vigilance even greater than the norm at sea, despite the many technical and scientific advances he has experienced in his long sea career.

We are fortunate to have had the experienced co-operation of Captain Portet over such an extended period and wish him success and good fortune in retirement with his wife of 34 years as well as in company with his three sons and two grandsons.

Book Review

The Atmosphere and Ocean: a physical introduction, by Neil Wells. 235 mm × 160 mm, 347 pp., *illus*. Taylor and Francis Ltd, 4 John Street, London WC1N 2ET. Price: £15.00 paperback, £29.00 hardback.

This book is broadly based on the author's course for first and second year undergraduate science students attending the Department of Oceanography at the University of Southampton. It is designed as an introduction to the physical processes of the atmosphere and ocean, with emphasis on their physical properties and interdependence.

In ten chapters the two systems are fully described and compared, thus joining together the many concepts of meteorologists, oceanographers and atmospheric physicists into a comprehensive account of the environment. The student is provided with a thorough understanding of the close relationship between the atmosphere and the ocean, starting with first principles by an account of the

Earth's place in the solar system. Physical concepts and mechanical processes are discussed in detail in preference to the mathematical factors which are included only where necessary to support the text.

All the chapters are amply supported by figures and tables which are mainly of simple interpretation but occasionally suffer from having too much detail included in small scale, poorly copied originals. This tends to show up in a discontinuity of style but this is probably unimportant in a text book which has material extracted from many authoritative sources, designed to give the student the best possible information. This the book seems to do and can be recommended for those seeking a grounding in the physical processes of atmosphere and ocean and to gain an indication of current experiments and future plans in this field.

Notices to Marine Observers

PORT METEOROLOGICAL OFFICE: CHANGE OF TELEPHONE NUMBER

The telephone number of the Port Meteorological Office for north-east England at Middlesbrough has been changed to 0642 231622.

USE OF CALL SIGN AND BREAK SIGN IN RADIO WEATHER MESSAGES

Weather messages transmitted by any means should always begin with the call sign of the vessel and end with the break sign (=). Up to 10 per cent of ships' coded reports are rejected daily by our automatic data receipt system due to the omission of one or other of these elements, most commonly the break sign. These omissions cause delay in the introduction of ship data to the forecasting model whilst the situation is manually restored.

CHANGE OF BBC RADIO 4 LONG-WAVE FREQUENCY

As from 1 February 1988, the weather bulletins for shipping broadcast on BBC Radio 4 can be heard on the new long-wave frequency of 198 kHz (1515 m) only.

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