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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. 67 **No. 336** **APRIL 1997**

CONTENTS

COVER PHOTOGRAPH: Disturbed sea surface caused by upwelling or tide-rips. The photograph was taken by Captain J.P. Briand on 6 September 1995 when the *Lampas* was off Pu Rondo near the northern entrance to the Strait of Malacca.

Letters to the Editor, and books for review should be addressed to the Editor, *The Marine Observer*, The Met. Office (OM), Scott Building, Eastern Road, Bracknell, Berks RG12 2PW.

LONDON: THE STATIONERY OFFICE

Annual Report of the Observations (Marine) branch for 1996

1. Voluntary Observing Fleet (VOF)

At the end of 1996 the United Kingdom Voluntary Observing Fleet of commercial vessels, offshore structures and other units comprised 489 Selected, 1 Supplementary, 52 MARID, 17 Auxiliary Ships, and 37 oil rigs and platforms. These stations continue to make voluntary observations of the weather in WMO *SHIP* Code at main and intermediate synoptic hours or other hours as necessary and are equipped by The Met. Office with meteorological instruments and stationery loaned for this purpose for as long as the observing unit undertakes to make voluntary weather observations.

The range of instruments carried depends upon the class of observing work being done. Ships recruited as 'Selected' carry a Precision Aneroid barometer, marine barograph, marine screen containing dry- and wet-bulb thermometers and either a sea-water bucket with thermometer or distant reading equipment. Those units working in categories other than Selected will carry fewer instruments. Anemometers are not used by the U.K. VOF, the surface wind speed and direction being estimated from the sea state. MARID ships concentrate on sea temperature and local weather conditions found on coastal passages in northern Europe, their contribution being vital for the prediction of fog and icing while the offshore units provide data from the North Sea oil fields. The U.K. VOF as a whole constitutes part of the WMO Voluntary Observing Ships scheme which currently comprises about 7,300 of the world's merchant vessels.

Vessels engaged in all classes of observing are serviced by a team of seven Port Met. Officers (PMOs) based at principal ports around the country, except for offshore units whose Offshore Adviser is based in the Aberdeen Weather Centre. Port Met. Officers regularly visit vessels of the U.K. VOF and those of other countries' fleets to offer advice and to check instruments while the PMOs themselves liaise with counterparts around the world through the offices of the Observations (Marine) branch, at Bracknell, so strengthening international co-operation which encourages more ships to become involved with voluntary work.

The number of meteorological logbooks received in 1996 was 853 compared to last year's total of 859. The logbook data are added to the vast marine databank after a series of computer quality control checks has been completed and the logbooks themselves are then assessed by Nautical Officers so as to reveal an order of merit among them. Nominations of 300 Masters and officers for the Annual Excellent Awards are then made while the careers of long-serving officers are assessed to identify the four Masters qualifying for special long-service awards.

Observations noted on the Additional Remarks pages of ships' met. logbooks have increased and we are pleased to include a greater number of them in The Marine Observers' Log section of *The Marine Observer*. Reports continue to be copied to relevant experts in the pool of those who voluntarily give their time and knowledge to comment upon sightings made at sea, and we were very pleased to hear from Mr Neil Fletcher, working for the Joint Nature Conservation Committee, who offered to help with the identification of, among other species, marine turtles.

2. Automatic equipment

A number of vessels from the U.K. VOF and those of other countries carry XBT equipment as part of the IGOSS Ship of Opportunity Programme and during 1995/96 the Royal Research Ships *Challenger*, *James Clark Ross*, *Charles Darwin* and *Discovery* contributed to a total of 1,374 bathythermograph reports received by the Hydrographic Office, in Taunton. The number of vessels fitted with the Meteorological Observing System for Ships is 17, which continue to assist with the automatic transmission of observations via geostationary satellites and other national meteorological services to Bracknell.

The TURBO1 system, working in conjunction with INMARSAT-C equipment, provides automated compilation, archival and transmission of ships' observations using software developed by KNMI. This program is used regularly on two VOF ships and is gradually being introduced to others, while KNMI's TURBO5 and TURBOWIN programs are used by more than half of the oil rigs and platforms to code and transmit observations.

3. Ocean Weather Ship

The Ocean Weather Service was terminated on 9 June 1996 and consequently O.W.S. *Cumulus* ceased operations as the lone United Kingdom weather ship and was returned to her Dutch owners, the Royal Netherlands Meteorological Institute, from whom she had been 'purchased' for the nominal sum of £1.00 in 1985. The last radiosonde ascent was made at 2315 UTC on 28 May 1996 and the last surface synoptic observation was made at 1500 on the 29th.

The *Cumulus* had been smoothly managed by Marr Vessel Management Ltd, of Hull, on behalf of The Met. Office, since December 1985.

4. International and domestic activities

Among the numerous meetings attended by the Marine Superintendent, Captain S.M. Norwell was the 8th Session of the Automated Shipboard Aerological Programme (ASAP) Co-ordinating Committee, in Reykjavik, from 24–28 June. Discussions included the possibility of identifying a potential vessel working regularly between the U.K. and the east coast of the United States or Canada with a view to fitting it with ASAP equipment, thus helping to compensate for the loss of Ocean Weather Station Lima.

At the invitation of Météo-France, the French National Meteorological Service, the 7th Session of the Co-ordinating Group for the Composite Observing System for the North Atlantic (COSNA) was held at Toulouse between the 27th and 29th of August; this was the first session to be held away from the WMO Headquarters at Geneva. Under discussion here were ASAP, drifting and moored buoy observation systems, and satellite meteorology.

In September, Captain Norwell attended the 1st Session of the *ad hoc* Group on the GMDSS, held at WMO headquarters in Geneva from the 23rd to the 27th. Included in the agenda was a review of operational experience with GMDSS for METAREA I (the North Atlantic Ocean from 48° 27′ N, to 71° N and east of 40° W).

5. Publications

Arrangements were put in hand to produce a calendar for marine observers for 1997. Containing photographs contributed by observers at sea, the calendar was ready for distribution well in time for the new year. The Twelfth Edition of *Ships*

Code and Decode Book was published in November and will be distributed to observing ships and interested users.

6. General

Timings of the Shipping Forecast broadcasts on BBC Radio 3 and Radio 4 were again altered. With effect from 4 May 1996 the Inshore Waters forecast was retimed to follow the Coastal Waters forecast at 0053, on Radio 4, while the Inshore Waters forecast at 0550 on Radio 3 was transferred to Radio 4, to precede the Coastal Waters forecast.

The Chief Executive and Captain Norwell presented inscribed barographs to four long-serving shipmasters who, happily, were all able to attend on the mutually agreed day, 22 May.

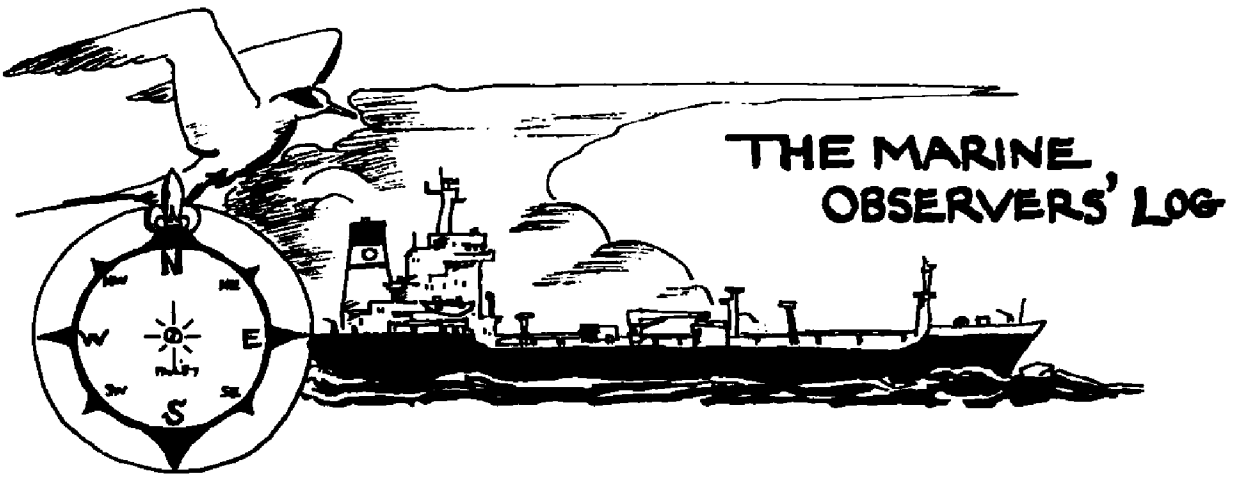
Nominations for annual Excellent Awards were sent to 300 Masters, Principal Observers and Radio Officers in recognition of their work completing meteorological logbooks during 1995. The books selected for this round of awards were: *The Times Atlas of the World: Reference Edition*, *Chambers Concise Dictionary: New Edition* and *Natural Wonders of the World: 100 Spectacular Wonders of the Natural World*. The nominees for 1995 included several officers who had not claimed an award for a previous year, and we were very pleased to hear from a number of these, thus enabling our awards records to be fully updated. Any officer in doubt as to whether he or she has been nominated in the past should consult previous October and July editions of this journal.

7. MetROUTE activities

The year started with the busiest quarter in MetROUTE's 28-year history, with a greatly increased number of ships using the weather routeing service. Many notable shipping companies such as Shell International Trading and Shipping Co. Ltd, the Cunard Line Ltd, Furness Withy Chartering, Geest Line Ltd and Zodiac Maritime to name but a few, continue to use MetROUTE on a mainly continuous basis for their fleets. The number of regular specialized forecasts for rig tows, cable ships, survey and offshore drilling operations has also seen a healthy increase. Cunard Line's *Queen Elizabeth 2* used MetROUTE's services for the annual 3-month World Cruise earlier in the year, and many luxury yachts also use the forecast service for their seasonal cruises in the Mediterranean and Caribbean Seas.

The MetROUTE tropical storm warning service proved to be of great value to clients with interests in the Caribbean area during the hurricane season, which saw several violent storms. In the final quarter of the year, as weather conditions deteriorated in the Northern Hemisphere the number of ship routeings again rose to meet the requirements of the busy winter season.

The MetROUTE team now consists of four Master Mariners and two full-time forecast support staff, with overnight cover provided by the International Forecast Unit. Throughout the year MetROUTE research and development have continued into new projects and services which, with updated software, will enhance the accuracy and quality of MetROUTE output and products.



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. All temperatures are Celsius unless otherwise stated. The standard international unit for barometric pressure is the hectopascal (hPa) which is numerically equivalent to the millibar (mb).

WATERSPOUT

South Atlantic Ocean

m.v. *Berlin Express*. Captain K. MacMillan. Burnie to Lisbon. Observer: Mr P. Handley, Third Officer.

14 May 1996. At 0643 UTC whilst the vessel was approaching Cape Town a waterspout was sighted on the port bow. At its longest stage it extended about 61 m from the base of a bank of cumulonimbus cloud with rain, which lay from north-west to south-east about 5.3 n mile away (by radar range to the rain clutter). The waterspout retreated into the cloud roughly two minutes after it was first sighted, without having reached the sea surface, and was followed immediately by a weak rainbow. The cloud base was estimated to be approximately 1,000 feet.

A few days later, on the 20th, Mr Handley, Mr D. Winter, Second Officer, Mr E. Pike, SMS and members of the ship's company watched another waterspout at 1350 whilst the vessel was approaching the ITCZ. There were rain showers in the vicinity and a band of rain was observed both visually and by radar along the horizon, falling from cumulonimbus cloud with a base at about 1,000 feet.

When first sighted, the waterspout appeared to be almost vertical; the visible part extended down approximately 150 m from the cloud base and, where it reached the surface, spray could be clearly seen. The waterspout took a slight bend before dissipating about four minutes after being sighted. It was followed immediately by a flash of lightning in the same direction, and this in turn was followed by heavy rain, thunder and lightning and a brief increase in wind speed to force 5. At 1445 the rain eased and the wind had veered to NW'ly, force 3.

Position of ship on the 14th: 34° 33′ S, 18° 18′ E.

Position of ship on the 20th: 05° 40′ N, 13° 40′ W.

Note. Mr M. Rowe, of the Tornado and Storm Research Organisation, comments:

'These two observations are of considerable interest; we have markedly few reports from the southern part of Africa. The Cape Town example was, strictly speaking, a funnel cloud as it did not reach down to the surface although, as the second example showed, the lower part of a waterspout is often invisible apart from the disturbance on the sea surface.'

SEA SMOKE

North Atlantic Ocean

R.M.S. *Queen Elizabeth 2.* Captain J. Burton-Hall, RD**, RNR. New York to Southampton. Observers: Mr I. MacNaught, Chief Officer and Mr S.S. Smith, 1st Officer.

13 June 1996. At 1158 UTC, prior to commencing our Great Circle to Bishop Rock at 1200, arctic sea smoke was noted. The following details of temperatures were recorded:

	Temperatures		
Time	Air	Wet-bulb	Sea
1158	9.1	8.0	24.0
1224	6.8	6.1	9.0

The sea smoke appeared to take the form of a number of towering 'tufts'. At 1158 the vessel was under the influence of the Gulf Stream and then speed was maintained with the slope water current.

Position of ship at 1158 UTC: 41° 27′ N, 49° 52′ W.

Editor's note. As observers are no doubt aware, arctic sea smoke, or steam fog occurs when there is a marked difference between the air temperature and that of the sea surface (usually at least 10°), the latter being relatively warmer. The sea smoke probably decreased at 1224 as the influence of the Gulf Stream was being lost.

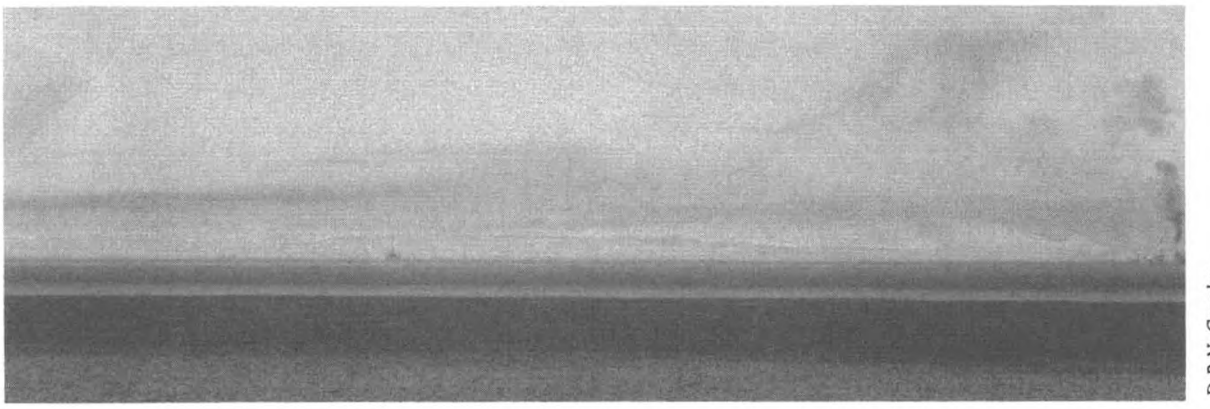
TEMPERATURE INVERSION

Gulf of Suez

m.v. *Singapore Bay.* Captain J.G.W. Dixon. Far East to Europe. Observers: the Master, Mr N.B.H. Skinner, 2nd Officer and Mr D.R.N. Cropley, 3rd Officer.

16 April 1996. At 1014 UTC, having completed noon calculations, it was noticed that a distinct black line hung in the sky from two points on the port bow to two points forward on the starboard quarter. After a short discussion between the observers, it was agreed that the phenomenon was a temperature inversion which was trapping the smoke and fumes emitted from the numerous oil rigs in the area.

The mountain tops on the coast of the Sinai Peninsula projected above the layer of smoke, giving a rough guide to its depth which was about 500 m. Smoke from the rigs nearest to the vessel's track seemed to rise above the layer but as it drifted towards the coast it decreased in altitude to blend with the distinct line of trapped smoke. There seemed to be a less distinct line along the coast to the west but as the wind was W'ly, most of the smoke accumulated to the east. The faint line to the west seemed to suggest that there was a temperature inversion over mainland Egypt too.



D.R.N. Cropley

This phenomenon was observed until 1400 but weakened as the vessel progressed up the Gulf of Suez. The photograph shows the scene at about 1330, looking towards the Belayim Oilfield.

Position of ship: 28° 04′ N, 33° 30′ E.

CURRENT

South Atlantic Ocean

m.v. *New Zealand Pacific*. Captain D. Watt. Rotterdam to Auckland. Observers: the Master and Mr I. Percival, Chief Officer.

23 May 1996. At 1600 UTC four parallel 'bands' of sea were visible to starboard and also on radar. The bands were of relatively still water separated by more choppy areas. These can be seen in the photographs where the radar shows them more clearly while the state of sea photograph only picks up only the first two.

Captain D. Watt

Radar display showing the 'bands' of sea.

The vessel altered course to pass across two of the bands but the sea temperature did not vary much, dropping by about 0.5° from 17.5° which had been the constant reading until that point; however, a strong easterly set was experienced for a time while crossing them. At the time the echo sounder was showing a depth of 470 m and the ship's position put it within the area of the Benguela Current, assumed to be the cause of the disturbance.

Captain D. Watt

The 'bands' of sea as seen from *New Zealand Pacific*

Weather conditions at the time were: air temperature 19.3°, wet bulb 16.4°, pressure 1018.2 mb, wind SW'ly, force 4. The sea state was generally slight with a long, low south-westerly swell.

Position of ship: 30° 04′ S, 14° 50′ E.

Editor's note. The *New Zealand Pacific* is a Selected Ship observing for the New Zealand VOF.

ICE

North Atlantic Ocean

m.v. *Exemplar.* Captain P.W. Bennett. Norfolk, Va. to Ijmuiden. Observer: Mr W.T. Lawrie, Chief Officer.

3 June 1996. At 1855 UTC whilst the ship was on a course of 076° at 12.5 knots, a small submerged growler was spotted off the port shoulder. At no time did it break the surface despite a choppy sea, and it passed down the ship's side about 20 m off. As it passed abeam an estimate of its size could be made; the intervening sea water gave it a very light blue-green colour, if the ice had been on the surface it would have measured approximately 1 m × 2 m but as it was waterlogged and submerged to an unknown depth it may have been many orders of size larger than the estimate. Its position was reported by telex to St John's.

Position of ship: 42° 03.8′ N, 48° 04.9′ W.

CETACEA

North Pacific Ocean

m.v. *Pacific Pintail.* Captain M.J. Stares. Japan to Panama. Observer: Mr G.P. Farrell, Chief Officer.

14 May 1996. Whilst the vessel was on a heading of 090° a whale was sighted ahead of it. As the ship approached it became apparent that the whale was either unaware of it or had no intention of moving. The ship's course was altered to

starboard and the whale passed close down the port side. Although at this point he was more concerned with avoiding the whale than observing it, the Chief Officer described it as being an estimated 12 m in length and was a dirty-brown colour, it also had a seemingly flattened fin. From an identification chart he identified the Humpback Whale as being the closest match to his sighting.

Position of ship: 34° 22′ N, 140° 00′ E.

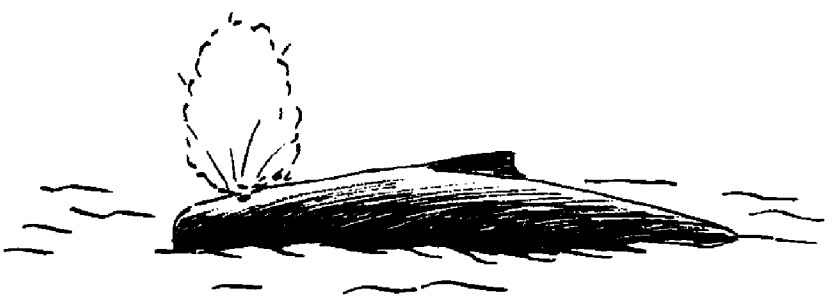
North Atlantic Ocean

m.v. *British Resolution*. Captain J.N. Gregson. Forcados to Europoort. Observers: Mr C. Vernon, 2nd Officer, Mr S. Sadkowski, Extra 2nd Officer, Mr H. James and Mr M. Mackellar, Cadets.

5 May 1996. At about 1600 UTC whilst changing over the watch two large splash areas were spotted to port approximately 0.5 n mile away. There had been a total of six whale sightings throughout the day, so attention was brought to the port side for further investigation. Within seconds of looking, a small to medium-sized whale, presumed to be a Humpback launched itself totally out of the water, clearing the surface by at least a metre. It then landed on its back with a resounding slap and large splash. The view offered to the observers was of a white underbody with fine lines or creases running along the belly.

All involved were dumbstruck at first because they had only seen similar displays on television. Unfortunately, the act was not repeated and happened so quickly that no accurate drawings could be made.

Later in the month, on the 26th, when the vessel was on passage from Las Palmas to Cabinda, a group of whales was spotted at 0930 by Mr A. Grayson, 3rd Officer and Mr P. Andrewe, Junior Engineer, close to the starboard bow. Initially indicating their presence with blows which were rounded and short, three whales were counted, all of roughly the same size at 4–5 m in length. They were swimming in the same direction as the ship at an estimated speed of 5 knots and were almost continuously breaking the surface while blowing frequently. This action revealed a narrow head which was squared off at the front, an elongated low dorsal fin and a generally long slender body, see sketch. The colour appeared to be dark-grey and was uniform.



The ship's presence did not appear to alarm the creatures even though they passed at 300 m from the vessel. The whales continued this behaviour until the observers lost sight of them. It was later thought that they were pilot whales. At the time of observation the wind was SE'ly, force 3 and there was a slight sea.

Position of ship on the 5th: 24° 18′ N, 17° 26′ W.

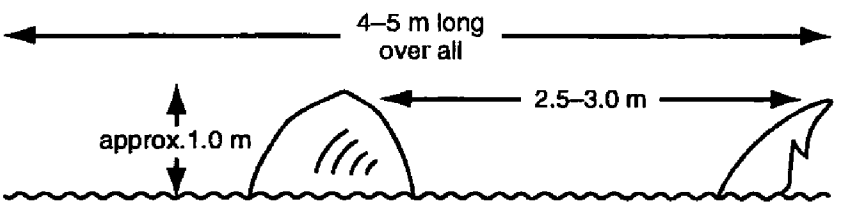
Position of ship on the 26th: 02° 30′ N, 08° 55′ W.

BASKING SHARKS

Mediterranean Sea

m.v. *Seki Pine*. Captain P.W. Jackson. Barcelona to Civitavecchia. Observers: Mr H.S. Wright, Chief Officer and Mr D. Hughes, GP1.

13 April 1996. Between 1700 UTC and 1730 UTC a number of sharks were sighted on the surface, passing to within about 20 m of the ship. They were 4–5 m long with dorsal fins showing about a metre out of the water; their tail fins also showed clear of the surface, the distance between the dorsal fin and tail fin being 2.5–3.0 m. The dorsal fin was dark-grey at the leading edge, becoming lighter behind while the tail fin was 'barbed', as shown in the sketch, with one shark having double barbs. A noticeable feature in sightings near to the ship was the wide open mouth beneath the surface as the sharks swam.



They were all acting in similar fashion, remaining on the surface at sedate walking speed, perhaps 3 m.p.h., with the upper tail fin lazily 'flapping'; viewing end-on occasionally showed the dorsal fin to be inclined, mostly to starboard from the bodyline and by about 45°. In all, about 40 sharks were seen.

Position of ship: 41° 17′ N, 03° 39′ E.

North Atlantic Ocean

m.v. *Vine*. Captain I.W. Connor. Rotterdam to Norfolk, Va. Observers: Mr J. Parhar, 2nd Officer and Mr A.V. Pinto, 3rd Officer.

22 April 1996. At 2315 UTC, 2 n mile apart from each other, two sharks were noticed on the surface of the water. They both had distinctly visible large dorsal and tail fins sticking out of the water and were both blackish-grey in colour. One was 5–6 m long while the other was about 3–4 m long and they were both swimming slowly in a north-easterly direction, passing the ship at a distance of only 8 cables. Owing to their fins clearing the water they were assumed to be Basking Sharks.

Position of ship: 39° 53′ N, 67° 12′ W.

DISCOLOURED WATER

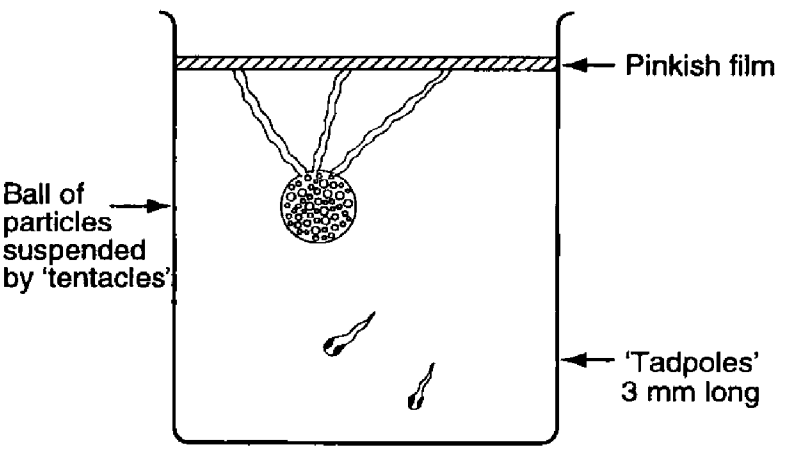
North Atlantic Ocean

m.v. *Kukawa*. Captain B.N. Jones. Le Havre to Conakry (Guinea). Observers: the Master, Mr S. Oduro, 2nd Officer, Mr W.E. Thompson, 2nd Officer and Mr J. Attoh, 3rd Officer.

28 May 1996. At about 1430 UTC patches of discoloured water of a pinkish hue were observed ahead, covering an area estimated to be about 4–5 n mile square. On passing through the water a sample was obtained, its temperature was noted as 25.6°, and it was placed in a glass jar which was then taken to the wheelhouse

window and put in the light. After settling down, the sample showed fine particles suspended in the water along with a thick pinkish film on top.

This observation appeared similar to that from the *Moreton Bay* reported in the January 1996 edition of *The Marine Observer*. However, 24 hours later it was seen that the particles had formed a ball in the centre of the jar and were supported by three 'tentacles', as indicated in the sketch.



After a further 24 hours the tentacles had disappeared and the ball had fallen to the bottom of the jar. We assumed this meant that they had died but we then saw two creatures that looked like transparent tadpoles with just two black eyes providing the only colour. They were first seen at the bottom of the jar and only then because of their vigorous tail movements, they were about 3 mm long. It was also observed that if the glass was disturbed in the dark, the 'algae' lit up and produced a spectacular display of lights. Unfortunately, the delight in shaking the jar to observe the light display obviously did not help the creatures which soon died. The pinkish film remained for several days, only slowly losing its colour.

Position of ship: 10° 00′ N, 16° 10′ W.

BIRDS

North Atlantic Ocean

m.v. *Tokyo Bay*. Captain D.S. Hughan. Southampton to Singapore. Observer: Mr T. Oliver, Chief Officer, Mr S. Gallacher, 3rd Officer and members of ship's company.

23 June–8 July 1996. A pigeon was brought to the bridge by the Chief Officer and was found to be ringed and marked D18340/539 GB95. It looked to be in a tired condition and when we tried to set it free it would return to the bridge wing where it spent the night being fed on water and biscuits. The pigeon had a dark-grey head and black wings with white speckles.

The next morning it flew down to the main deck and was then seen later on in the afternoon on the wooded B-deck of the vessel with another pigeon of a lighter colour. Crew member Mr H. Acenas fed them daily on water and peas and they seemed happy enough to stay on B-deck which offered more shade and space to walk about; they would also fly up to the top tier of containers directly abaft their deck and even did a lap of the ship. They only did this once though as the vessel's speed averaged over 21 knots.

We expected them to disembark as we passed the bright lights of Gibraltar on the 26th but they elected to stay on board. Unfortunately, as the air temperature increased, the birds' activity decreased, and when the vessel transitted the Suez Canal on the 29th they just sat flat on a shaded area of the wooden deck, with water close by which was freshened regularly. This seemed to be the limit of their activity until 8 July, the day before arrival at Singapore, when it was noticed that they were no longer on board.

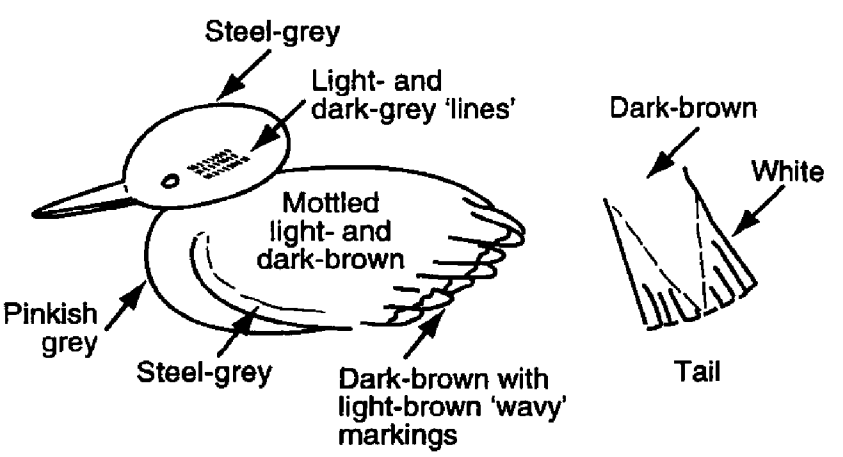
Position of ship on the 23rd: 43° 40′ N, 09° 38′ W.

North Atlantic Ocean

m.v. *Chiquita Scandinavia*. Captain N.P. Colling. Antwerp to Santa Marta, Colombia. Observers: the Master, Mr P.T. Clegg, Chief Officer and Mr E. Cahill, Cadet.

6–7 May 1996. At 1600 UTC an exhausted bird about the size of a pigeon was observed on top of a container about 21 m from the bridge. The bird, shown in the rough sketches, was only seen in a huddled or hunched position except for a few brief moments when it spread its tail for balance in the wind. At the time the ship was on a course of 235° at 21 knots and there was a following NNE'ly gale. The observers debated whether to try and rescue it but decided to let it recover on its own since it would be scared and likely to try and fly, possibly ending up in the sea if a ladder was put up against the container, which was 2 m high.

It had a steel-grey cap and clearly-defined lines of dark-grey and light-grey behind the eyes but not meeting behind its head. Its breast was pinkish-grey while the folded wings, as far as could be determined, were the same colour as the cap along the leading edges whereas the main parts were a large 'mottle' of dark-brown and light-brown with the flight edges being a dark-brown with a lighter brown 'wave'. When the tail was spread for balance, this was square with the brown colour coming to a point at the centre and it had white edges.



After about 20 minutes, when the bird was checked again, a bird of prey identified by Mr Cahill as a Kestrel (and confirmed by the picture in the July 1995 edition of *The Marine Observer*) was in the process of killing the bird. When it had accomplished this, it attempted several times to fly off but being unsuccessful settled down to feed on top of the container, starting at its victim's head and then working down the body. It fed for two hours and fifteen minutes before flying off. Other 'passengers' around at the time were two Ringed Doves and three Swallows.

The next morning, the Kestrel returned to feed again and attempts were made to photograph it from a nearby crane but it was disturbed and flew off to continue feeding elsewhere. At noon the ship passed 8 n mile off Terceira, in the Azores, and the bird was not seen again.

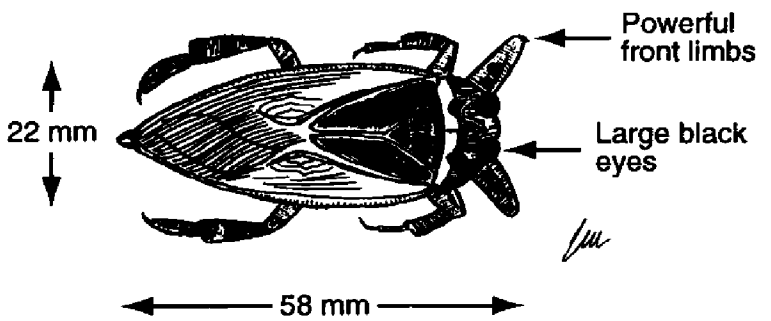
Position of ship at 1600 UTC on the 6th: 42° 42′ N, 19° 14′ W.

INSECTS

Indian Ocean

m.v. *Colombo Bay*. Captain B.V. Chipperfield. Jeddah to Port Kelang. Observers: Mr C.W. Longmuir, 3rd Officer and Mr C. Saint, P.O.N.

6 June 1996. During the morning a well preserved but deceased insect was discovered on the poop of the vessel and was brought to the bridge to be identified. As shown in the sketch, it was 58 mm long, about 22 mm wide and was a light-brown colour with dark-brown patches. It had six legs, the two rear pairs being light-brown with regular dark-brown stripes while the front pair were very powerful; all its legs were hooked at their tips. Its eyes were relatively large and black in colour but there were no antennae.



It was assumed that the insect was a member of the locust family and had been blown on board while the vessel was in the Gulf of Aden.

Position of ship at 0600 UTC on the 6th: 05° 30′ N, 80° 00′ E.

Editor's note. This insect rang a bell with us so we delved back through several years of the journal to rediscover a similar example reported by the *Cardigan Bay* on 20 July 1985 when in the South China Sea; the insect was positively identified as a Giant Water Bug. There are several species, all living in fresh or slightly salt water but not in the sea itself; they are carnivorous, feeding on insects, fish and frogs (hence the powerful legs) and have a painful bite, in America they are sometimes known as 'Toe-biters'. They fly at night and are often attracted to light.

Although not identical, we think the above sighting is probably one of that family rather than a locust.

BIOLUMINESCENCE

Strait of Hormuz

m.v. *New Zealand Star*. Captain A.J. Brown. Muscat to Dubai. Observers: the Master, Mr R.A. Colon, 2nd Officer, Mr R.T. Cordova, AB, and Mr N.A. Vale, AB.

26 May 1996. At approximately 2105 UTC on a still, cloudless morning during the 12–4, with the moon having just set and there being little or no reflection from

the sea, the vessel was in the obscured section of Little Quoin light and Gap Island when what appeared to be in the sky at a low altitude were flashing, dull lights from ashore.

It soon became apparent that these lights were actually in the water and that the vessel was closing in on them fast. On entering the visible section of Little Quoin light, the vessel was given a display of an underwater light show following no particular pattern but tending to go round in circles in an abstract form not too disimilar to the start of a 'Dr Who' programme. On clearing the underwater show the lights became more pulsed, as first seen but under water, and appeared to be coming in on the port quarter to head off in a north-westerly direction.

From information received on arrival, a nuclear submarine had sailed the previous evening!

Position of ship: approximately 26° 30′ N, 56° 30′ E.

Editor's note. The *New Zealand Star* is a Selected Ship observing for the New Zealand VOF.

North Pacific Ocean

m.v. *Peninsular Bay*. Captain J. Welsh. Hong Kong to Pusan. Observer: Mr S. Frediani, 3rd Officer.

12 May 1996. At 1800 UTC whilst the vessel was on a heading of 041° at 22 knots luminescence was observed in the form of large milky or streaky patches 5–10 m wide and 2–3 m long. It was so intense at times that it affected the Lookout's night vision. On closer inspection, it was discovered that the milky patches had an orange tint to them which led to the conclusion that they contained large shoals of krill which were feeding on plankton. Also present was a strong smell similar to freshly-cut grass left on the compost heap for a few days. The phenomenon persisted throughout the hours of darkness until daybreak, the display showing the greatest quantity and intensity ever seen by the observer.

Luminescence was present throughout the leg of the voyage from Pusan to Japan and was even seen in the Japanese ports of Kobe, Nagoya and Yokohama but the luminosity was not as intense when compared with the earlier observation.

At the time of the first sighting the sea temperature was 18.5° and the wind was NNE'ly, force 1–2.

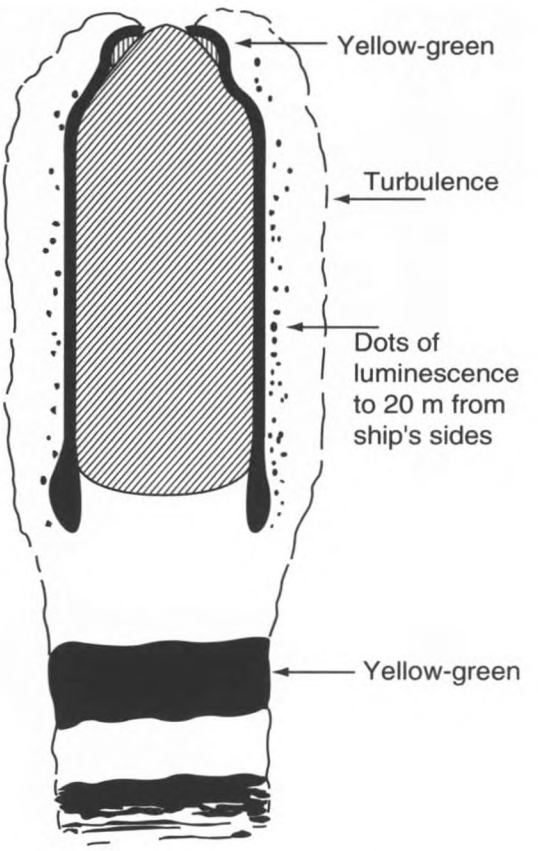
Position of ship: 22° 29.2′ N, 123° 22.7′ E.

Bass Strait

m.v. *Shabonee*. Captain I.D. McKenzie. Approaching Melbourne. Observers: Mr L. McCarthy, 3rd Officer and members of ship's company.

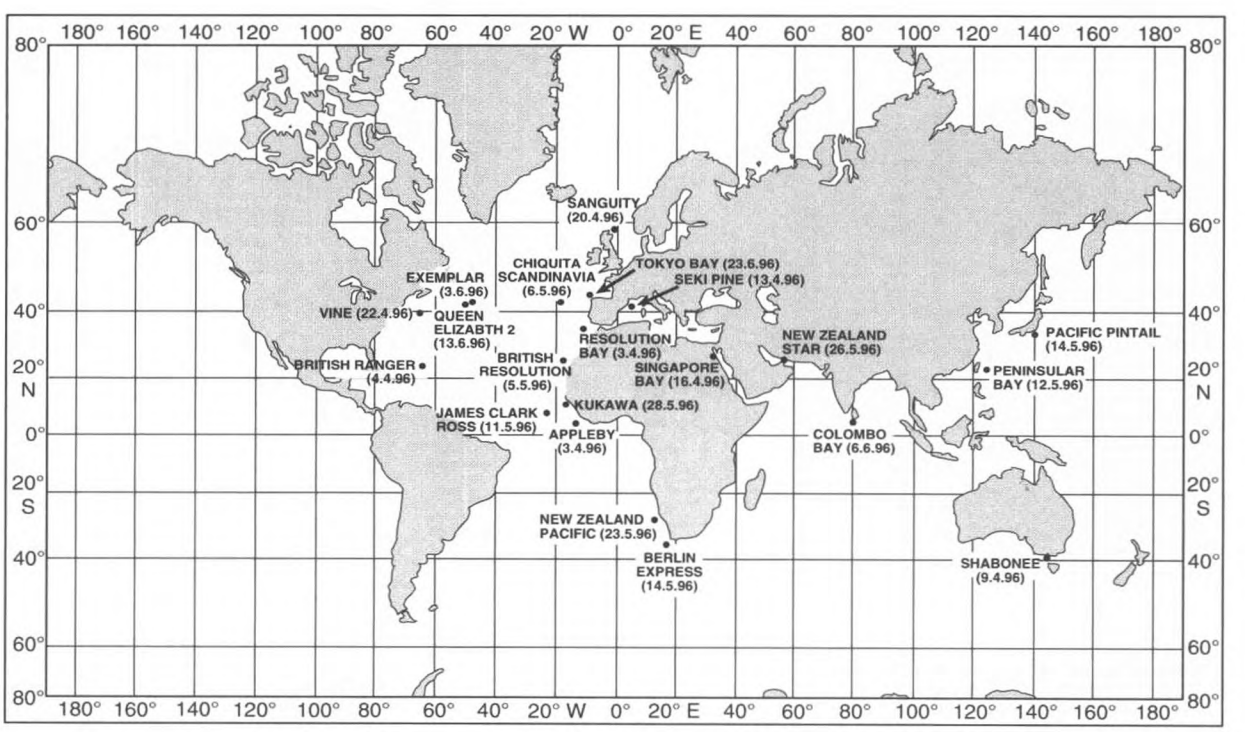
9 April 1996. At 1120 UTC whilst approximately 30 n mile south-west of Cape Otway, a luminescent yellow-green glow was seen in the ship's wake, also in the bow wave and along its sides, see sketch. During a 10-minute period the effect was intermittent, perhaps lasting for a couple of minutes and then disappearing for maybe half a minute.

In the wake could be seen areas of luminescence whilst present throughout were areas or dots of luminescence stretching to 20 m away from the sides of the ship. These dots were like floating objects the size of a man's fist and continued until 1230.



with one or two stars showing and there were rain showers in the vicinity although not within 3 n mile. The wind was SSE'ly, force 3–4 and there was a low to moderate south-by-easterly swell.

Position of ship: 38° 56′ S, 142° 57′ E.



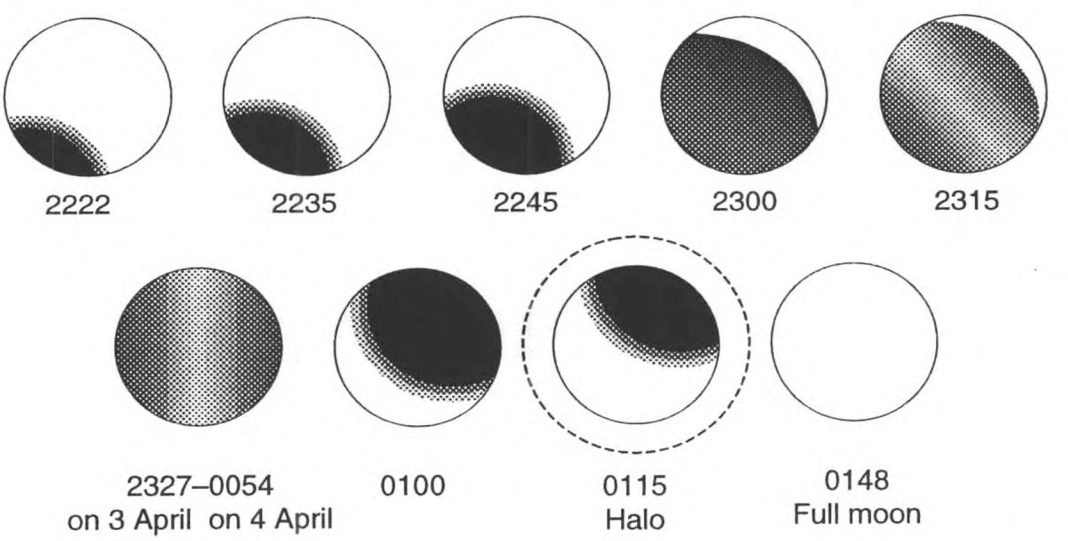
Position of ships whose reports appear in *The Marine Observer's Log*

ECLIPSE

North Atlantic Ocean

m.v. *Resolution Bay*. Captain A.M. Tweedie. Hobart to Lisbon. Observers: Mr F. Cambra, 2nd Officer, Mr G. Smith, 3rd Officer, Mr P. Quinn, SM3 and Mr K. Thompson, SM.

3–4 April 1996. At 2222 UTC on the 3rd a total eclipse of the moon began and, as it commenced, the leading edge of the shadow was noted as being silver-grey in colour as the remainder darkened to a deep black. The eclipse was complete at 2327 and the moon showed red-brown colouring. By 0054 the total phase was ending as the shadow started to move in a 2 o'clock direction and the full moon was once again observed at 0148. The sketches show the sequence of events.



The sky cover was 7 oktas of thin cirrus with 1 okta of small cumulus; at 0115 a halo of 22° became visible in the high cloud.

Position of ship: 35° 17′ N, 11° 17′ W.

m.v. *Appleby*. Captain A. Crofts. Saldanha Bay to Redcar. Observers: Mr J. Parkin, 2nd Officer, Mr W. Roberts, 2nd Officer, Mr S. Fitzgerald, Chief Engineer Officer and Mr D. Nandakumar, ABS.

3–4 April 1996. The eclipse began at 2222 UTC on the 3rd and throughout the observation the uncovered part of the moon was very bright, particularly the small section visible just prior to the total phase. The covered section was clearly visible even at total eclipse, the spherical shape appearing to be particularly well emphasized; whereas the moon at first glance usually appears 'flat', its spherical nature was clearly apparent throughout the eclipse. This could have been simply because of the brightness of the moon which, during the period from 1 April to 7 April was such that no stars were generally visible below about 30° altitude.

Position of ship: 06° 29′ N, 14° 15′ W.

m.v. *British Ranger*. Captain W.A.J. Cameron. Escravos to the Bahamas. Observers: the Master and ship's company.

4 April 1996. The start of the eclipse was missed owing to heavy cloud cover

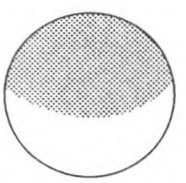
caused by the passage of a cold front; however, at 0025 UTC the front had passed and the sky cleared rapidly allowing the following observations to be made.

0025: Deep-red at north-west quadrant, lightening to light orange-red at the south-east quadrant.

0030: Moon almost completely eclipsed. Colour unchanged.

0045: Colour becoming lighter. Total phase passed.

0115: Colour considerably lighter.



0145: Light-orange colour still visible through binoculars.

At 0200 the moon was three-quarters visible and there was no longer any colouring to be seen, the top portion of the moon was dark-grey. The eclipse ended at 0215 as the full moon appeared.

Position of ship: 21° 57.4′ N, 64° 36.3′ W.

Note. Dr R. White, of the Institute for Research in Meteorological Optics, comments:

"The silver-grey leading edge of the shadow reported by *Resolution Bay* was almost certainly part of the penumbra. My first inclination was to say that the fact that the edges, particularly the leading edge, of the umbra were black or grey rather than the expected reddish colour may perhaps have been due to much dust in the upper, but not the lower, atmosphere of the Earth. The Earth's atmosphere refracts just a little more than the minimum necessary to bring rays grazing the Earth's surface to the centre of the Earth's shadow at the distance of the moon so that the whole shadow can be illuminated by such refracted light (rays passing through only higher levels of the atmosphere are refracted less). However, rays which would (in the absence of refraction) pass through the narrow annulus (for a point source) of the shadow of the Earth's atmosphere are dispersed by the refraction over the whole shadow of the globe contained within that annulus, as well as the annulus itself, so that illumination is much reduced compared with what it would be on the absence of eclipse. The reddish tinge is the result of this colour being less scattered in all directions than the blue end of the spectrum.

"The *British Ranger* viewed the eclipse from further west. The colouring here is generally more what I would have expected, the central deeper red resulting from those rays that have had a much greater path length through the Earth's atmosphere than those producing the lighter tones.

"Regarding the *Appleby* observation, the moon normally appears 'flat' because there is no limb-darkening or brightening, and other criteria such as parallax (on a left-eye to right-eye baseline) which normally allow the perception of depth are utterly negligible at lunar distance. But limb-darkening or brightening of the eclipsed moon is to be expected at mid-eclipse, and this may be the reason why the observers felt the eclipsed moon to be clearly spherical."

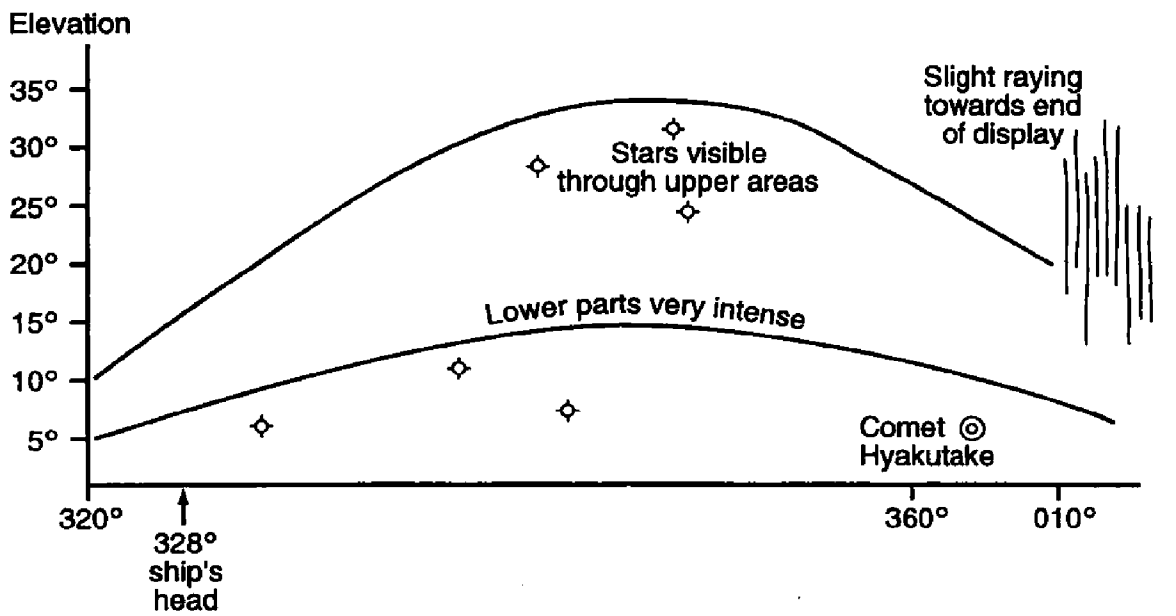
Editor's note. Reports of the eclipse have also been received from the *Vine* and the *Duhallow*. The Master and officers on *Vine* also noted the blood-red colour of the eclipsed moon whereas cultural traditions were exercised on the *Duhallow* where some of the ship's company preferred not to watch the event at all.

AURORA BOREALIS

North Sea

m.v. *Sanguity*. Captain D. Golden. Grimsby to Belfast. Observer: Mr I.A. Marson, Chief Officer.

19/20 April 1996. At 0030 UTC on the 20th a glow was observed northward of the vessel and developed quite quickly into a homogeneous arc stretching from about 320°, through north to 010°. The elevation of the lower edge ranged from 4° to 5° at the ends, to a maximum of 10° while the upper edge ranged from 10° at the ends to a maximum of 35°, see sketch.



The arc was very intense (blotting out stars) at its lower edge then fading evenly upwards. Stars were visible through the upper areas of the arc. The intensity of the lower edge gave the impression that it was over a bank of cloud, so marked was the contrast, but this was not the case as the setting Venus together with stars and comet Hyakutake were visible below it. The arc was a uniform pale grey, or perhaps a very slightly green colour.

Shortly before the display ended, abruptly at 0200, slight vertical raying was observed towards 010°.

Position of ship at 0200 UTC: 58° 05.8′ N, 02° 14.3′ W.

Editor's note. The *Sanguity* is a MARID ship.

RADIO RECEPTION

North Atlantic Ocean

R.R.S. *James Clark Ross*. Captain C.R. Elliott. Montevideo to Plymouth. Observers: the Master and ship's company.

11–12 May 1996. With the vessel nearing the African continent just south of the Cape Verde Islands, an increase in VHF radio traffic was heard on both Channel 16 and Channel 6. This was quite clearly from a port control in the general area owing to the general nature of the calls heard, which were in English.

On the 11th at 1600 UTC VHF traffic was heard, continuing into the night. From consultation with *Admiralty List of Radio Signals*, Volume 6, it appeared that Dakar Port Control uses the above channels and is the only station in the area to do so. The distance from Dakar at the start of reception was over 450 n mile.

On the 12th at 1010, with reception having continued day and night, a call to and from Las Palmas Radio was heard which, at this time, was more than 1,000 n mile away. The abnormal reception continued for some days afterwards by which time the ship had turned north to follow the 20° W meridian.

Position of ship at 1600 UTC on the 11th: 08° 26.3′ N, 22° 31.3′ W.

Position of ship at 1010 UTC on the 12th: 11° 39′ N, 21° 05.2′ W.

MISCELLANY ...

An additional mélange of maritime sightings

BT Navarin. 17 May 1996. At 1000 UTC Third Officer R. Poch and 2nd Officer P. Reddy spotted two Killer Whales passing the ship at about 100 m whilst in position 07° 02′ S, 81° 19.4′ W.

Botany Bay. 10 May 1996. A bright-green object was sighted by Third Officer S.L. Rayson and the Watchkeeper at 1224 UTC. It travelled across the ship's bow from port to starboard, in a northerly direction and vanished at about 45° altitude, bearing 340°. At first sight the light was so bright and intense that it was thought to be a flare but the probable explanation is that it was a meteor. The ship's position was 40° 56.3′ S, 148° 53.1′ E and there were no other vessels in the vicinity.

British Ranger. 30 May 1996. Whilst in the Gulf of Mexico, Second Officer T.J. Blyth and his wife noted 18–20 dolphins about 300–400 m off the ship's starboard side. They were in groups of two or three and were chasing or playing with each other. About 2 m long, they had grey backs, white bellies and short snouts; when they jumped out of the water they never fully cleared the sea but rose at an angle of 60° to 70° then turned to land on their sides. Staying with the ship for about 15 minutes they were thought to be Short-snouted Spinner Dolphins.

Charles Darwin. 9 June 1996. Several schools of pilot whales were spotted around the vessel at 1100 UTC in position 60° 02.6′ N, 04° 57.6′ W. They were surfacing and diving continuously with 'definitive' blowing actions.

Coppename. 22 April 1996. At 0855 UTC in position 31° 10′ N, 32° 02′ W Captain D.W. Bunyan, Chief Officer C. Bryson and Third Officer E. Erispe watched a waterspout at a distance of 10.7 n mile for 25 minutes during which time it reached the surface and retracted again several times. It was clearly visible on radar and developed from a cloud base of 1,800 feet.

Elk. 19 May 1996. The following birds were noted on the vessel whilst in the North Sea: one Hen Harrier, two House Martins, two Swifts and one Knot in winter plumage.

Exemplar. 4 May 1996. At 1945 UTC Chief Officer W.T. Lawrie sighted the spout of a blowing whale about 3 n mile south of the vessel which was in position 41° 25.9′ S, 51° 43.5′ W. Through binoculars 'it' was two Killer Whales leaping high from the water and generally heading south, their black-and-white colours picked out by the evening sun. They seemed to be small examples but the distance off may have been deceptive.

Lima. 3 April 1996. Luminescence in the form of isolated spots was seen by Third Officer R. Bruce and SG1 E. Jones at 2345 UTC in position 06° 15′ S, 23° 50′ W. The spots were fairly well spaced with a distance in excess of 5 m between them, several being seen at any one time, and were visible only in the wave running along the ship's hull and very close to the ship in her wake. Nothing was seen greater than 4 m away and no changes were noted when the Aldis lamp was shone on the sea or when the echo sounder and Doppler log were switched on.

Magnolia. 4 April 1996. At 0815 UTC just prior to rounding the Cape of Good Hope, well-defined lee waves were observed by Third Officer D. McIntosh. The wind was N'ly, force 2 and the waves seemed to extend due south of Table Mountain and run some 30 n mile out to sea. They were nearly sinusoidal and there was also a second set of waves, less well defined, and observed in direct opposition to the first. There were probably six peaks on each wave. The sky was clear with a small amount of surface mist.

Northwest Shearwater. 12 May 1996. At 1400 UTC in position 01° 13′ S, 126° 40′ E pinpricks of light were seen on the sea by Second Officer P. Green and R. Alvarez, AB. Upon shining a torch on the water it was possible for them to 'write' their names on the sea, a complete name of up to seven characters remaining visible for several seconds. A similar sighting occurred on 23 June in approximately the same location but was not so intense as the 'writing' lasted for only about 10 seconds after the light source was removed.

Editor's note. The *Northwest Shearwater* is a Selected Ship observing for the Australian VOF.

Ormond. 2 April 1996. Four whales were sighted by Captain L.J. Hesketh and Chief Officer A. Baker in position 23° 14.8′ S, 08° 44.8′ E. They were 15–16 m long, dark-grey on top with white bellies and had a fairly small, curved dorsal fin roughly 60 cm high, the flukes were not seen on diving. They were thought to be Sei Whales.

Providence Bay. 23 May 1996. Between 1030 and 1500 UTC whilst on passage from Kobe to Nagoya, Captain R.A. Kenchington, Third Officer M.W. Jamieson and SMS W. Wescombe watched luminescence which was visible almost constantly throughout the period. Its intensity varied but it was seen in the wakes of other vessels up to 4 n mile distant.

Putford Artemis. 20 April 1996. At 0440 UTC Chief Officer P.G. McCardle and Deck Cadet Miss K. Womersley noted an inversion stretching from 210° to 030° in the North Sea. It was a heavy yellow-brown colour and lay a few degrees above the horizon, fading at 0610 as it appeared to fan out and rise at an angle of 25°, giving the appearance of smoke. Platforms 13 n mile to the north in the Valiant Gas Field were clearly visible but no flaring off was noticed from platforms or drilling rigs.

Scirocco Universal. 26 April 1996. Whilst on passage from Paranagua to Port Elizabeth, Captain R.J. Kendall spotted a single unidentified seal basking on its back in the sun about 380 n mile from South Africa. It was only 60 m from the ship but rapidly swam off and dived in the direction of the wash away from the vessel.

Selectivity. 16 May 1996. At 1730 UTC Captain T.L. Jeffery and Chief Officer A. Gander watched a bird which flew across the vessel in front of the wheelhouse windows before wheeling and landing on the hatch top. At first glimpse it was thought to be a female Peregrine but after it had settled down it revealed itself to be a young cuckoo. The ship was on passage between Tilbury and Belfast.

Shetland Service. 28 June 1996. The second of two whale sightings was made by Chief Officer D.E. Grief whilst the vessel was on patrol duties in the North Sea; a single unidentified whale appeared near the vessel and remained for some time whereas earlier in the voyage a cow and calf were seen along with numbers of gannets, indicating the presence of fish, possibly herring shoals.

Sulisker. 14 May 1996. Whilst in position 56° 20.5′ N, 01° 40.5′ W, in the Marr Bank area between 0000 UTC and 0200 UTC, shoals of sand eels were observed rising to the surface of the sea. The weather at the time was calm and the eels could be seen in the vessel's wake; further observation made with a searchlight showed that the surface of the sea appeared to 'bubble' at times.

Tokyo Bay. 3 May 1996. Whilst westbound in the Strait of Hormuz, Third Officer M.J. Baker counted 10 flamingos flying in an almost straight line a few cables off the ship's port beam. They had pink wings with black wing-tips, long necks and white or light-pink bodies. They stayed on a parallel course with the ship for a while before overtaking it and passing across to the starboard bow on a roughly westerly course at a speed of about 25 knots.

Whitcrest. 5 June 1996. At 1815 UTC a shoal of fish closely followed by a flock of birds was plotted on the radar at a distance of 2.6 n mile by Second Officer D.J. Williams. A clearly defined trail and distinct vector were possible, and continued so until 1.6 n mile past and clear.

SCENE AT SEA

Captain P.W. Jackson

Mistral conditions encountered by *Seki Cedar* at 1800 UTC whilst in the Gulf of Lyons on 22 June 1996.

Editor's note. The Mistral is a cold, dry northerly or north-westerly wind flowing into the Mediterranean along the northern coast from Ebro to Genoa. The wind is characterized by the sinking of cold air generated over the mountains and which is then excessively strengthened by being funnelled through gaps in the mountain ranges of the Pyrenees and the Alps. It is most intense on the coasts of Languedoc and Provence, especially around the Rhône Delta where wind speeds in excess of 75 knots have been reached.

Captain R.A. Kenchington

A brooding cumulonimbus cloud and its accessory cloud, pileus, photographed from the *Providence Bay* whilst in the Indian Ocean in May 1995.

Editor's note. Pileus cloud occurs on or just above the top of a vigorous cumuliform cloud and is caused by the localized lifting of the environment above the swelling cloud top. It forms if there is sufficient moisture in this area but is short-lived because either the parent cloud pushes up through it or it subsides to lower levels and evaporates.

SCENE AT SEA

G.J. Simpson

A Turtle Dove pictured on board the *Lincolnshire* in May 1996 whilst the vessel was on passage between Livorno and Bethioua.

Editor's note. On page 56 of this issue, observers on the *Chiquita Scandinavia* report a bird whose 'identikit' characteristics appear to be similar to the features shown in this photograph.

W. Stoker

This owl was seen flying around the *Singapore Bay* on 29 May 1996 whilst the vessel was off Kyushu, Japan. Commander M.B. Casement, O.B.E., of the Royal Naval Birdwatching Society has identified the bird as "almost certainly a Scops Owl (*Otus scops*). Ear tufts are not visible in the photograph, so this bird is probably immature. Small size, yellow eyes, feathered legs but unfeathered yellow feet are distinctive features of Scops Owl. It is widely distributed throughout Europe, Africa, India and south-east Asia including Japan, and is migratory".

Fifty years of technology development *

By J. Houghton

(Royal Commission on Environmental Pollution)

The technological developments of remote sensing (particularly from orbiting satellites) and of large computers have dominated the last 50 years, and between them have brought about nothing less than a revolution in the practice of meteorology. Computers and satellites have also made possible the development of flexible and automated communication systems for the acquisition, management and delivery of meteorological data.

Remote sensing

Prior to the Second World War, most weather observations were made by devices in situ. The thermometer, barometer, raingauge and sunshine recorder are all examples of such. The radiosonde, too, makes measurements throughout the atmosphere but still in situ before transmitting the information by radio. If we discount observations of cloudiness and actual weather made by eye, a remote-sensing device we all possess, no routine measurements of weather were then made by remote sensing.

An outstanding example from the 1920s and 1930s of a remote-sensing instrument observing the atmosphere was the ultraviolet spectrometer for measuring ozone in the upper atmosphere, built by Gordon Dobson in his laboratory at Oxford. A highly sophisticated instrument, it was the forerunner of instruments of a similar kind to be flown later on earth-orbiting satellites.

Weather radar

The invention of radar in the UK in the 1930s and its rapid development during the War provided an opportunity for the first application of remote sensing to meteorology. The first report of the observation of a storm by radar was in 1941. By 1950 storms and areas of heavy rain were routinely monitored that way, so providing an important forecasting aid. When digital computing technology became available in the 1970s and 1980s radars could be calibrated on line and networked together; radar maps could be produced. One of the earliest operational networks covered England and Wales; it was gradually extended to cover all of the UK. Through the regular use of radar maps in TV forecasts we are now very familiar with the valuable information that radar can provide. Comprehensive networks are now available over much larger areas such as the USA and large parts of Europe.

The first satellite observations

Radar is an active remote-sensing technique; active signals are sent out to probe the nearby atmosphere. Passive remote sensing employs the radiation reflected or emitted by the atmosphere or, for instance, by clouds to infer the atmosphere's structure and properties. Passive techniques have been particularly applied from earth-orbiting satellites.

* Reproduced from *Weather*, May 1996, pp. 163–167, by kind permission of the Editor.

The first weather satellite, called TIROS 1 (Television and Infra-red Observation Satellite 1), was launched by the USA on 1 April 1960; it carried a simple television camera for viewing the clouds below the satellite. It was in a near-polar orbit at about 1,000 km altitude and orbited the earth every 90 minutes or so, 14 times per day. For the first time, the global pattern of weather could be observed twice per day as the earth rotated beneath the plane of the satellite's orbit.

Better still in terms of coverage of weather systems were the pictures from the first geostationary meteorological satellite, ATS I, launched on 7 December 1966. Orbiting at 35,000 km above the equator, it remained stationary over a given point on the equator and provided continuous observations of about a quarter of the earth's surface. Time-lapse pictures (every half an hour) were provided of the evolution of weather systems, thus giving a completely new view especially of what happens in the tropics. Five geostationary satellites dispersed around the equator now provide continuous and nearly complete coverage of the whole earth (Figure 1).

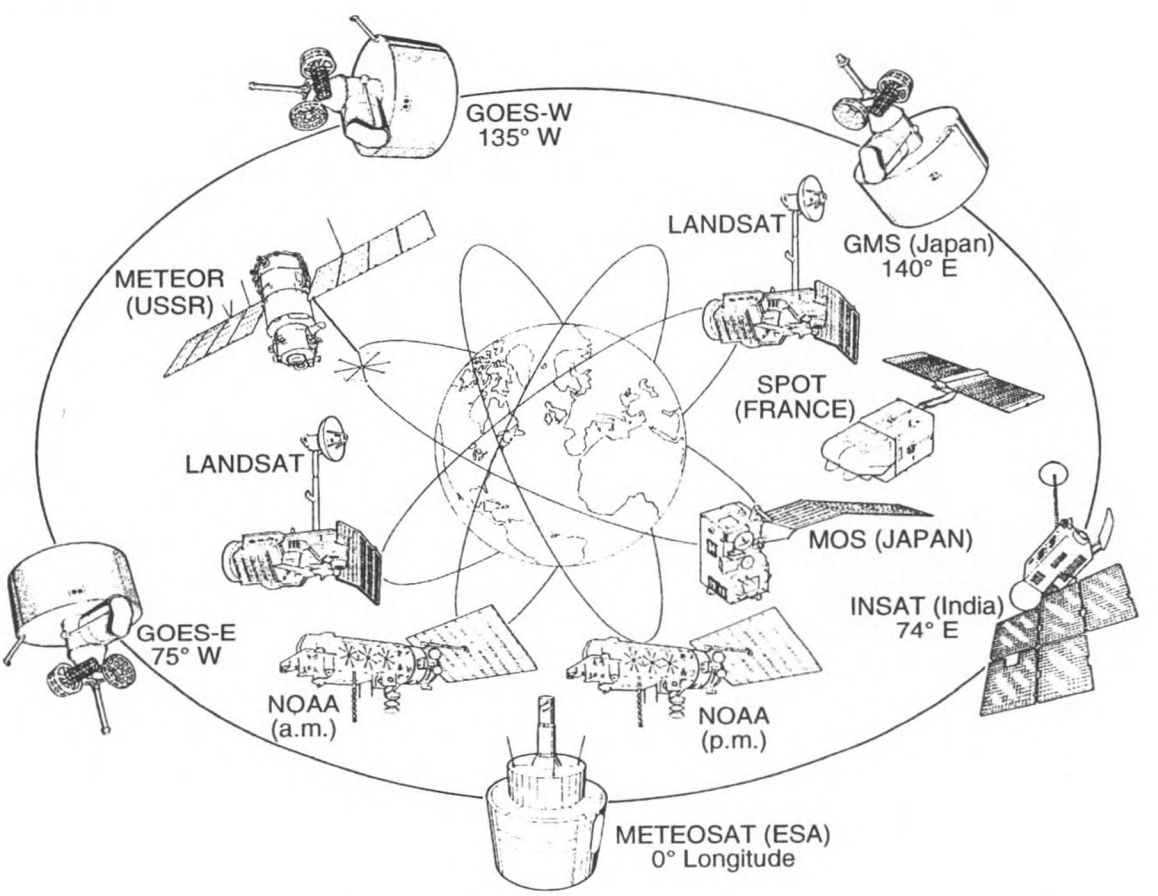


Figure 1. Operational earth-observing satellites during the early 1990s, showing those in geostationary orbit and those in near-polar orbit. Those not identified with a country label are provided by the USA.

Remote sounding of temperature and composition

Pictures of clouds provide a great deal of qualitative information about weather systems; by tracking the movement of clouds they also give information about wind speed and direction — this is especially useful in tropical regions. But satellite instruments can provide more than that. Observations of the outgoing

radiation at infra-red or microwave wavelengths emitted by gases like carbon dioxide and water vapour enable the temperature and humidity structure of the atmosphere below the satellite to be obtained. Such information has become a vital input to atmospheric circulation models employed for numerical weather prediction.

The first remote observations of atmospheric temperature in the lower atmosphere were made from the Nimbus-3 satellite launched in 1969, and fairly soon such observations proved to be highly valuable in providing coverage of otherwise data-sparse regions of the Southern Hemisphere. However, it was not for some 20 years that the data became really useful in regions of the Northern Hemisphere where more conventional data are available. The challenge to the scientists involved has been to achieve adequate accuracy in the basic observations and to develop adequate means of assimilating such data into numerical models.

The particular emphasis of British scientists in this field of remote sounding has been on the measurement of the temperature at altitudes above 10 km or so — in the stratosphere and mesosphere. With the first instrument flown on the Nimbus-4 satellite in 1970, it was possible for the first time to observe the structure of the atmosphere at these levels on a global scale. Subsequent instruments flown on later Nimbus satellites and on the NOAA (National Oceanic and Atmospheric Administration) operational series have provided a continuous observation at these levels ever since (Figure 2). British scientists have also pioneered remote-sounding measurements from satellites of stratospheric composition, especially of those constituents concerned with ozone chemistry.

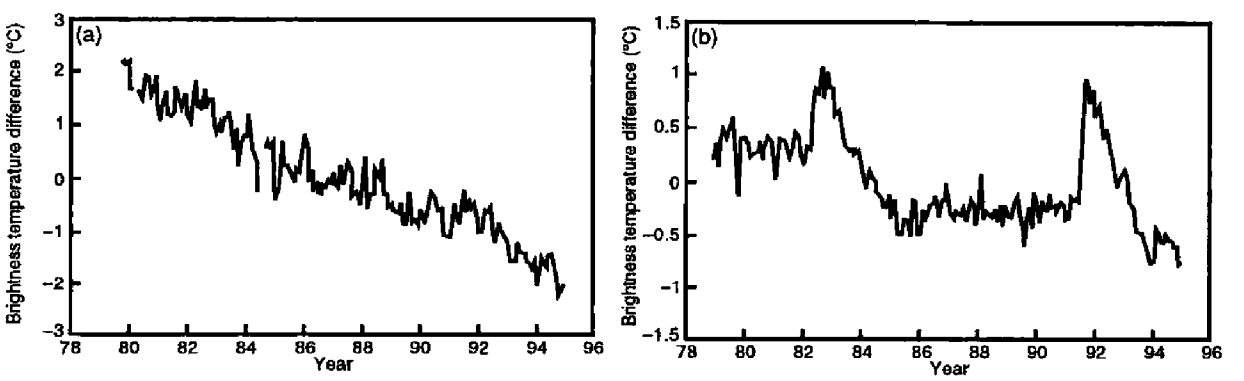


Figure 2. Observations from stratospheric sounding units on NOAA polar-orbiting satellites of changes in the global average temperature (degC, differenced from monthly averages for 1980-94) in atmospheric layers centred at (a) 54 km and (b) 29 km. The peaks are due to the influence of the volcanoes El Chichon (1982) and Pinatubo (1991), and the cooling trends over the period are due to a combination of the depletion of ozone and the increase in carbon dioxide, both as a result of human activities (from John Nash, Meteorological Office).

Remote platforms

Satellites have not only provided platforms for mounting remote-sensing instruments, they are also an invaluable aid to communications. In particular they are employed to interrogate and locate remote instruments, for instance those in remote locations, on drifting buoys or on ice shelves.

The weather services of the world maintain satellites both in geostationary and in near-polar orbits (Figure 1). Space agencies have also flown many research satellites for atmospheric observation and there are exciting plans being developed in the USA, Europe and Japan for large sophisticated satellites to be launched later this decade and early next century.

Computers and modelling

It was around 1920 that Lewis Fry Richardson (1922) presented his dream of weather forecasts carried out by numerical integration of the equations of motion; he imagined thousands of people being continuously employed to keep pace with the actual weather. That dream was realised with the advent in the 1950s of the electronic computer. Although early numerical forecasts in the 1950s and 1960s showed promise, none involved during those early years would have predicted how successful numerical weather prediction would become. Computers a hundred million times faster than those first used are now available and there seems no end to their continued improvement in speed and capacity (Figure 3).

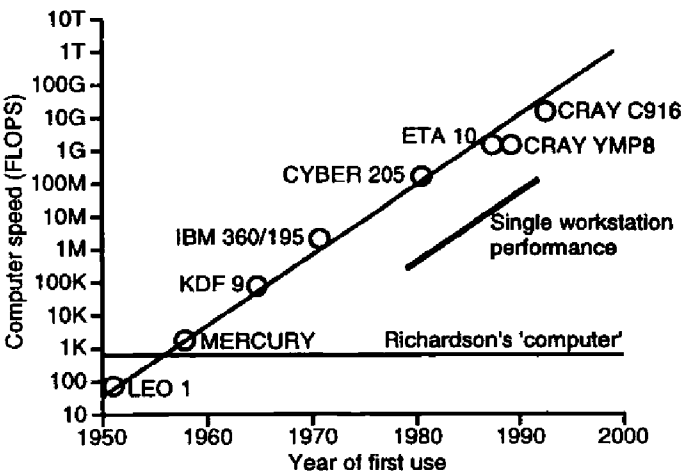


Figure 3. Speed (in Floating Point Operations per Second (flops)) realised in the forecasting application for computers employed for numerical weather prediction at the Meteorological Office since 1950. An estimate of the speed which might have been realised by Richardson's 'people computer' is also shown.

What is remarkable is that each advance in the physical or dynamical description included in the models, each improvement in data coverage and quality, and each addition to computer capability has led to measurable improvement in the resulting forecast accuracy (Figure 4). That improvement still continues — although as predictability limits are approached it is bound eventually to slow down.

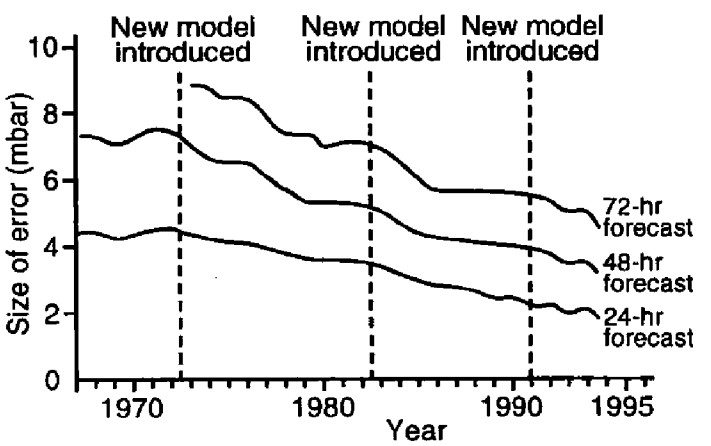


Figure 4. Reduction in forecast errors (root-mean-square differences of surface pressure compared with analyses) in 24-, 48- and 72-hour Meteorological Office forecasts since 1967.

Data handling and communications

Associated with the developments in computers have come enormous advances in communications and in information technology. Gone are the days of hundreds of teleprinters and their operators, and endless reels of paper tape. The taking of observations, their communication, dissemination and assimilation into models is now very largely automated except for some quality checks for which human

intervention remains necessary. Data flows on the Global Telecommunication System, and through satellite links, are truly enormous; well over ten thousand million (10^{10}) bits of observational data enter the Central Forecasting Office[1] at the Meteorological Office at Bracknell each day.

The output of meteorological models and forecast services is now also largely automated. Charts of all kinds are prepared by machine and most weather products reach customers via the fax machine or other electronic routes.

Human-machine interaction

With the advent of new technology it is inevitable that many tasks once performed by humans are now carried out by machine. But that has not meant that humans are redundant; their tasks have just become different. At every stage of machine development, human skill has been necessary to assess the products produced automatically and to add value to them. Humans are particularly expert at integrating and evaluating a wide range of information, especially information from images.

The understanding of weather and climate is one of the greatest and most exciting challenges presented to science and the associated technology. As the quality and range of the basic observational data and of the computer products continue to improve, the ability and ingenuity of human scientists and forecasters applied to meteorological problems will ensure continued development in the accuracy, range and availability of meteorological information for the benefit of all parts of human society.

REFERENCE

Richardson, L. F. (1922) *Weather prediction by numerical processes.* Cambridge University Press (reprinted by Dover Publications 1966)

[1] Now known as the National Meteorological Centre of The Met. Office.

Voyages south

By J. Shanklin

(British Antarctic Survey)

During the course of my work with the British Antarctic Survey I have made several lengthy voyages on the R.R.S. *Bransfield* and shorter voyages on the R.R.S. *James Clark Ross* and H.M.S. *Endurance*. As an enthusiastic amateur astronomer and sky watcher I have had many opportunities to view interesting atmospheric phenomena.

My first voyage to the Antarctic started just before Christmas, 1981. We were due to fly to Punta Arenas, via Rio de Janeiro, to join the *Bransfield* but after a delay of several days for some minor repairs to the aircraft, we set off for Copenhagen! We eventually joined *Bransfield* on 22 December and sailed immediately for the Falkland Islands. The following night I had my first view of

the southern stars — Sirius at the zenith, Orion upside-down and, to my eyes, a not very impressive Southern Cross. With time I have gained familiarity with the constellations of the south but it still takes a while to get used to them each time I return.

In calm conditions during the voyages I am able to make counts of sunspots by setting up a pair of binoculars on a tripod and projecting the solar image onto a sheet of card. (A sextant can be used but you should never look directly at the sun with binoculars or the unaided eye. An impressive demonstration of the danger is to hold a sheet of dark paper close to the eyepiece of the binoculars — it catches fire in seconds.) The number of spots visible waxes and wanes with an approximately 11-year cycle, which was at a peak in 1979 and 1990. Heading south on this first voyage towards Halley station, we crossed the Antarctic Circle on 8 January. Although swell virtually disappears when the ship is in ice, a different problem besets solar observation as the ship is continually changing course to work through the pack. On our final day at Halley, a partial solar eclipse occurred, with maximum just after local midnight. Seeing a crescent sun low in the sky with mist tumbling down from the 30-m high floating ice sheet onto the sea ice was an impressive sight. The temperature dropped to –8° and wreathes of sea smoke formed above the open water, which soon had patches of grease ice on its surface. The sharp relief due to the low sun and reflections of the pastel shades of the sky in the sea completed the picture.

As the sun sets there is a chance to see the so-called green 'flash', which forms when a combination of scattering and refraction leaves only green light at the moment of sunset. I have seen this on a few voyages but more often than not I see it as a steel-blue pulse of light. After major volcanic eruptions, such as Mount St Helens in 1980 and Mount Pinatubo in 1991, volcanic dust in the stratosphere produces several atmospheric effects. Multi-coloured twilight glows persist long after sunset but sunset colours on clouds seem to be suppressed. The dust can produce a weak halo, known as Bishop's ring, around the sun. This has a brownish colour and the diameter (around 18°) changes with the solar altitude; it is slightly easier to see when viewed through yellow- or brown-coloured glasses. Sometimes the dust can be lower in the atmosphere and, during a call to the Falklands in 1992, the *Bransfield* was covered in dust from the eruption of Mount Hudson in southern Chile, which also reduced visibility to a few miles.

As the sky gets darker, first the planets and then the stars appear. The planet closest to the sun, Mercury, is easier to see from the Southern Hemisphere because of the shape of its orbit. At a favourable elongation from the sun, it is an easy naked eye object, though surprisingly some famous astronomers have never seen it. My most memorable view of it was early one morning when *Bransfield* was at anchor in Brandy Bay, off the coast of the Antarctic Peninsula. Venus and Mercury were prominent objects in the dawn sky but what made it special was the sound of a whale blowing and exploring around the silent ship. At the right elevation, Venus (and sometimes Jupiter) can illuminate a path on the sea surface, and Venus is bright enough to cast shadows.

The exceptionally dark skies away from civilisation allow some of the fainter glows in the night sky to be spotted, though they can require at least half an hour for the eye to become sufficiently adapted before they can be seen. The two satellite galaxies to our own Milky Way can be confusing to the novice observer as they appear like two small cumulus clouds in the sky, and I wonder how many times they have led to reports of one okta of cloud in an otherwise clear sky!

BAS/Jon Franklin

Venus and Mercury at Brandy Bay

A rather fainter glow is the zodiacal light; this is a faint glow caused by dust in the plane of the solar system being illuminated by the sun. It forms a cone shape in the morning or evening sky but continues in a band all round the zodiacal constellations, expanding to a broad patch in the anti-solar direction. Glows can also be seen in the sea and, although I have never seen any major displays of phosphorescence it is quite common in the ship's bow wave, particularly in warmer waters.

Around the time of the equinoxes there is a greater chance of seeing the aurora australis (or borealis, for those in the north); in addition the night sky at high latitudes starts to become truly dark after the summer twilight. My first view of it occurred on St David's Day in 1982, when I saw a pinkish glow with white rays. The Senior Meteorologist suggested that it was probably noctilucent cloud, however on my return to the U.K., it transpired that there had been a major solar storm and the aurora borealis had been seen widely at the same time. On a trip in April 1989, I was able to observe the quiet arc on several nights, with activity increasing to display rays and curtain forms on one occasion, and I was able to point this out to several 'FIDS'[1] who had spent two years in the Antarctic and had never seen the aurora. Frequently only the diffuse glow above the quiet arc is visible and this would never be noticed from the U.K. when it would be obliterated by sky-glow from towns and villages.

As an amateur astronomer my main interests are the scientific observation of comets and meteors, and the dark skies of mid-ocean are a pleasant change from the light-polluted skies of the U.K. For serious meteor watching you need to spend a least an hour counting the number and brightness of the shooting stars. It can sometimes be quite difficult to find a spot away from all the ship's lights and even in the tropics it can get surprisingly cold at night. Meteors can be divided into sporadics, which can appear from any part of the sky, and shower meteors which seem to radiate from a fixed point and are generally associated with specific comets.

[1] FIDS — a term of companionship used by and for those working for the British Antarctic Survey, formerly the Falkland Islands Dependency Survey.

The most spectacular display I have seen from the *Bransfield* occurred on the morning of 22 April, 1982 as we headed northwards in the South Atlantic. In the space of one hour I saw 46 meteors, the majority from the Lyrid shower. This was perhaps prophetic as the associated comet is named Thatcher and the reason we were headed northward in mid-Atlantic was the Falklands War so, 'A strong display from Thatcher in mid-Atlantic!'

In 1986 I made a second trip to the Antarctic, partly to coincide with the return of Halley's comet. I made the first ever sighting of the comet from the Antarctic on 25 February. Three weeks later it was better placed and was an impressive sight rising tail first above the mountains of the Antarctic Peninsula.

BAS/Jon Franklin

Halley's comet above the mountains of the Antarctic Peninsula

I rejoined the *Bransfield* towards the end of March for the voyage back to the United Kingdom. We were carrying out a program of twice-daily radiosonde launches, partly for the synoptic purposes as a trial ASAP[2] project, and partly to provide ground truth for satellite studies. Sometimes a third launch was required, usually at around 0300 local time. This was quite convenient for me as I could combine the work with observations of meteors and Halley's comet. Passing the coast of Africa the skies steadily became hazier and astronomy was curtailed as the harmattan (carrying wind-blown dust from the Sahara) blocked out the stars.

Several interesting meteorological phenomena occur where land interrupts the flow of air across the Southern Ocean. Over the island of South Georgia, which rises to just under 3,000 m, lee waves are frequently set up in the atmosphere, allowing spectacular 'stack of plates' cloud to form. Sometimes the updraughts are turbulent and clouds come and go quite rapidly. Under these conditions, the correct geometry can give beautiful irisation colours on the margins of the filamentary cloud that form. Ferocious downdraughts from the mountains produce gust fronts or williwaws that tear spray from the sea surface and present a significant hazard to small boats in their path.

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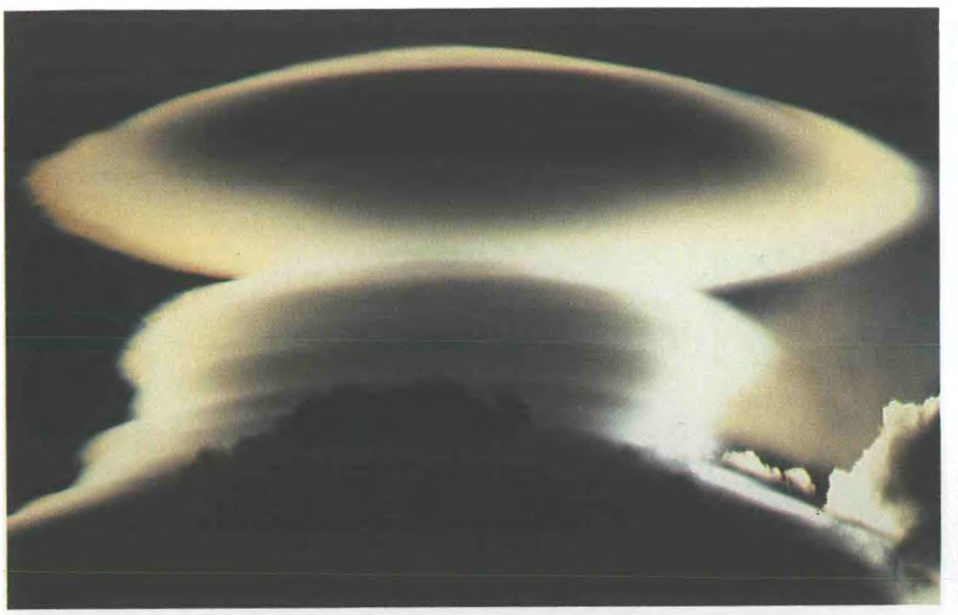
[2] Automated Shipboard Aerological Programme



BAS/Chris Gilbert

'Stack of plates' cloud

Optical phenomena are quite a common occurrence: rainbows, coronae, 22-degree halos, parhelia and crepuscular rays are relatively frequent, but more rarely seen are fog-bows, the Brocken spectre, moon bows, sun pillars and the larger halos.

BAS/Jon Franklin

A fog-bow and the glory from on board *Bransfield*

Surprisingly halos are less common during the Antarctic summer than they are in temperate northern latitudes. Perhaps the strangest phenomenon that I have seen was at the end of a mid-April night in the South Atlantic, some time before dawn, when **dark** rays reaching to around 60° altitude were visible against a **brighter** background at a bearing of about 140°.

Noctilucent clouds are a rare sighting in the Southern Hemisphere, partly due to the fact that the best location for seeing them is the band between 50° and 60° latitude. These clouds occur at altitudes of around 80 km during the summer and

are still lit by the sun long after sunset. Appearing silvery-blue in colour, they can change in form quite rapidly. My first sighting of them was in mid-December 1986 when the *Bransfield* was heading eastwards along 60° S before entering the pack-ice to reach Halley station. A second sighting occurred from near the Falkland Islands whilst on the *James Clark Ross* in mid-December 1994. There are suggestions that the clouds are becoming more frequent due to increasing concentrations of water vapour in the upper stratosphere.

Whales are a relatively common sight in the southern oceans, and over the past 15 years the smaller whales seem to have increased in numbers, though I have never seen a Blue Whale. Albatrosses, penguins, petrels and other oceanic species are frequently encountered, but occasionally rarer migrants visit the ship. On my first voyage we found a Cattle Egret on the ship's helicopter deck as we headed north towards the South Orkney Islands. Sadly, the next day it was found dead. A second Cattle Egret that joined the ship in the North Atlantic did better and was cared for in a crate until we passed Fogo, when it was released, though it seemed a little reluctant to leave the comfort of the ship. Passing through sub-tropical waters brings sightings of various jellyfish and flying-fish, and occasionally a fish would land on the hold covers.

If any members of ships' complements do make observations of astronomical phenomena, these will be gratefully received by the British Astronomical Association. Details of what is required are given in the *Marine Observer's Handbook* and observations can be forwarded to the BAA through The Met. Office. A particular object that may be observed over the next couple of years is comet Hale-Bopp which could be a naked eye object to the end of 1997.

Observations of nacreous clouds on 16 February 1996

The majority of clouds occur within the troposphere, the depth of which varies with latitude and season, averaging about 18 km near the equator to about 9 km near the poles; the types of cloud forming in this zone of the atmosphere are familiar to observers — stratus, cumulus, altocumulus, altostratus and cirrus, and their varieties. The atmosphere above the tropopause (the top of the troposphere) is a region where few clouds form owing to much drier conditions; even so, in the summer months noctilucent clouds, at heights which have been found to be near 82 km, can be viewed from favourable latitudes while during the winter months, when the sun is low enough to provide illumination, nacreous (or 'mother-of-pearl') clouds can occasionally be seen, having formed at heights closer to 25 km.

These clouds resemble the lenticular form of altocumulus but have a more delicate structure. They are lit by the sun and show characteristic irisation which is most brilliant just after sunset or shortly before sunrise, remaining or becoming visible long after or before these times. The clouds are at their best when the angular distance between them and the sun is less than 40°.

Their reported occurrences have been mainly in Norway and Scotland during the winter on occasions of a strong and deep west to north-westerly airflow (as would be caused by a deep depression over northern Scandinavia) and their occurrence over large mountain masses allied to the fact that they show little or no movement suggests that they may be of orographic origin, similar in nature to

standing wave clouds but on a grand scale. Because of their height they can be seen several hundred miles away from their source, for example, clouds formed over Scandinavia would be visible from Scotland. The exact nature of their constituent particles is unclear but the irisation effects would suggest diffraction of light by spherical particles of less than 250 μm.

On 16 February 1996 a display occurred around sunset and The Met. Office received many telephone enquiries from the general public asking about it. Among those who saw it and were able to take photographs were Captain R.I.G. Calder (a past observer with the U.K. VOF, Master of the *Dart Europa*), Captain B.A. Chapman (Master of the *Corystes*) and Captain P.R. Dew (Master of the *Hemina*).

Captain R.I.G. Calder

Captain P.R. Dew

Above: Part of the nacreous cloud formation as seen from Aberdeen between 1600 and 1700 UTC. Below: The same display as seen further south, from Newport-on-Tay. (The exact time of observation, other than being after sunset, is not known.)

Captain B.A. Chapman

The view of the clouds from Corton Roads anchorage, off the Suffolk coast, at 1740 UTC.

Our thanks go to Captains Calder, Chapman and Dew for these pictures.

Postscript to 'Observations of comet Hyakutake by United Kingdom VOF Observers'

In the January 1997 edition of this journal we published an account of the sightings of comet Hyakutake made by U.K. VOF observers, and at the time of going to press a total of 25 ships had sent in reports. Since then, three more reports have been received; therefore, not wishing to exclude any observers from recognition of having sighted the comet, we gladly acknowledge the contributions from the *Chiquita Elke* whose observing officers watched it between 23 and 31 March 1996, their best view being just before dawn on the 26th, the *Sanguity* from which the comet was seen on the night of an auroral display (see page 62 of this issue) , and the *London Glory* from which the comet was spotted in April, between the 10th and 13th.

AURORA NOTES APRIL TO JUNE 1996

By R.J. Livesey

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

There was a period in April from the 11th to the 22nd when the Earth's magnetic field was disturbed and mid-latitude aurorae were observed in British waters [see the report from the *Sanguity*, on page 62]. In May and June things were very quiet and no aurorae were reported from any British observing site. The April activity was related to high-speed particle streams thrown out from the sun. Solar activity

subsided in May and June. The summer of 1996 turned out to be one of the quietest periods experienced for a number of years for magnetic disturbances or mid-latitude aurorae.

Comet Hyakutake observed in conjunction with an aurora, from the *Sanguity*, has proved to be one of the brightest in recent years and has been well seen by many people. The comet did not have a dust tail of solid particles thrown off by solar action. Such a tail is often curved in shape as the individual particles go into their separate orbits about the sun. The comet did have an ion tail of activated molecules that are not affected by gravity and depart from the comet in a straight line under the influence of the solar wind and the interplanetary magnetic field. It was Biermann, in 1951, who used the behaviour of cometary ion tails to argue for the existence of the solar wind of electrified particles that leave the sun to have an effect upon the Earth's magnetic field and the generation of aurorae.

It is of interest to note that comet Hale-Bopp is now also with us and should provide an interesting visual object to observe this spring.

Although there has not been much evidence of mid-latitude aurorae they have been active in the high latitudes of the auroral zone. Stephen Martin, a British Airways pilot, has sent in a number of aurora reports made during night flights that have taken him across mid-Canada, Labrador and the North Atlantic within sight of the auroral oval. On 28/29 June he saw the simultaneous apparition of aurora and noctilucent clouds (NLC).

May and June began the Northern Hemisphere NLC season. In Table 1 is given the distribution of event nights. In British waters the most widespread event nights were those of 20/21 June with cloud to an altitude of 30 degrees in the Clyde estuary, 22/23 June which was all-sky off the Norfolk coast, and 24/25 July which was covering three-quarters of the sky at Leith, after sunset. This latter event began covering most of the sky and then settled down to a zone of brilliant clouds forming a zone of bright light to some 11 degrees, or so, above the northern horizon. This was a magnificent display so late in the NLC season and was the brightest that had been seen for some time.

Table 1 — Monthly number of NLC event nights in British waters

Month	Confirmed	Suspect	Total
May	1	1	2
June	24	2	26
July	19	2	21
August	3	1	4

An analysis of the reports received has given the lowest geographic latitude at which each apparition has been seen in British waters, and the results are given in Table 2.

Table 2 — Percentage of event nights NLC seen down to stated geographic latitude in British waters

Geographic latitude	59	58	57	56	55	54	53	52	51	50	49
Percentage event nights	2	—	—	21	10	2	4	42	15	2	2

The lowest latitude of all from which NLC has been observed and photographed was 46° 48′ N, 101° 48′ W, at Glen Ullin, North Dakota as reported by Jay Brausch, a well-known amateur aurora observer.

LETTERS TO THE EDITOR

'South wester'

The *Leonia* had been moored to the Durban SBM and discharging for 24 hours when at about 1030 UTC, I heard a weather warning on the VHF from Port Shepstone. The local station was reporting a south wester which had just arrived off Port Shepstone. The Pilot/Berthing Master came to see me with the request that I make ready the engine for when the south wester arrived off the SBM area.

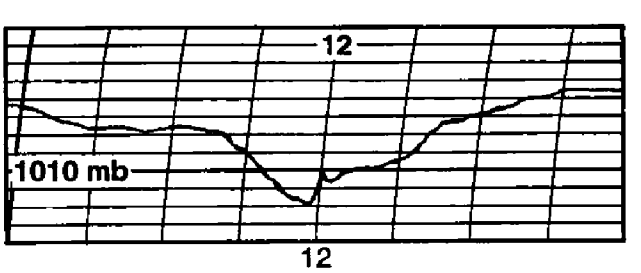
At 1200 we could see a distinct line on the sea surface about eight miles distant, approaching the ship. Our weather conditions were wind NNE'ly, force 3, sea state 2 with a slight swell. Our heading was about 350°, air temperature 24.5°, wet bulb 22.5°, pressure 1012.4 mb.

It was fascinating to watch the south wester approaching as I had not experienced such a phenomenon before. The line of advance became even more defined as it approached, the white horses of the south-westerly wind being clearly visible to the naked eye, almost giving the appearance that the sea surface was 'boiling' along the line of advance.

The flags were flying out near full flight in the NNE'ly wind and, just as the 'line of advance' approached, the wind died down completely, causing the flags to droop limply for about 15 seconds before the wind became SW'ly, force 5 and the flags unfurled to full flight, cracking in the wind.

The tug which was towing us astern to keep us clear of the SBM had to increase his pull to keep us from riding up due to the quick change in conditions and it was also necessary to assist him with *Leonia*'s engine. Conditions had changed, the wind was SW'ly, force 5–6, the sea state was 4–5 while the swell was still slight, the air temperature was 22.0° and the wet bulb was 20.5° with the pressure rising quickly.

Looking at the barograph trace, from about 0300 it had remained quite steady until 0800 when it started to fall steadily, slowing down for about 1.5 hours before the south wester came through, when it rose rapidly.



Leonia now lay awkwardly across wind and swell, even the stronger wind force on the accommodation and large area of hull now clear of the water being unable to overcome the effects of the undercurrents making her lie thus.

During the final stages of discharge, on the 13th, Mrytle the local turtle put in her first appearance for some time. She was swimming around in the area of the SBM, on our starboard bow. On inspection there was very little grass on her back but there was a strange patch visible. Whilst talking to the local divers, it transpired that they often give Myrtle a quick scrape and remove the barnacles. One such barnacle when removed, took off some of her shell which did not regrow, so the divers covered the hole with resin.

Captain A.F. DeVanney, Master of the *Leonia*. (Shell International Trading and Shipping Co. Ltd.)

Velella report, *The Marine Observer*, April 1996

Captain J.B. Nichols, Master of f.r.v. *Scotia* wrote to Dr F. Evans, via the Editor's desk, in connection with the above report. Dr Evans was kind enough to copy his reply to us and, with his permission, we now print both letters.

Dear Dr Evans,

I read with interest the report by m.v. *Pacific Pintail* and your accompanying comments to the article. In view of your pleasure in adding this report to your data file may I add a further, weak report.

I too have experienced such a sighting, but mine was unfortunately several years ago and before I was acquainted with *The Marine Observer*. At the time of the sighting I had not realised its significance and therefore did not record any details at the time except that it was an unusual phenomenon.

My vessel was proceeding northwards and was passing the north-west corner of Spain, off Cape Villano. Like Captain Young, I too thought I was approaching a line of tank washings until I was able to identify the line through binoculars and was surprised to find it to be a mass of Portuguese Men O'War, each with a sail of approximately two inches diameter. The east/west line extended as far as the eye could see either side of the ship and I estimated the line to be about one mile wide with no visual deviation from this dimension. I was master of a small container ship at this time so my height of eye above sea level would have been approximately 35 feet.

I have no records as to what time of the year this sighting occurred as I was trading regularly on this route — I do not even recall the year, let alone the month — though I do remember it was a fine and calm day. My best guess at a date would be 1978, plus or minus two years.

I have no idea whether the Velella phenomenon is common off the Spanish coast, I sailed U.K./Mediterranean for 25 years without ever repeating such a sight, in fact this remains my only sighting in 41 years at sea and as such, it left a telling memory. My purpose in now reporting the incident to you is to hopefully add another piece of the jig-saw to your records.

Yours sincerely,
Captain J.B. Nichols

Dear Capt. Nichols,

I was most grateful that you should have taken the trouble to send on your observation. It is most interesting. Huge concentrations of *Velella* have been reported fairly regularly from Selected Ships in the Pacific but similar reports do not seem to appear in the scientific press although Pacific *Velella* have been extensively studied. So far as I am aware, no such concentrations have been reported from the Atlantic at all, so yours may be a first. British textbooks, even those that deal with marine biology worldwide, simply describe the range of this little creature in the world oceans and then usually add that it is occasionally stranded on U.K. shores.

In the Pacific the concentrations reported from shipboard are from about 35° to 45° N across most of the ocean width. Robert Bieri, an authority on the species, thinks they are concentrated around the 15° sea-surface isotherm at the time of their maximum size and density, although our ship records would place this nearer 13° or so. This would fit well with Cape Villano at a corresponding Atlantic latitude, 43° N, and a similar sea temperature. I would think the odds, then, are that you saw the *Velella* concentration in or close to April.

You may recall, in the Sherlock Holmes case of 'Silver Blaze' an important point emphasized by the great detective was the curious incident of the dog, who did not bark in the night-time. Equally your single sighting of such a concentration of *Velella* over a period of 25 years of regular trading along the route represents a similar important negative observation, such that we can say that such concentrations are far rarer in the North Atlantic than they are in the Pacific. That, as you observed, is another piece of the jig-saw to fit into my records. Thanks again, and best wishes.

Yours sincerely,
Frank Evans

Sperm Whales

Today [29 June 1996] I have witnessed an amazing sight. One that I have never seen and probably never will see again.

Whilst on passage from Melbourne to Auckland during the early afternoon of the 29th, a dull cloudy day but with little sea and swell, I looked forward to a large area of disturbed water and spray, two points to starboard approximately two miles away.

My first thought was 'Whales' and so started to carry out the usual calls as everyone likes to see a whale when they are around. Then my mind changed to think they were dolphins, there was too much disturbance to be a whale or two.

Then as we got closer and I looked through the binoculars I was stunned at what I saw. It was not dolphins or a whale or two, it was a mass of whales. The sea was thick with them, approximately 50 in all (some of the ship's complement would say more). 'What type of whales we asked ourselves?' Sperm Whales, no mistake. Large, blunt, square heads, forward shooting bushy spout and small bump for a dorsal fin.

But look there to the left of the group, there it was, the unmistakable fin of a 'Killer'. Then we could see them swimming around the mass of Sperm Whales, with their distinctive white markings clearly visible. What a sight.

As we steamed past the group, approximately 200 m down the starboard side, we could see the Sperm Whales were huddled in a circle. Heads to the centre and tails to the outside. They were all sizes. Very large ones, we took to be males, through to small calves. The smaller whales and calves seemed to be towards the inner part of the circle as if they were massing to protect one another. There was also a definite area of undisturbed sea in the centre of the group.

The Sperm Whales were spouting randomly as well as their heads and tails rearing out of the water. During this time the Killer Whales, now thought to number five, kept circling the Sperm Whales.

As our ship passed, neither the Sperm or the Killer Whales seemed to be perturbed by our presence. (I suppose they had more important things on their minds.) The group did not appear to be moving in any direction. However, once the vessel was past and clear of the group, the Sperm Whales seemed to submerge slowly, as one, until they were out of sight. The Killer Whales continued to swim around the area for a short period of time before disappearing.

This letter may read like a story but it was a sight I will never forget and one I only wish we could show to others but I am afraid we cannot. Nobody had a camera and we are all terrible at drawing. Still, I hope my account of the sighting puts some sort of picture in your mind of the amazing sight we saw.

It would be nice to know if what we saw today was a rare sighting of what appears to be a defence manoeuvre by Sperm Whales to protect themselves from predators, and are Killer Whales predators of such?

Received from Mr G. Andrews, 2nd Officer on the *Rangitoto* (a Selected Ship reporting for the New Zealand VOF) and forwarded by Julie Fletcher, Marine Meteorological Officer at Wellington,

Book Reviews

Whales, Dolphins and Porpoises, The visual guide to all the world's cetaceans by Mark Carwardine with illustrations by Martin Camm. 150 mm x 215 mm, 256 pp., softback. ISBN 0 7513 1030 1. Dorling Kindersley Limited, 9 Henrietta Street, London WC2E 8PS. Price: £13.99.

This is one title in a series of natural history guides going under the umbrella of *Eyewitness Handbooks*. Somewhat wary of the 'series' label I half-expected, for some reason, to find a less than adequate book. However, I was quite mistaken and my first impressions were totally inaccurate. For here, in a book which will readily fit on any desk or library shelf, is all the interested beginner or enthusiast needs to make identification of 79 species of cetaceans, although the author acknowledges that this number could increase or decrease in the future as species are reclassified or new ones discovered.

The author and illustrator have between them 30 years of watching whales and have produced a practical field guide based on their experiences. For species which they have not seen, the notes are drawn from a variety of sources including scientific papers, visual aids and the experiences of colleagues and friends. The book is well designed and easy to use; the authoritative text is sufficient rather than expansive but much of the huge amount of information on offer is delivered

visually (as the sub-title indicates) by means of excellent annotated colour illustrations, maps and photographs throughout. Colour-coded bands on the pages for each species give numerous additional details including population, group size, threats, diet and position of the fin but the author makes the point that cetaceans may not behave or look exactly as noted since the most commonly observed features and behaviour form the basis of the information given.

Catering for the boom in tourism relating to whale-watching excursions, some of the information (for example, where to go and what to wear) will be superfluous to the interested mariner who can be at sea for long periods and pass through prime whale-watching areas in the course of his profession. Overall, this is an excellent guide and one well suited to the needs of observers in a marine environment.

J.F.

Coastal Marine Zooplankton, Second Edition: A practical manual for students by C.D. Todd, M.S. Laverack and G.A. Boxshall. 217 mm × 296 mm. viii + 106 pp, *illus*. Published by the Press Syndicate of the University of Cambridge, the Pitt Building, Trumpington Street, Cambridge CB2 1RP. ISBN 0 521 55533 7 (paperback). Price: £15.95.

'Zooplankton' are the (generally) small animals which cannot swim strongly enough to escape from ocean currents. Their distribution is thus largely passive and determined by local water movements. They include the floating larvae of many bottom-living or sessile animals such as worms, starfish, sea urchins and barnacles. This is a manual of black-and-white photographs of a wide range of coastal zooplankton, with the avowed objective of photographing 'live plankters in their natural state (or as close to it as possible)'. It is a revision of the 1991 edition, with the addition of Dr Geoff Boxshall, of the Natural History Museum, to the original two authors Dr Chris Todd and Professor Mike Laverack (now deceased), of St Andrews University. The photographs are, with a few exceptions, excellent, and considerably improved on the first edition. The position of each specimen is carefully defined in its biological group (Phylum, Class, Subclass, Order etc) and information on key features for identification are included. It is specifically aimed at marine biology students at British universities, to help them identify the organisms in plankton samples. As a consequence it assumes much more background knowledge (and specialist zoological jargon) than most seafarers (and some students!) will ever have or want to have. The authors provide a list of suggested technical sources for detailed identification and emphasize that it is "our specific desire that students should not content themselves in identifying an organism by merely fitting an animal to a picture". Unfortunately most seafarers will want, perfectly reasonably, to do exactly that, and will not be concerned with the finer points of species identification. In addition a binocular microscope would be necessary to see in the animals much of the detail shown in the photographs. A further limitation is that it is restricted to a British coastal zooplankton, and most seafarers obtaining plankton in a net, sea-temperature bucket, or engine cooling filters will have samples from oceanic waters and from other latitudes. They will not find in the book the ostracod crustaceans, radiolarians or many other animals which are common in the tropical surface zooplankton. My conclusion is that this is the right book (for U.K. students) in the wrong place (*The Marine Observer*). Paul Horsman's *The Seafarer's Guide to Marine Life* would perhaps be more

appropriate for most readers but has an emphasis on the larger animals and some illustrations are not very clear. I would urge interested readers to find a copy of Sir Alistair Hardy's New Naturalist volume *The Open Sea: the world of plankton* if you possibly can; it is beautifully illustrated and written, and fascinating at every level.

Dr P.J. Herring
Southampton Oceanography Centre

Personalities

RETIREMENT — CAPTAIN B.A. HALL retired in August 1996 after 43 years spent at sea or with shipping connections ashore.

Bruce Anthony Hall was born in Truro on 25 August 1936 and did his pre-sea training at King Edward VII Nautical College, London, in 1952. Serving his apprenticeship with Buries Markes from 1953 until 1956 and, after obtaining his 2nd Mates Certificate, he joined F.C. Strick & Co. in 1958, as Third Officer and stayed with that company until the end of 1960. During that year his first meteorological logbook was compiled, coming from the *Albistan*. Whilst with Strick's he also obtained his 1st Mates Certificate and was promoted to Second Officer before leaving to join Canadian Pacific Steamships, as Third Officer once again. He served with this company from 1961 until the end of 1964, gaining his Masters Certificate and ending this phase of his career as Chief Officer on their cargo vessels before swallowing the deep anchor by taking up employment ashore, the bulk of which was spent at Vickers Shipbuilders in Barrow-in-Furness, as Estimator/Change Notice Controller. Whilst with C.P. Steamships, Captain Hall contributed to weather observing by sending logbooks from the *Beaverford*, *Beaverglen* and *Empress of Britain*.

In 1977 his feet were once more itchy for the sea and he joined the Department of Agriculture and Fisheries (Scotland) as 2nd Officer, sending 14 logbooks from the *Jura* between 1980 and 1987, with his career culminating as Master of f.p.v. *Norna* in 1996, his name having appeared in a further 24 books. Captain Hall says that there have been many 'occasions' during his career but the most memorable was in 1985 "when I climbed Rockall to visit Mr Tom Maclean, who was camping out on the island to claim it for British sovereignty, where I spent about an hour with him and enjoyed a cup of tea before leaving and being ignobly swept into the sea after my descent. Fortunately, the standby boat quickly rescued me and, apart from a bruised shin bone, I was none the worse for wear although my wife was to read about the event in the newspaper before I had the chance to speak to her. I have thoroughly enjoyed being part of the team over the years and give my best wishes to Captain Norwell who I grew to know well during his tenure of the Gourock office."

As for retirement plans, Captain and Mrs Hall hope to travel quite a bit interspersed with visits to two of their three daughters, one of whom lives on a farm in Wales, and the other in the north of Italy, while their third daughter presently attends Birmingham University.

During his 19 years of involvement with weather observing, Captain Hall was nominated for an Excellent Award on six occasions between 1983 and 1993. We thank him for all his contributions and wish him a long and happy retirement.

RETIREMENT — CAPTAIN M.A. HILL retired on 18 July 1996, so ending a career spent mostly with one company.

Michael Hill was born in Huddersfield on 18 October 1935 and did his pre-sea training at South Shields Marine School before joining Chapman and Wilan as an apprentice in December, 1951. After a four-year apprenticeship he obtained his 2nd Mates Certificate and joined the New Zealand Shipping Company in July 1956, making his first weather observations from the *Papanui* and being named in five meteorological logbooks from that ship, the last being received in 1958. These were followed by logs from the *Paparoa* and *Middlesex* between 1959 and 1961.

He obtained his Masters Certificate in January 1962 and was promoted Chief Officer that year; he then served on all types of vessels within the company, including the *Otaki*, *Nottingham*, *Pipiriki* and *Haparangi*, and was serving as Chief Officer on the last of the passenger ships, the *Rangitoto*, when it was handed over to C.Y. Tung, in 1968. His observing career continued with the New Zealand Shipping Company until the merger of the P&O Group companies in 1972 when Captain Hill joined the General Cargo Division and was promoted Master of the *Strathaddie* (ex-*Farsistan*) in June 1975. He served on ships of Lauritzen Peninsular Reefers from 1976 to 1982, namely the *Wild Avocet*, *Wild Curlew* and *Wild Fulmar*, followed by a spell on the *Vendee* and *Vosges* trading between Marseilles and Ashdod. After this he obtained his 'Oil' endorsement and served on OBOs.

There was a spell of shore employment in Head Office during 1984/85, where he was doing Market Research and was Contracts Manager before joining the Gas Fleet to serve on LPG carriers *Garbeta*, *Gazana* and *Galconda* until the fleet was sold to Kvaerners in 1987. Captain Hill then transferred to P&O Bulk Division and served on Cape sized bulk ships including *Snowdon*, *Vine*, *Zetland*, *Ullswater* and *Pytchley* until retirement, his final command being the *Eridge*.

Captain Hill says, "Having moved further into the country (Weardale) three years ago, I have plenty to occupy myself in the garden, and we are very fortunate in that we have numerous country walks around us. Looking back, there have been many changes in the industry and I feel that I have been very fortunate to have been able to serve the major proportion of my career, 40 years, with the same company albeit in various guises, and for the many friends and colleagues I sailed with over the years, many of whom still keep in touch".

The National Meteorological Archive has 78 logbooks bearing Captain Hill's name, spanning an observing career of 34 years during which he was nominated to receive an Excellent Award on six occasions. We extend our best wishes for a happy retirement and thank him for all his valuable work in weather observing.

RETIREMENT — CAPTAIN D.R. MCWHAN retired from his post of Port Met. Officer for south-west England in April this year after 26 years based at Southampton and a varied sea-going career prior to that.

Douglas Ross McWhan was born in December 1934, and took his pre-sea training at Glasgow Technical College in 1950 before 'serving his time' with Donaldson Line. When that company's west coast U.S.A. and Canada trade and ships were sold to Blue Star Line in 1954, he transferred to the latter company, all between 1951 and 1955. Then, after obtaining his successive Certificates of Competency, he became an experienced voluntary weather observer on such fine ships as *Empire Star* and *Napier Star*. On passing his Master's Certificate in

November 1960 he joined The Met. Office and sailed in o.w.s. *Weather Watcher*, a 'Flower' class corvette, in January 1961, being promoted through the ranks via *Weather Monitor*, *Adviser* and *Reporter* (all 'Castle' class corvettes) to become Master of the Weather Ships in 1967.

In April 1968, Captain McWhan came ashore on appointment to Bracknell Headquarters to help start up the new Ship Routeing Service with Captain Gordon Mackie, and remained in that sphere of duty until 1971 when he was appointed Port Met. Officer at Southampton, then based within Southampton Weather Centre. The current Port Met. Office, housed within the Mounbatten Business Centre, in Southampton, became operational in August 1992 and was Captain McWhan's final relocation before retirement. He lives with his wife Sally near Southampton and has three sons and four grand-children. In the future he is looking forward to spending more time sailing in Greek waters, on his part-owned yacht.

Notices to Marine Observers

THE MARINE OBSERVERS' LOG

The Marine Observers' Log together with the recently introduced Miscellany, are the sections of the journal where we record the many types of phenomena encountered by observers at sea, and we like to include as many as possible in each issue of *The Marine Observer*. Contributors to these parts of the journal may be interested to know that once a ship's logbook has been received in our office at Bracknell, it starts a lengthy journey away from the branch before finally returning many weeks later, ultimately to find permanent residence in the National Meteorological Archive, at Bracknell.

In order to ensure that items of interest are available for publication when needed, the Additional Remarks pages are photocopied and stored for later use before the logbook itself goes on its way. When the time comes to consider reports for publication there are often occasions when useful snippets of information are not available on the copies, such as the voyage during which the report was made, or the observer's name, or the date and time of the occurrence. A full picture of the events described is sometimes difficult to produce therefore, especially if the logbook is not available for cross-reference purposes.

To help readers stay fully in the picture, we would be grateful if the following points could be mentioned in reports, — it could make the difference between an interesting report and an outstanding one:

1. Ship's name
2. Voyage during which the observation was made, and position of ship at the relevant time.
3. Master's name
4. Observing officers' names and ranks.
5. Date and time of the observation.
6. Weather conditions at the time.

Additionally, please be sure to make a note of photographers' names where necessary and, in the event that a photograph is sent without a full report, please include the above details on a separate sheet of paper.

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