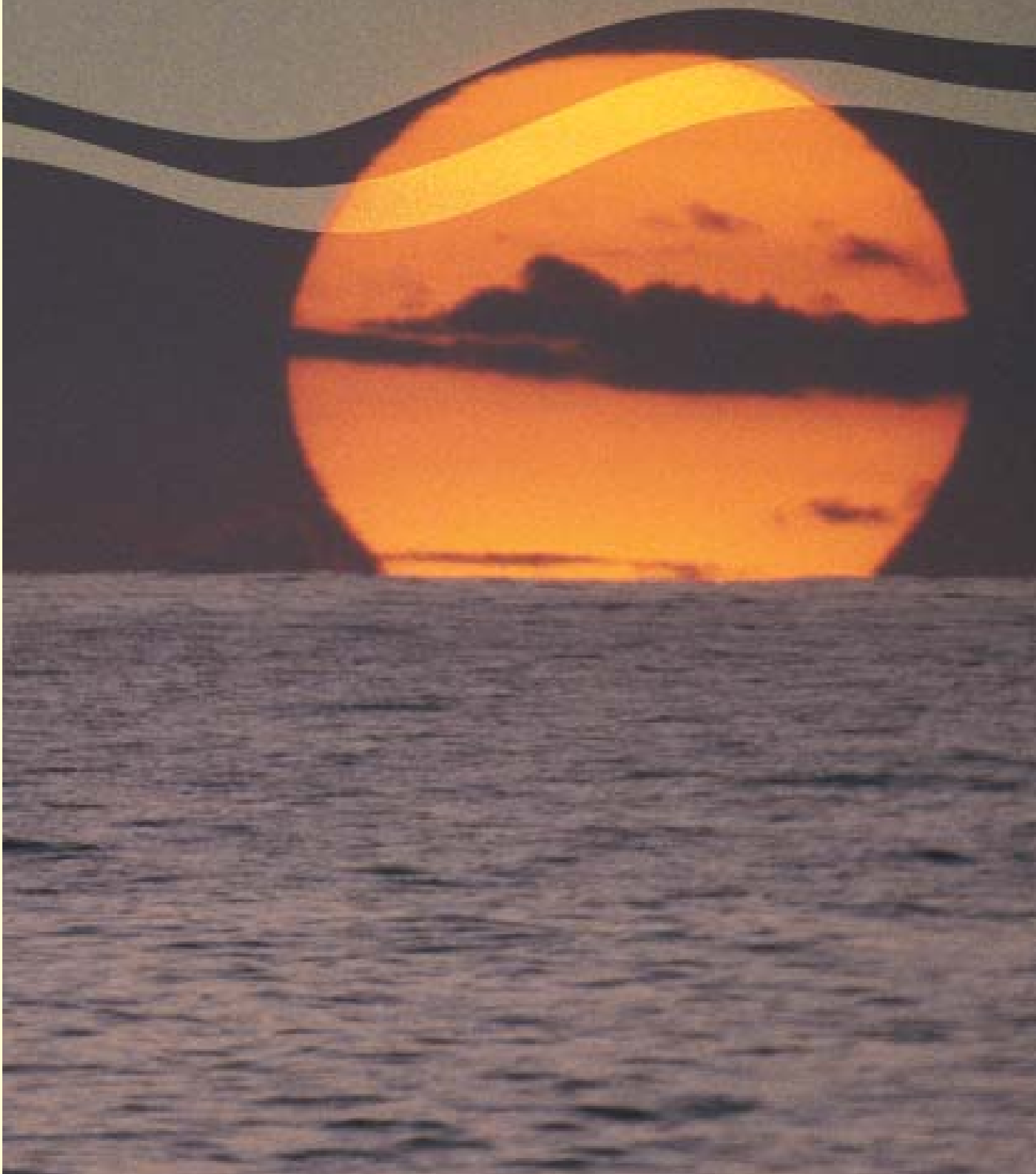
# The Marine Observer



## A quarterly journal

*October 2002*

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# The Marine Observer

Vol. 72 No. 358 October 2002

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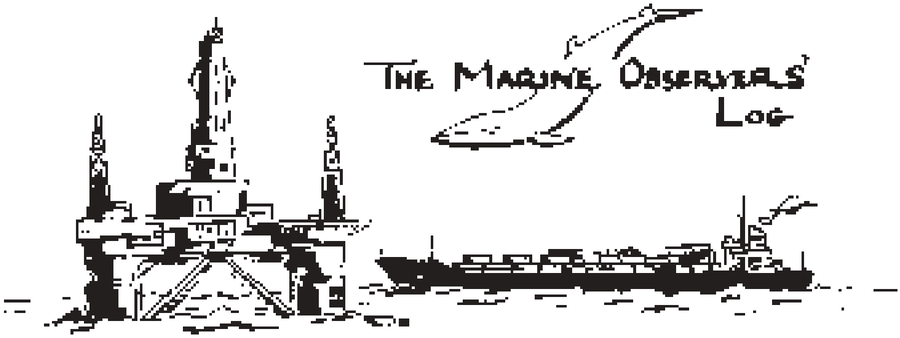
**LONDON: THE STATIONERY OFFICE**




This section of *The Marine Observer* comprises reports of interest and scientific value which have been contributed by individual observers, received in ships' meteorological logbooks, or downloaded from TurboWin records. All reports are welcome in the Marine Networks section and, wherever possible, they are forwarded to relevant sources of expertise for comment and analysis.

All temperatures in this publication are given in degrees Celsius unless otherwise stated, and the barometric pressure is given in millibars (mb) although the standard international unit is the hectopascal (hPa) which is the numerical equivalent. Where mentioned, 'mile' and 'miles' are to be taken as the nautical mile.

**Thunderstorm**
North Atlantic Ocean
*26 December 2001*

- **m.v. *Marienborg***
- **Captain S. Davison**
- **Basse Terre to Sete**
- **Observers: Captain Davison, K.F. Macdonald (Chief Officer) and R. Buyo (AB)**

For the previous two days the vessel had been experiencing strong winds up to force 6 accompanied by large swells from the north-west, all associated with two depressions to the north.

During the 4–8 watch on the evening of the 26th a thunderstorm approached the vessel from a general south-westerly direction, arriving at 1830 UTC. Typical 'thunderstorm weather' was experienced. The sky was completely overcast owing to the cumulonimbus cloud (with anvil) and, during daylight, mamma cloud had also been seen. Stratus and cumulus fractus were also present — the cloud base being sometimes as low as 200 feet.

Much to the disgust of the Second Officer — who was outside attending to the bridge windscreen wiper which had been damaged in the winds of the previous day — heavy rain showers were present at the start of the thunderstorm, although they eased off as time passed. Thunder was heard frequently, sometimes very close to the vessel, while intense lightning of both sheet and forked varieties was experienced very close to the vessel at times. This did nothing for the mood of the Second Officer who was still outside and starting to wonder how good a lightning conductor he would make.

By 2200 lightning was still visible all around the vessel although thunder was not heard, and the sky was still overcast but the rain showers had ceased. However, the cloud was thinning and allowed the moon to shine through. The ship's position at the start of the thunderstorm was 26° 43.3′ N, 32° 03.6′ W.

## Killer whale
South Atlantic Ocean
*17 December 2001*

- **m.v. *British Hawk***
- **Captain J. Harris**
- **Long Beach to Caleta Cordova**
- **Observers: M. Pratt (3rd Officer) and D.M. Sharp (Chief Officer)**

Whilst west of the Falkland Islands in moderate seas, some large splashes were noted at a distance of about 500 m on the port beam at 1325 UTC. At first they were thought to have been caused by a school of dolphins leaping, but closer inspection revealed that there was only a single large whale with a tall dorsal fin. The whale was black in colour but had white undersides.

After consulting *Whales, Dolphins and Porpoises* by Mark Carwardine, it was identified as a killer whale (*Orcinus orca*) and, as the book described, was in fact breaching. The whale was about six metres long and was observed to breach five times, with an interval of 10 seconds between each, before moving off towards the south-west. The ship's position at the time was 52° 42.3′ S, 63° 35.3′ W and was on a heading of 349° at 15 knots.

**In brief:** Whilst crossing the Arabian Sea on 19 October 2001, the *British Pioneer* was visited by what was thought, by Chief Officer C. Henrickson, to be an Eurasian jay. Possibly an Indian subspecies, it was identified by the unmistakable bright-blue flashes across its wings, and its harsh cry. The weather was overcast at the time with a N'ly wind. On the 20th, when in position 21° 21.5′ N, 61° 43.6′ E, two grey herons were seen approaching the vessel from astern. They spent 20 minutes circling the maindeck, making several attempts to land but failing on each occasion. Eventually they departed towards the north-west. The herons were identified by their slow wing beats, large broad wings, their heads tucked back into the 'shoulders', and their trailing legs.

## Dolphins
North Atlantic Ocean
*17 November 2001*

- **m.v. *European Shearwater***
- **Captain B. Miller**
- **Dunkirk to Barrow-in-Furness**
- **Observers: M.D. Brown (3rd Officer), J. Gaskin (Chief Officer) and R. Bickerton (Cadet)**

Around 10–12 dolphins were sighted on the port side of the vessel at 0558 UTC; they appeared to be of the bottlenosed variety and approached to a distance of roughly 5 m. They seemed to be playing in the light reflected from one of the portholes, and stayed for about 10 minutes. The 8–12 watchkeeper then reported that he had seen two dolphins at 2151 the previous evening doing the same thing.

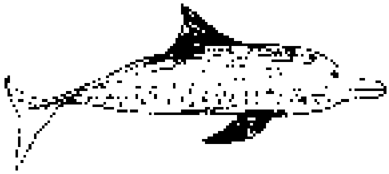
At the time of the second sighting, the vessel had recently passed St David's Head and was on a heading of 021° at 8.5 knots in position 51° 59′ N, 05° 41° W. The skies were overcast and there was an ENE'ly wind of force 4, while the sea temperature was 13.4°.

**In brief:** At midnight on 21/22 October 2001 the 'Northern Lights' were observed from the *Queen Elizabeth 2* in position 50° 11.2′ N, 02° 47.7′ W whilst on a heading of 074°. The display took the form of a red sheet or curtain, and was witnessed by First Officer R. Hone and Second Officer K. Kelleher.

**Dolphins**
South Atlantic Ocean
*5 December 2001*

- **m.v. *Copiapo***
- **Captain T. Elahi**
- **Jeddah to Paranagua**
- **Observer: B.C. Sapukotana (3rd Officer)**

At 1300 UTC, when 120 miles off Paranagua, a school of about 25 dolphins visited the vessel where they seemed to enjoy the wave activity in the bow area. They were between 2 m and 2.5 m long, but the difference between these dolphins and others that had been seen on other occasions was that they had small spots all over their bellies, as indicated in the drawing.



The ship's position at the time was 25° 54.3′ S, 46° 03.5′ W, and the wind was NE'ly, force 4.

**In brief:** At 2335 UTC on 20 October 2001 Second Officer A. Doolan observed bioluminescence stretching back 150–200 m in the wake astern of the *British Pioneer*. It was also seen well ahead and abeam to port and starboard, so was not caused by the ship's motion. The ship's position was 24° 39.7′ N, 57° 46.5′ E at which point the sea temperature was 29°.

*Editor's note.* This report was forwarded to Professor Peter J. Herring, at the Southampton Oceanography Centre, who said he believed the ship had passed through a large patch of luminous dinoflagellates. These can be stimulated by other marine organisms, surface waves and turbulence (including that created by ships).

**In brief:** On 19 November 2001 at 0820 UTC a large school of dolphins, estimated by Captain C. Grahame to number in excess of 200, was encountered by the *Storrington*. Groups and individuals arrived at speed on both bows and rode the bow wave for about 10 minutes. The ship's position was 52° 45′ N, 10° 05′ W and its heading was 341° at 11 knots.

**Dolphins**
North Atlantic Ocean
*19 November 2001*

- **m.v. *Berlin Express***
- **Captain I.M. Hill**
- **Rotterdam to Fremantle**
- **Observers: Captain Hill and F.H. Munro (3rd Officer)**

At 0930 UTC whilst the vessel was passing through a large area of calm water on a heading of 186° at 20 knots, the observers noted three patches of disturbed water on the starboard bow at a distance of roughly five cables. Upon further investigation through binoculars the largest patch was seen to contain a school of dolphins, numbering well in excess of 50.

Whilst watching the dolphins it became apparent that the smaller areas of disturbed water contained large amounts of fish. As all three groups passed in the opposite direction down the starboard side at six cables, the observers were treated to a fine display of dolphin 'gymnastics'. Later, the dolphins were tentatively identified as being of the bottlenose species. The ship's position at the time was 23° 55′ N, 17° 18′ W.

**Whales**
Indian Ocean
*15 October 2001*

- **m.v. *Linares***
- **Captain S.P. Harris**
- **Coastal passage off South Africa**
- **Observers: Captain Harris and members of ship's company**

A single unidentified whale was observed at 0628 UTC. The vessel was passing Bird Island at the time when the whale was spotted about half a mile away on the starboard bow.

It was light grey in colour, roughly 3–4 m long and travelled in a southerly direction while blowing at 10-second intervals. The blows were approximately 2 m high. When passing abeam the whale breached, raising itself about one metre and turning in the air.

Later, at 0940 when the vessel was in position 33° 38′ S, 27° 00.2′ E and passing Port Alfred, two more whales were seen at a distance of half a mile on the port beam. One was light grey like the whale seen earlier, and was blowing to a height of one metre every 10 seconds, whereas the other was positioned 'head down' to reveal what seemed to be a white stripe down the centre of its tail. This whale repeatedly slapped the surface of the calm sea with its tail.

**Dolphins**
North Pacific Ocean
*7 November 2001*

- **m.v. *Gosport Maersk***
- **Captain B. Jakobsen**
- **Long Beach to Oakland**
- **Observers: P. Handley (Chief Officer) and G. MacKinnon (Cadet)**

At 1830 UTC while the vessel was on a heading of 285° in the Santa Barbara Channel, close to ODAS buoy 46053, a large pod of dolphins was observed one mile ahead. They were jumping and surfing continuously as they travelled in a general northerly direction.

As the vessel approached the dolphins, they changed direction and came towards it, and the observers were then able to watch them swimming along on both sides of the vessel and in the bow wave, arranging themselves in long lines. The dolphins were up to two or three metres long with dark-grey or black backs and white bellies.

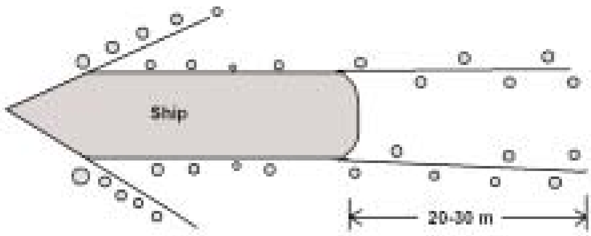
The sea was very calm, almost glassy, and there was a west-north-westerly swell of two metres; these conditions allowing the dolphins to be observed to a depth of two or three metres underwater. The dolphin activity lasted for about four minutes, and their numbers were estimated to be about 6,000. Many pelicans were also seen fishing amongst them at the surface. Dolphins had been seen earlier in the morning along with a group of about 20 seals, but they had not appeared in such large numbers.

At the time of the observation the sky was very hazy, the air temperature was 15.5° while the sea temperature was 16°.

**Bioluminescence**
Indian Ocean
*13 December 2001*

- **m.v. *British Adventure***
- **Captain P. Anderson**
- **Balikpapan to Mumbai**
- **Observers: J. Hassall (3rd Officer) and members of ship's company**

At 1750 UTC whilst in position 07° 51′ N, 77° 01′ E, bioluminescence was noted on both sides of the vessel as well as appearing in the wake and bow wave. As indicated in the sketch it took the form of blobs or patches, estimated to be 20–30 cm across, which were a vivid bright-green colour.




Some of the larger patches extended well astern in the wake. The ship's course and speed at the time of observation were 308° at 12 knots, whilst the wind was NNE'ly, force 2 producing a slight sea. The sea temperature was 27°.

*Editor's note.* Professor Peter Herring said of this report:

"The most likely cause of this observation was an encounter with a large group of luminous jellyfish. When just below the surface and stimulated by a bow wave or wake, they will give a long, bright, usually green flash which is diffused by the water to give a roughly circular patch of light whose size depends on both the size of the source and the depth."

**In brief:** A school of approximately 50 common dolphins approached the *British Skill* in position 11° 08.6′ S, 121° 01.4′ E on 19 November 2001. Third Officers M. Newton and M. Hagan noted that the dolphins had been on a heading of 240° but altered their course to investigate the ship (heading 286°) for a few minutes before resuming their original course.

**Spider**
Red Sea
*28 October 2001*

- **m.v. *Newport Bay***
- **Captain L.J. Fletcher**
- **Colombo to Suez**
- **Observers: T. Bebbington (3rd Officer), C. Macleod (Chief Officer) and ship's company**

A large spider was discovered out on deck at 1000 UTC. It was thought to have come aboard in Colombo a few days previously, and was now backed up to one of the container stools in a defensive posture. It was approximately 120 mm across with the body being 10 mm across and 20 mm long. Its head was rounded and there was a cluster of eyes at the foremost part, behind which was a longer thinner abdomen. It was light brown in colour with distinctive black markings on its head and legs. (See photograph on page 177.)

The spider also possessed what appeared to be fangs about 2–3 mm long which were kept sheathed unless provoked — but no-one was going to get close enough for accurate measurement!! It would also jump/run forwards from its defensive position and raise itself up on its legs if provoked in any way. Sadly it died a couple of days later, probably because of the falling temperature. The ship's position when it was first found was 14° 34.6′ N, 42° 07.3′ E.

*Editor's note.* This report was passed to Dr Andrew Whittington, of the National Museums for Scotland. Although spiders are not his speciality, he was able to offer some assistance with identifying the spider, suggesting that it was possibly of the family Philodromidae, and that the specimen was perhaps *Philodromus*.

**In brief:** The Leonid meteor shower was observed from the *British Vigilance* on 18 November 2001, from 2050–2055 UTC in position 15° 20′ N, 67° 05′ E. During this time Second Officer N. Haysom counted 14 meteors in the sky to the north-west, many bright enough to be reflected on the sea. They lasted for approximately three seconds before disappearing, but left bright green trails. *

**In brief:** What was thought to be part of the Leonid meteor shower was observed from the *Quorn* at 2142 UTC on 12 December 2001 in position 30° 00′ S, 92° 32′ E. A bright 'falling star' crossed the sky extremely fast from north-west to south-east, disappearing behind cloud about 20° above the south-eastern horizon. The duration of the sighting was three to five minutes, and the observers were Chief Officer L.J.A. Vaz and B.V. Tandel (AB).

**In brief:** On 2 November 2001 at 1710 UTC a bright green light was noted three points on the starboard bow at an elevation of approximately 30° above the horizon. It crossed the sky from starboard to port, gradually changing in colour to dull orange as it descended and burnt out before reaching the horizon. The object resembled a flare but was travelling quite fast. Third Officer K. McAlea and Seaman J. Dale, who watched its passage on board the R.R.S. *Charles Darwin*, decided that it was either a meteor or a falling satellite. The object was sighted from position 00° 06.7′ S, 58° 00′ E.

## Meteors

South Pacific Ocean

*18 November 2001*

- **m.v. *Teignbank***
- **Captain J.J. Millar**
- **Auckland to Noumea**
- **Observer: G.R. Phillips (Cadet)**

At 1358 UTC whilst the vessel was in position 34° 03.5′ S, 173° 51.6′ E on a heading of 330°, a meteor was sighted in the northern sky approximately 20° above the horizon. Its duration was about two seconds but it left a long, wide, yellow streak in the sky. The meteor had moved in a westerly direction while its path of travel was almost parallel with the horizon.

Another meteor was observed about 30 minutes later, bearing 350° at the same altitude as the first one. This was much the same as the earlier sighting although the meteor did not last as long. At 1452 numerous small meteors were seen in the location where the two larger ones had appeared, and all followed the same path as them.

* See page 190 of this edition for more about the Leonid meteor shower.

# E-mailed reports from UK observing ships

**Readers are reminded that additional observations can be e-mailed direct to the Editor at: obsmar@metoffice.com**

**m.v.** ***Resolution Bay***. Observers: J.J. Southam (3rd Officer) and D.M. Pettimore (Supernumerary)

On 19 November 2001 at 0540 UTC, whilst on passage from Cape Town to Fremantle, as many as seven albatrosses at one time were circling the vessel. On closer inspection, one of them appeared to be an Amsterdam albatross — apparently a rare species. It was noticeable because it had a dark body and dark upper surfaces to its wings, whereas the undersides appeared to be white but with a dark collar and wing-tips. The body length was less than that of a royal albatross, and the wing-span was also shorter by comparison. The vessel was in position 39° 58.2′ S, 49° 33.1′ E about 1,350 miles west-by-south of Amsterdam Island (where these birds originate).

*Editor's note.* Little is known of this species but *Seabirds, an identification guide* by Peter Harrison, says of it: "Recently discovered breeding on Amsterdam Island...pelagic range unknown. Resembles juvenile/immature Wandering Albatross, but averages smaller than that species with dark cutting edge and tip to both mandibles. From above looks much like juvenile/immature Wanderer, but from below the underwing has a more extensive brown mark at base of leading edge and (perhaps) a slightly wider dark trailing edge...bill colour is the only reliable method for separation..."

**m.v.** ***Resolution Bay***. Observers: J.J. Southam (3rd Officer) and A.J. McMahon (2nd OF)

On 19 December 2001 when the reefer boxes were being checked, a seahorse (shown on page 176) was discovered. Measuring approximately 12 cm long and 5 cm wide it appeared to be slightly damaged and was therefore thought to have been dropped by a bird. The seahorse was found in position 47° 43.4′ S, 168° 32.5′ W when the vessel was on passage from Port Chalmers to Lisbon.

*Editor's note.* This — to the best of our knowledge — is the only seahorse report that has ever appeared in *The Marine Observer*, proving the point that there is a 'first time' for everything. Dr Frank Evans, of the Dove Marine Laboratory, said:

"The only seahorse of New Zealand waters and indeed of southern Australian waters is *Hippocampus abdominalis*. It is a quite large creature, occasionally up to 25 cm long. and is found from low water down to a depth of only about 50 m, so it had clearly been aboard the ship for some time. The species is usually found associated with seaweed beds or among colourful sponges and hydroids and it seems likely, as suggested, that this one had been picked up by a bird some time earlier and dropped on board."

**m.v.** ***City of Cape Town.*** Observers: Captain G. Peaston, J. Geddes (2nd Officer), D. Old and P. Crawford (Cadets)

On 17 June 2002, whilst the vessel was on a passage from Durban to Port Elizabeth on a heading of 235° at 20.5 knots, two schools of dolphins, each consisting of approximately 200 to 300 individuals, where observed. They were crossing the bow from starboard to port. Approximately 2–2.5 m in length, they were dark-grey and cream in colour with dark-grey fins, nose and tail, and were identified as common dolphins (*Delphinus delphis*).

The area that they covered on the sea surface was large enough to produce a target on the ship's radar so, by plotting them, they were found to be heading due south at 9 knots. The vessel's positions were 31° 20.5′ S, 30° 08.8′ W and 31° 30.6′ S, 29° 55.6′ W at 1330 UTC and 1400 UTC, respectively.

**R.R.S. *James Clark Ross.*** Observers: R. Paterson (Chief Officer), C. Griffiths, (Dunstaffnage Marine Laboratory) and members of ship's company

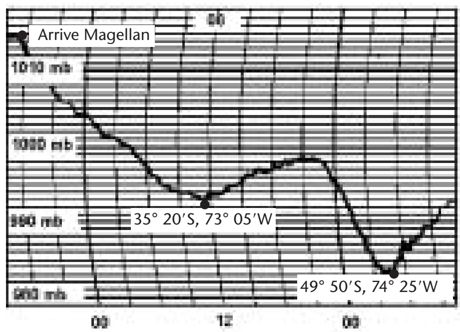
At 2120 UTC on 21 June 2002 the ship was lying quietly on station (73° 25.7′ N, 07° 42.4′ E) in the Norwegian Sea using dynamic positioning, when a large number of dolphins appeared over a wide area. Numbers were difficult to estimate as there were several hundred individuals, many of which approached close to the ship. The consensus among the scientific party, using *Whales, Dolphins and Porpoises* by Mark Carwardine, was that they were white-beaked dolphins. The white body stripe was easily visible when the dolphins were a few metres underwater. Their surface behaviour was fairly acrobatic.

The dolphins were seen over a period of approximately 30 minutes. Once the ship departed the station for Svalbard a number accompanied it for a few minutes only, then left as the ship gathered speed to 12 knots.

This event was witnessed by several members of the ship's complement and the large scientific party from Dunstaffnage Marine Laboratory and the University of East Anglia. The sky was overcast at the time, and there was a NW'ly wind of force 3 or 4 while the sea temperature was 7.2°.

**m.v. *Cheshire.*** Observers: Captain F.R.F. Martin, N.A.E. Sunderland (Cadet), D. Jelovcic (3rd Officer) and G. Arora (2nd Officer)

On 7 August 2002, whilst on passage from Bahia Blanca to Mejillones, the vessel was transitting the pilotage waters of the Straits of Magellan and Patagonia Channels when the barograph indicated a rapid decrease in pressure (see barogram). This decrease continued for some considerable time and the indications were that the conditions in the South Pacific Ocean were rapidly deteriorating.




At the point of the lowest barometric pressure, the winds in the channels had increased to around storm force 11, and the vessel had the choice of going into the Pacific to resume passage, or go to anchorage in the shelter of the channel and transit the narrows in the morning.

The decision was made to go to anchor. This proved to be a wise move as the conditions in the Pacific were bad that night. The next morning the ship heaved anchor and transited the narrows in daylight with the flood tide.  Some hours later the ship resumed passage in the Pacific with the barometric pressure back to normal! The observers found it very interesting to see such a rapid drop in pressure and were thankful that the ship was in sheltered waters.

**m.v. *New Zealand Pacific.*** Observers: Captain A.E. Spencer, D.C. Winter (1st Officer), A. Alieskanderari (2nd Officer), A.G. Wilson (3rd Officer), A. Osmialowski (Cadet) and members of ship's company.

Between 0330 and 1430 UTC on 2 August 2002, when no daylight remained, the 1st Officer observed glowing green objects on or just below the water surface, passing down the side of the vessel and visible to a distance of about 200 m. The colour was similar to bioluminescence, but the objects (creatures) appeared to be substantial in size and stationary in the water, with no apparent alteration of colour and shape, the green glow also remaining steady.

The estimation of their size varied from 20–45 cm in length, with a width of 8–20 cm. They were shaped like squid, but it was not possible to determine any detail. The average frequency of sightings was approximately 15 per minute.

The phenomena continued through the night, until nautical twilight the next morning. Although some of the observers have been regular visitors to these waters, none had previously encountered this phenomenon. No reference books were available on board, but it was suggested that these may have indeed been squid (do they ever glow in the dark?).

The ship's position at the start of the sighting was 47° 00′ S, 155° 21′ W, while the course was 090° making an average speed of 21.1 knots.

*Editor's note 1.* Professor Peter Herring said of this sighting:

"The objects were probably luminescing Pyrosomas. They are colonial seasquirts and have a knobbly cylindrical shape, certainly reaching the sizes estimated in the report. Pyrosomas do not move quickly and appear relatively immobile in the water (squids would flash rather than glow and would move very rapidly in the water in response to the ship's passage). They are one of the few oceanic animals that glow steadily and they have a greenish-blue light. They 'switch on' their light in response to a mechanical stimulus or to illumination from another light.

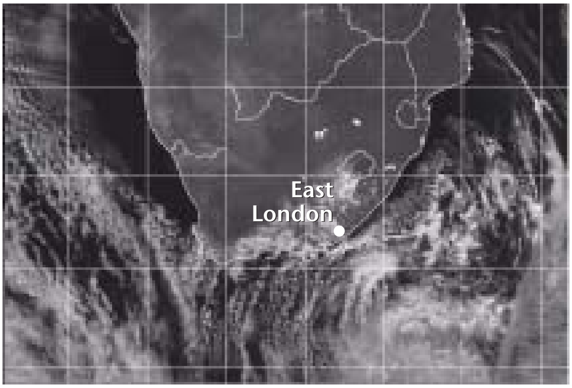
"They often appear locally in large numbers and at night migrate to the surface from deeper waters. There is one very large (and much less obviously cylindrical) species which is usually sighted singly and may grow to several metres in length but most sightings — like this one — are of groups of specimens of smaller species."

*Editor's note 2.* The *New Zealand Pacific* is a member of New Zealand's Voluntary Observing Fleet.

# Forecasters everywhere need ships' reports

**Ian T. Hunter (South African Weather Service)**

The satellite image below was captured by the EUMETSAT geostationary satellite Meteosat VII at 1200 UTC on 7 May 2002. It shows a cloud mass, centred approximately 150 miles south-east of East London, that represents a deep secondary vortex which developed rapidly overnight on the eastern Agulhas Bank. The primary vortex is clearly visible further offshore with its frontal band spiralling in from the southern Moçambique Channel.




## The problem

Of all the numerical models available to the South African Weather Service not one accurately analysed the secondary system. As a result it was expected that both winds and waves would be under-forecast off South Africa's east coast. But how to quantify this?

## The answer

Fortunately the *Sealand Voyager* (KHRK) heading south off the Transkei coast, provided invaluable observations at both 0600 and 1200 UTC. The 0600 observation (including SW'ly winds of 55 knots) helped analysts to gauge the depth of the new low. By 1200 the ship was estimating the wind wave component at 10 m with the swell at 9m. (An 'abnormal wave' warning for the Agulhas Current had been issued the previous day and was still in force.)

## Some comments and a heartfelt plea

- KHRK was the only ship observation all day between Durban and Cape Town (a distance of some 800 miles). Although this is a major sea route this scarcity of ship observations around the South African coast is by no means unusual. In terms of tanker traffic alone, the Cape Sea Route carries over 10 per cent of the world's sea-borne oil trade.
- Land-based winds, particularly around this coast in winter are notoriously non-representative of conditions offshore.
- Satellites are not the 'be all and end all'. Cloud imagery is not always easy to quantify and satellite-derived winds are by no means always available.

Please remember that forecasters need your weather reports. The above example shows that data from Voluntary Observing Ships can still have a marked impact on the accuracy of marine predictions — and thus on maritime safety.

# When a ship's message was just the tip of the iceberg

In accordance with the requirements of *SOLAS* Chapter V ships must report navigational hazards to competent authorities. Of course icebergs are included under this heading, and the sighting of them is of great importance for ships navigating in their vicinity. Records of sightings are also of value for research into the annual extent of ice. The following example illustrates how a single ship's sighting of a berg can contribute to improved accuracy of information disseminated to the marine community.

## An iceberg in June in the North Atlantic Ocean

On 4 June 2002 the *P&O Nedlloyd Marseille*, under the command of Captain K. Campbell, was crossing the North Atlantic on passage from Hamburg to Charleston when an iceberg was spotted by Third Officer J. Sturdy and Chief Officer A. Lewington. The time was 2200 UTC, and the berg was sighted both visually and by radar. It was a medium-sized tabular iceberg which, when viewed from the east, seemed to be shaped rather like a ship. A message concerning the sighting was sent to the US Coast Guard, informing them that the position of the berg was 42° 43.5′ N, 49° 37.4′ W.

Following receipt of this message the International Ice Patrol issued a Safety Broadcast Notice to mariners, cautioning ships in the relevant area of the Grand Banks that an iceberg had been reported outside the limits of all known ice. A request for further reports was also made.

## International Ice Patrol

The US Coast Guard International Ice Patrol acknowledged the *P&O Nedlloyd Marseille*'s report with this message:

"Thank you for your excellent and very detailed ice report of 04 June 02. This report updated our southern-most Limit of All Known Ice. Your detailed description provided very valuable information that was very useful to our computer drift and deterioration model. This information was extremely valuable to our efforts to provide the most accurate products possible.

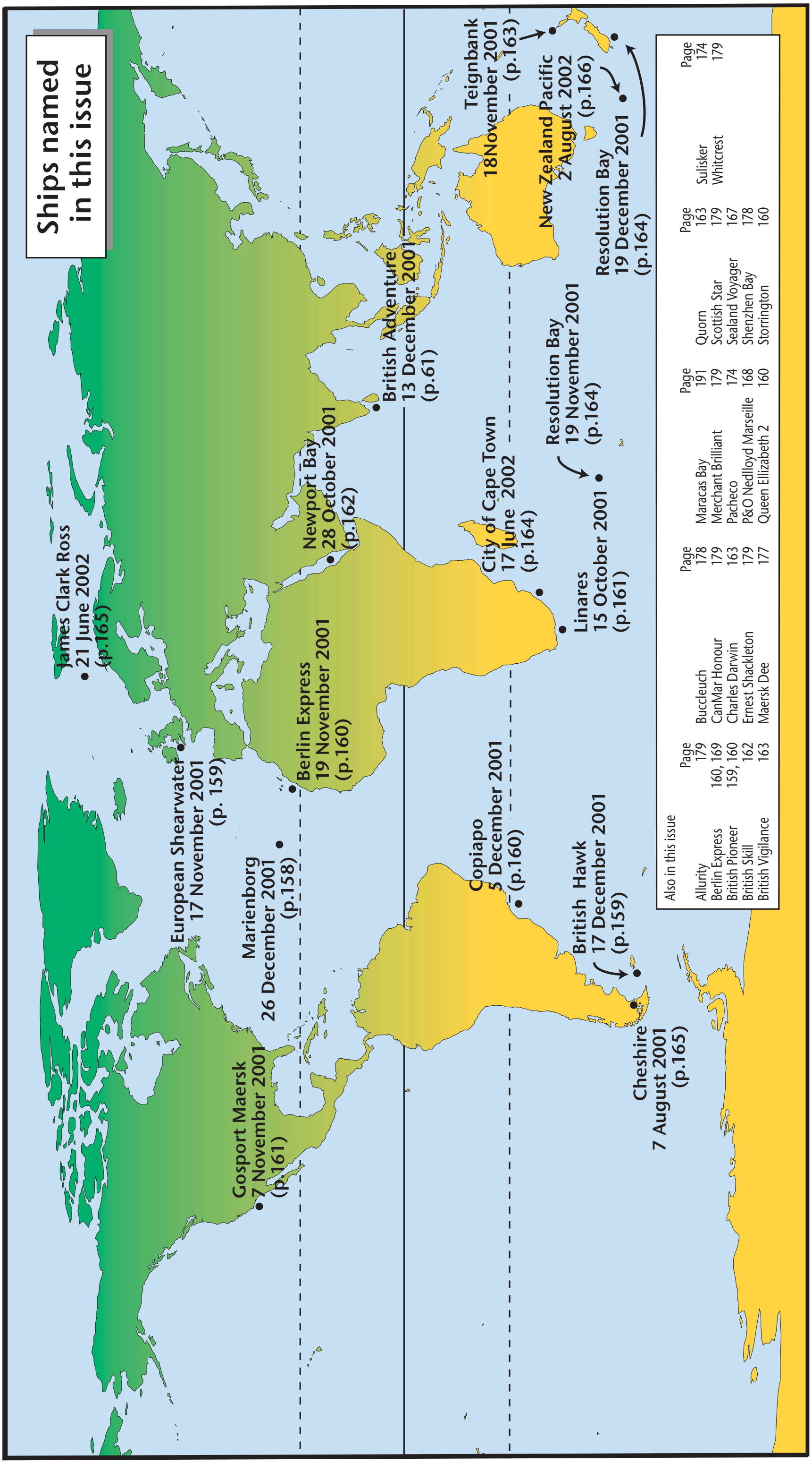
"While the International Ice Patrol gathers iceberg, weather and oceanography data from a host of sources, no information is more valuable than the reports received from the dedicated professional mariners transitting the North Atlantic. Your timely, accurate reports are essential to our ability to provide the most precise iceberg safety information possible. We genuinely appreciate your efforts!

"Please continue to make ice and weather reports, every six hours, when operating within latitudes 40° N and 52° N and longitudes 39° W and 57° W. These reports can be sent to COMINTICEPAT via INMARSAT–Code 42 or through any US or Canadian Coast Guard Station."

## Conclusion

From the above example it can be seen how officers on board Voluntary Observing Ships can and do make a significant contribution to the accuracy of marine information.*

* See also 'Forecasters everywhere need ships' reports' on page 167 of this edition.



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Marienborg 26 December 2001 (p.158)
Gosport Maersk 7 November 2001 (p.161)
Berlin Express 19 November 2001 (p.160)
Newport Bay 28 October 2001 (p.162)
British Adventure 13 December 2001 (p.61)
Teignbank 18November 2001 (p.163)
New Zealand Pacific 2 August 2002 (p.166)
Resolution Bay 19 December 2001 (p.164)
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# Berlin Express 'watches the birdie'

Whilst off the west African coast on 20 November 2001, observers on the *Berlin Express* were joined by a hitch-hiker in the form of the bird shown in the picture. It was spotted shortly after the vessel had passed Cap Vert, heading for Cape Town en route to Fremantle, and was sunning itself on a container directly in front of the bridge.

Anon

***Above:*** *Cattle egret*

Captain I.M. Hill and Third Officer F. Munro, on the bridge at the time, were thus afforded an ideal opportunity to study it. The bird was of medium size and slender build and had a long, pointed, yellow beak. Its neck was like that of a heron or crane and, when the observers watched the bird in flight, it was noted that it had no discernible tail feathers. On the whole its entire plumage was white, with black tips at the end of both wings and a small 'pattern' on its back. The bird continued to 'buzz' the ship and even rested on the bridge wing but returned to its favoured position to pose for the photograph.

A few days later, with Cape Town behind it, the *Berlin Express* was in position 38° 42′ S, 35° 17′ E on 30 November and was joined by majestic oceanic wanderers rather than supposedly disorientated landbirds.

The starboard bridge wing proved an excellent vantage point from which to view the gliding skills of a pair of large albatrosses — Captain Hill was again one of the lucky observers, together with Second Officer G. Rice and M. Price (2OF). The first of the birds had a white body, faded orange bill, and wings that were mainly black on top but with white beneath, and black wing-tips. The second albatross was basically the same but instead of black areas on its wings, it had grey ones. Both birds' wing-spans were around two metres. They were believed to be of the yellow-nosed species.

Anon

Anon

*Above and left: one of the albatrosses photographed from the* Berlin Express.

The albatrosses cruised around the bridge wings for quite some time, close enough to allow these pictures to be taken. However, after a few minutes they became 'camera shy' and refused to come within range again.

## Identification of the *Berlin Express* sightings

These reports were passed to the Royal Naval Birdwatching Society (RNBWS) for their records, and we have since been contacted by Commander M.B. Casement OBE of the Society who believes the bird seen on 20 November was a cattle egret — this species frequently being recorded off west Africa. However, black markings are not known in the plumage of this bird.

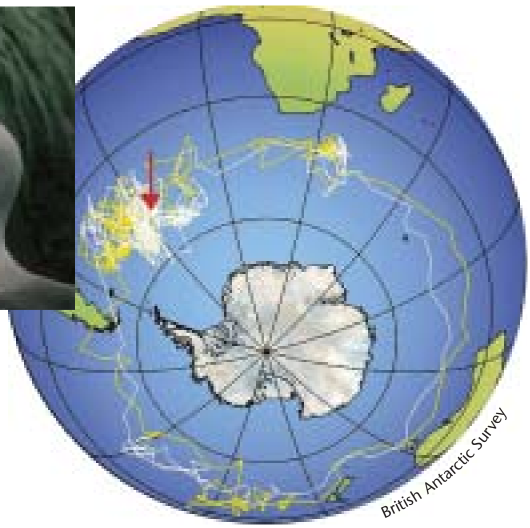
Captain P.W.G. Chilman also of the RNBWS, and whose speciality is seabirds, said that the albatrosses were in fact immature wandering albatrosses. They breed on many islands in the Southern Ocean and are circumpolar. This species begins life almost totally dark brown in colour but gradually transforms to adult plumage that is completely white with the exception of dark wing-tips.

He said that the yellow-nosed albatross, by comparison, is smaller, and the black colour on the upper surface of the wings always extends across the back of the bird.

## Postscript

It is well known that albatrosses travel vast distances across the oceans, but exactly where they go is something of a mystery. However, researchers at the British Antarctic Survey (BAS) now seem to have the upper hand in solving the puzzle. They have designed an ultra-light data micro-logger, weighing only a few grams, that could be carried by an albatross without causing it distress. The logger records the level of light every 10 minutes, and can function for up to eight years (a necessity considering that young albatrosses stay at sea for several years before returning to land in order to breed). Once retrieved, the data about light levels can be converted into latitudes and longitudes.

Such loggers have been fitted on grey-headed albatrosses on Bird Island (South Georgia) in order to find out where the birds went after the breeding season. The illustration below shows the results of an 18-month journey that commenced in 1999 — the yellow track shows the route taken during the first winter, while the white track shows the subsequent summer period and the second winter. The arrow indicates the location of South Georgia.




*Above: Routes taken by grey-headed albatrosses*

The position of the *Berlin Express* sighting of young wandering albatrosses coincided more or less with the area to the south-east of South Africa that was also favoured by their grey-headed cousins.

Professor John Croxall (BAS), who specialises in the conservation of marine seabirds said that this area was indeed important for 'wanderers', especially for the populations of the Prince Edward Islands and the Crozet Islands, and for South Georgia birds en route to Australia.

Increased knowledge about the movements of albatrosses may lead to improvements in fishing methods, particularly longlining, which is known to be responsible for the deaths of many thousands of these birds annually.

### Acknowledgement

Our thanks to Professor John Croxall at BAS for his help in the preparation of this item.

## Why albatrosses don't often get in a flap

Albatrosses are way ahead of the field when it comes to the subject of renewable energy — evolution over millions of years has adapted them to travel vast distances over the oceans using nothing but the wind and turbulent air currents produced by the motion of the sea surface. This skill allows the birds to use a minimum of their own resources, and a pair can forage for days at a time during the breeding season to provide food for a chick that might be in a nest hundreds of miles away.

### 'Dynamic soaring'

Their pattern of flight is perhaps the nearest that nature gets to demonstrating 'dynamic soaring' (a challenge that glider pilots relish — where endless fixed-wing unpowered flight over a flat surface is achieved simply by exploiting the energy that can be drawn from a wind gradient). It is the wind gradient that makes the effortless flight of the albatross possible. Wind blowing over the sea is slowed in its lowest layers by friction with the surface; as the friction decreases with height so the wind speed increases accordingly, thus creating a gradient of wind speed.

### Flight patterns

In relatively calm conditions, the albatross users its slender, glider-like wings to fly downwind covering a considerable distance as its ground speed increases (it can reach speeds of up to 70 m.p.h. in this phase of activity). When it nears the sea surface, where the air is slowed by friction with the waves, its ground speed is reduced, but it then turns so that its momentum carries it aloft once more.

Having regained its original height, but now also losing airspeed thanks to the increased wind speed, the albatross turns again to repeat the dive-turn sequence. Albatrosses can also dive across the wind before climbing and executing this 'stall-turn' manoeuvre, so they are not restricted to travelling only in the direction of the prevailing wind. Figures 1 and 2 illustrate two ways in which the wind gradient is used to generate power for flight.

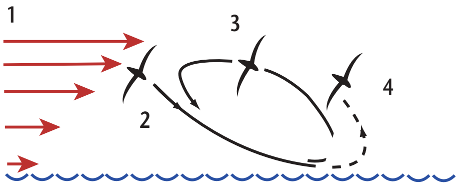



*Figure 1: Flight pattern in line with prevailing wind. 1–wind gradient; 2–bird dives downwind; 3–bird turns and uses its velocity to climb into the wind gradient; 4–after descending nearly to the sea surface, the bird turns into the wind and climbs again.*

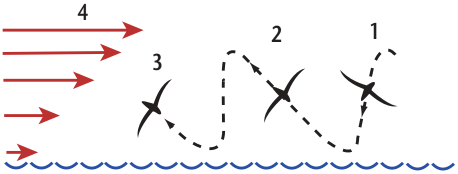



*Figure 2: Flight pattern across wind. 1–bird dives across the wind; 2–turns and climbs into wind; 3–after a 'stall-turn' bird dives again to repeat the sequence; 4–wind gradient.*

When sea waves are added to the equation, particularly those occurring in the extreme conditions of the Southern Ocean — which is the year-round home of many albatross species — the waves themselves generate and contribute wind gradients to the birds' environment, and these are also fully exploited.

Ships' observers have noted how albatrosses glide along the face of a wave using the localised wind gradient until it expires (i.e. the gradient becomes insufficient to maintain the glide); they then point one wing at the sky and use their velocity to shoot up over the top of the wave so as to descend into the next trough and begin another glide.

## Ships are 'waves' too

Air currents created by interaction of the wind with the bulk of a ship also aid albatrosses and other seabirds. Such mobile 'cliffs' produce updrafts which allow ships' observers to see 'eye to eye' with birds using them to 'hover' alongside, often at bridge level. The turbulent air in the wake also creates opportunities for them to follow a ship at ease as they scavenge for food churned to the surface by the propeller, or indeed scraps deliberately thrown to them.

Albatrosses are born to glide, human pilots learn to glide. The latter do it for pleasure — and it is difficult not to believe that the birds do not get some fun out of it too.

## Note

Many populations of several species of these majestic birds have suffered greatly in recent years, and with tens of thousands dying each year, their very survival is in question. The principal problem they face appears to be the activity of fishing boats using 'long lines'. This method of fishing employs a single line which can be 60 miles long, along which are attached shorter lines at intervals of only a few metres. These weighted lines are baited with tasty morsels such as squid — one of the albatrosses' favourites. Although the bait sinks quickly, it remains on the surface just long enough to allow birds (and other wildlife) to take it. Their fate is then sealed for they either become entangled in the lines, or the weight of the bait eventually drags them under water where they drown. *

During the breeding season, the implications of such disastrous consequences for chicks waiting in vain to be fed are clear. Solutions that will aid the birds and the fishing industry are being sought at international level, and it must be hoped that the outcome will be successful. In the meantime, we will be pleased to forward to the appropriate authorities any sightings of albatross species by ships' observers.

* See 'Saving the albatross', *The Marine Observer*, January 2001, 35.

## Attention all shipping... here is a whale warning...

The waters around the coastlines of Europe are within the ranges of many species of cetaceans, and observing officers on board ships recruited to the UK VOF send frequent reports of sightings of whales and dolphins in coastal waters.

In the northern North Sea for example, single killer whales have been seen, and also family groups such as the one shown below which was seen attending mackerel-fishing boats at 61° 13.6′ N, 01° 42.6′ E on 18 October 2001. (Photographed from f.p.v. *Sulisker*).

P.Laycock

P.Laycock

Minke whales have been seen further south in the North Sea, whilst dolphins have been reported occasionally in the English Channel. (So far no reports of the bottlenose dolphins that are thought to be resident in the Firth of Forth areas have been received, but page 159 of this edition carries a report of what may be the 'Cardigan Bay' dolphins.)

Many sightings occur in the Bay of Biscay, an area associated in the past with the whaling industry, and now continually crossed by shipping on international routes. Pilot whales, bottlenose and common dolphins are among the species that are often observed, but the pulses of observers really start to race when members of larger whale species make themselves visible, especially when this happens close to a ship.

The *Pacheco* had one such close encounter in the Bay of Biscay on 10 October 2001 — whales seem not to object to ships passing through their 'living room'. Captain D.J. Miller takes up the story:

"At 0750z the Chief Engineer and I were discussing some work that needed to be done when we spotted a large blow about 5 m high, about 20 degrees to port and roughly half a mile away. While I readied my camera, the Chief Engineer was looking for it through binoculars out on the bridge wing. I was just telling him that we had nearly hit a whale when I was on the ship four years before, when I noticed a disturbance in the water very fine to port, only about 100 m away. I dashed inside and put the wheel hard to port, and then went onto the starboard bridge wing to check that we had missed it. At that point we saw that there were two whales. I was taking shots with my camera at this time.

*See 'Climate change and the Continuous Plankton Recorder Survey', *The Marine Observer*, July 2001, 118


D. J. Miller

"We saw them blow again, and got a good side view of them. On checking our whale poster, I think they were fin whales from the shape of the dorsal fin and the slow roll after the blow.

"I brought the vessel back on course and checked that the 'fish' that we were towing for the Continuous Plankton Recorder Survey * was still there — it was.

"About two minutes later a lone dolphin was spotted to starboard, closing on the ship. It was seen leaping from the water and went straight for the bow where it disappeared from view. The Chief Engineer then went up to the fo'c'stle to watch, and three more were seen coming from the port side to play in the bow wave."

The dolphins could not be identified. On this occasion the *Pacheco* was heading north-north-west in position 46° 17′ N, 04° 41′ W at 13.9 knots. There were only light winds at the time, and the long, moderate westerly swell made the whales easier to see.

## Studies of Biscay's wildlife

Researchers into the wildlife of Biscay have been able to utilise, as mobile observation platforms, ferries that cross the region continually. Such ships are useful since they follow more or less fixed routes all the year round which, in turn, offer a degree of continuity in the observation records. The *Pride of Bilbao* (P&O European Ferries (Portsmouth) Ltd) and the *Val de Loire* (Brittany Ferries Ltd) are two such observing platforms regularly accommodating researchers from two organisations dedicated to increasing the knowledge of Biscay's wildlife — Organisation Cetacea (ORCA) and the Biscay Dolphin Research Programme (BDRP). In recent years, on the Portsmouth/Bilbao and Plymouth/Santander routes, data has been amassed on about one-third of the world's cetacean species — all of which occur in this globally important region. Biscay's seabirds and other inhabitants are also recorded.

The web sites of these two organisations * are for anyone with an interest in visible marine life. For professional seafarers, fare-paying passengers or private concerns in particular, they carry on-line illustrated descriptions of Biscay's cetaceans and seabirds with the aim of encouraging as many observations as possible from the area. ORCA's site is especially useful for its inclusion of animated sequences to aid the identification of the larger whales.

## Postscript

Dr Kelly MacLeod, of the Sea Mammal Research Unit, Gatty Marine Laboratory, University of St Andrews, commented on the *Pacheco* report as follows:

"The observers correctly identify the sighting as a fin whale. The photograph shows the characteristically small dorsal fin, relative to the average 18–22 m body size, which gently slopes backwards as a continuum of the back. This feature sets it apart from sei whales, with which it can be confused, that have erect and strongly falcate fins. However, dorsal fin shape alone is not always adequate to tell these two species apart. When fin whales are observed at close range, the asymmetrical colour pigmentation on the head can often be observed. This species has a white lower jaw and blaze on part of the head and 'shoulder' on the right side. The blow is very tall (3–4 m) and can be seen from several miles away when conditions are right.

* ORCA: www.orcaweb.org
BDRP :www.biscay-dolphin.org.uk

"Fin whales are abundant in the Bay of Biscay. However, research by Organisation Cetacea (ORCA) and others (Biscay Dolphin Research Project) suggests that it is only seasonally resident. ORCA has shown that fin whales arrive in the Bay of Biscay mainly from June through to October. Peak encounters with fin whales tend to occur during August when numbers of animals in the region is at its greatest. As a migratory species, fin whales are to be found at feeding grounds during the summer months and low latitude breeding grounds in the winter. The Bay of Biscay is probably a rich feeding ground with a steep continental slope that probably generates upwellings and mixing in this area, which can lead to patches of increased productivity. Fin whales eat mainly schooling fish but will also eat plankton. The preference for fin whales off the shelf edge and very deep waters beyond has been noted. Calves are also seen in the area, perhaps having made their first migration to the feeding ground.

"Ship strikes of whales are probably common but the majority are not recorded. Globally, fin whales have been found to be the most frequently hit species, which is surprising given that it is capable of swimming at speeds of over 10 knots. They also use low-frequency vocalisations which suggests they are capable of hearing low-frequency noises, including that from an approaching vessel".

# Scene at sea

J.J. Southam

***Left:*** *A seahorse found on board the* Resolution Bay *in December 2001.* *(See page 164.)*

# Scene at sea (*contd*)

J. Briand

***Left:*** *Massed australasian gannets feeding in Bream Bay, North Island, New zealand.*

Anon

***Left:*** *A large spider found on board the* Newport Bay *in October 2001. (See page 162.)*

***Left:*** *A "...strange bird..." that visited the* Maersk Dee *at 0715 UTC on 10 August 2002 when the ship's position was 56° 44.1′ N, 01° 18.3′ E.*

*The bird was seen by Captain J.H. Heald, Chief Officer G. Colby and Second Officer J.A. Currie, and was identified as a male crossbill by Commander M.B. Casement OBE, of the Royal Naval Birdwatching Society, who said these birds breed in Scandinavia, Scotland and locally in eastern England. (The crossbill is another 'first' for* The Marine Observer.*)*

# Awards to UK Voluntary Observers and Ships

Weather forecasts and climatological products benefit greatly from the assimilation of ships' data, and weather forecasters everywhere look to reports from observing ships to aid or confirm their understanding of what is happening to the weather at sea. The Met Office acknowledges the work of the UK Voluntary Observing Fleet (UK VOF) through the following awards.

## Special long-service awards — 1999/2000

Shipmasters who have contributed a minimum of 18 years' service to the UK VOF become eligible for nomination to receive a Special long-service award in the form of a presentation barograph housed in a suitably inscribed case.

Observing careers have been assessed and ranked in order of merit according to consideration of length of service, the number of meteorological logbooks submitted and, more importantly, the quality of their contents. The six masters who have been selected for presentations on this occasion are:

- Captain A.J. Ball (P&O Nedlloyd Ltd) whose observing career began in 1972 with a logbook from the *Encounter Bay*.
- Captain D.J. Baily (P&O Nedlloyd Ltd) whose observing career began in 1973 with a logbook from the *Laomedon*.
- Captain A.W. Ellis (P&O Nedlloyd Ltd) who sent his first observations in 1967 from the *Manchester Spinner*.
- Captain K.D. Campbell (P&O Nedlloyd Ltd) who also began his observing career on selected ships in 1967 on the *Glenorchy*.
- Captain G.M. Long (Natural Environment Research Council) who began observing on the *Redcar* in 1963.
- Captain M.J. Power (Blue Star Line Ltd) whose observing career began with observations from the *ACT 1* in 1971.

The recipients will all be invited to receive their awards at the Met Office on a mutually convenient date to be arranged.

## Selected ships — 'Excellent' Awards 2001

UK voluntary observing officers with shorter observing careers continued to make significant contributions to real-time meteorological data through the transmission of their synoptic weather reports. These same reports also enjoy a second and much longer life in permanent databanks maintained for climatological research. In order of merit, the logbooks received from the following ships have achieved the highest standards of weather observations.

1. *Shenzhen Bay* (P&O Nedlloyd Ltd). Captain J.M. Dodworth. Principal Observers K.R. Smith and O. Ridyard
2. *Berlin Express* (P&O Nedlloyd Ltd). Captain I.M. Hill. Principal Observers R. Hunter and A. Ward
3. *Buccleuch* (Zodiac Maritime Agencies Ltd). Captain A.S. de Souza. Principal Observers P.S. Devarpalli and D.K. Bhakta

In addition to the above-named observers, those named on pages 181 to 182 have also submitted qualifying logbooks, and are nominated to receive 'Excellent' Awards.

## 'Marid' ships — Awards 2001

Whilst noting sea-temperatures and making other, non-instrumental observations in UK coastal and near-continental waters, observers serving on 'Marid' ships also contributed to the 'melting pot' of meteorological data during 2001. The following ships submitted the highest number of observations:

1. *Allurity* (F.T. Everard & Sons Ltd)
2. *Merchant Brilliant* (Merchant Ferries Ltd)
3. *Whitcrest* (John H. Whitaker (Tankers) Ltd).

Qualifying observers serving on these ships are listed on page 183.

## 'TurboWin' ships — Awards 2001

This year an additional award category has been introduced for observers using the TurboWin system for coding their observations. Awards have been made on the basis of the number of observations downloaded by UK Port Met. Officers during that year. The four ships identified by this method are:

1. R.R.S. *James Clark Ross* (British Antarctic Survey). Principal contributors Dr P. Bradbury and J. McCarthy
2. *CanMar Honour* (Canada Maritime Services Ltd). Principal contributors S. Kumar and V.S. Gaur
3. R.R.S. *Ernest Shackleton* (British Antarctic Survey). Principal contributors Captain A. Liddell and R. Kilroy
4. *Scottish Star* (IUM Shipmanagement AS). Principal contributors D.Y. Caparaz and J.D. Amo

In addition to an award which will be made to each of the above principal contributors, a certificate will also be presented to each of the four named ships on which they have served.

## Offshore installations — Awards 2001

Observers working on offshore installations are already familiar with annual awards recognising their work for the UK VOF, but until now they have not been recognised in this publication. However, we are now very pleased to include the offshore nominees on page 183.

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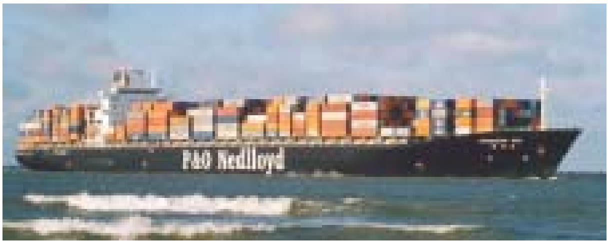
Our thanks go to all observers. Official notification regarding these awards may already have reached the individuals concerned. However, we would like to hear from anyone whose name appears in the listings but who has not yet received such notification.

Queries can be e-mailed to obsmar@metoffice.com, faxed to +44 (0)1344 855873, or relayed via any UK Port Met. Officer.

# Some of the top-rated observing ships for 2001




Waterweg photos

*m.v.* Shenzhen Bay
*(P&O Nedlloyd Ltd)*

Fotoflite

*m.v.* Allurity
*(F.T. Everard & Sons Ltd)*

Anon

*m.v.* Buccleuch
*(Zodiac Maritime Agencies Ltd)*

BAA

*R.R.S.* Ernest Shackleton
*(British Antarctic Survey)*

# Nominations for 2001

## 'Selected' ship category

The following observers have been nominated to receive an award in recognition of their contributions to the work of the UK Voluntary Observing Fleet during 2001. (Masters are shown in bold face.) The co-operation of those named in claiming these awards by 30 April 2003 would be appreciated.

| **Name and Company (See Note)** | |
|---|---|
| **Abbott, T** | 23 |
| Aguilos Jr, A | 20 |
| Ahmed, RA | 23 |
| Ambusaidi, KS | 32 |
| Anand, PS | 03 |
| **Andrews**, L | 39 |
| **Andrews**, T | 04 |
| Annand, JL | 32 |
| Aponsu, WMI | 16 |
| **Appleby, J** | 21 |
| **Artimonek, W** | 17 |
| Augustine, B | 42 |
| Austen, P | 21 |
| Avery, KO | 26 |
| Ayazo, A | 17 |
| Ayyar, S | 27 |
| Azarcom, B | 17 |
| **Baily, DJ** | 32 |
| Bakatan, AJ | 33 |
| Balkwill, J | 29 |
| **Bamford, CR** | 16 |
| Bansal, M | 42 |
| **Banton, RM** | 41 |
| **Baranowski, P** | 20 |
| Barrett, J | 39 |
| Barry, W | 21 |
| Bennett, K | 04 |
| Bhakta, DK | 42 |
| **Bhat, J** | 03 |
| Binyon, DEC | 21 |
| Blacker, NJ | 04 |
| Blythe, NE | 36 |
| Bongat, G | 32 |
| **Boreman, J** | 41 |
| Brew, J | 32 |
| Brockbank, CP | 21 |
| Broughton, J | 32 |
| Brown, P | 21 |
| **Bryson, GW** | 28 |
| **Bunyan, DW** | 08 |
| Cahill, EJ | 39 |
| Caminong, AP | 31 |
| **Campbell, CF** | 17 |
| Canete, RB | 37 |
| Canete, RM | 28 |
| Capes, S | 32 |
| **Carlton, N** | 31 |
| Cereno, SD | 39 |
| **Chamberlain, RJ** | 26 |
| Charlton, J | 08 |
| Chase, SC | 16 |
| Chauhan, S | 06 |
| Chin, CY | 27 |
| **Chipperfield, BV** | 32 |
| Christensen, J | 32 |
| Cinco, JM | 08 |
| Clemente, J | 08 |
| Colby, G | 24 |
| **Colley, DP** | 23 |
| Collier, G | 32 |
| Collins, T | 35 |
| Contreras, C | 17 |
| Cope, AJ | 26 |
| Corder, C | 31 |
| Currie, JA | 24 |
| D'Abreo, JMS | 06 |
| Dajay, R | 18 |
| Danasekara, D | 20 |
| D'Arcy, D | 31 |
| **Dathan, PH** | 34 |
| **David, AM** | 06 |
| **Davies, PD** | 32 |
| Davison, J | 12 |
| De Los Santos, M | 04 |
| **De Souza, AS** | 42 |
| **Deeney, JA** | 07 |
| Degollado, R | 34 |
| Desmond, LN | 04 |
| Devarpalli, PS | 42 |
| **Dick, JA** | 36 |
| Diskin, D | 36 |
| **Dodworth, JM** | 32 |
| Dominguez, AC | 17 |
| Donnelly, MP | 35 |
| Dove, D | 05 |
| Dubey, CN | 42 |
| **Eames, C** | 08 |
| Ebdy, J | 35 |
| Eleria, WC | 08 |
| **Ellis, AW** | 32 |
| **Elson, DJ** | 04 |
| **Erikson, F** | 17 |
| Erispe, EE | 08 |
| Espanola, R | 32 |
| Evans, TLJ | 40 |
| Famaloan, R | 17 |
| Farr, J | 32 |
| **Farrell, GP** | 21 |
| Fergusson, M | 35 |
| Fernandes, E | 42 |
| Fernando, SR | 42 |
| Flintoff, NG | 32 |
| Frediani, S | 32 |
| **French, PC** | 32 |
| Fuller, KE | 32 |
| **Furneaux, PA** | 32 |
| Garde, AR | 42 |
| Garner Richards, JE | 32 |
| Gawad, A | 23 |
| Genovese, G | 31 |
| Gerona, EC | 28 |
| Gesulgon, J | 23 |
| Ghuman, PS | 42 |
| **Gladstone, J** | 17 |
| Gonzaga, OB | 18 |
| Gopal, M | 42 |
| Graham, A | 32 |
| Graves, MH | 26 |
| **Gregson, JN** | 12 |
| **Greig, TR** | 21 |
| Guddati, CS | 03 |
| **Gundersen, HT** | 10 |
| Gustilo, R | 20 |
| Guthrie, G | 41 |
| Hadfield, D | 21 |
| Halewood, R | 32 |
| Hall, NA | 12 |
| Hapitan, NL | 04 |
| Harbord, JB | 32 |
| **Harris, JC** | 32 |
| **Harris, SP** | 23 |
| Hawthorne, R | 32 |
| **Heald, J** | 24 |
| **Hill, IM** | 32 |
| Holmes, JC | 26 |
| **Holst, JA** | 11 |
| Hughes, B | 41 |

## Nominations for 2001 (contd)

| Name and Company (See Note) | |
|---|---|
| **Hughes, R** | 32 |
| Hunter, R | 32 |
| **Jackson, JW** | 07 |
| **Jain, SK** | 04 |
| James, H | 41 |
| Jassim, KF | 32 |
| **Jewell, MCJ** | 35 |
| Jimena, RR | 17 |
| Johnston, K | 32 |
| Kalagayan, W | 38 |
| **Kapoor, D** | 42 |
| **Kenchington, RA** | 32 |
| Khan, M | 42 |
| Kotkavoori, T | 31 |
| Krzysztof, J | 20 |
| **Lacey, AG** | 21 |
| Lanckay, R | 08 |
| Lasheer, BS | 42 |
| Laupeano, A | 17 |
| **Lax, DW** | 32 |
| **Laycock, JP** | 35 |
| **Le Sueur, P** | 34 |
| Legaspi, ND | 13 |
| Likiyan, J | 04 |
| **Lloyd, S** | 29 |
| Lloyd-Smith, M | 41 |
| **Lockie, WG** | 18 |
| Mackenzie, A | 32 |
| Mannath, A | 04 |
| Mansuelo, A | 20 |
| **Manuel II, FA** | 37 |
| **Marr, D** | 21 |
| Mathews, S | 42 |
| Mathias, G | 32 |
| Mayers, NP | 32 |
| **McEwan, GA** | 23 |
| **McLarty, RJ** | 32 |
| McMahon, F | 41 |
| McMahon, T | 21 |
| McParlin, P | 09 |
| Mehendale, AV | 42 |
| Merwyn, S | 06 |
| **Michalik, L** | 20 |
| **Miley, PA** | 42 |
| **Millar, JJ** | 02 |
| **Millar, SG** | 32 |
| Mills, T | 32 |
| Milner, JA | 32 |
| **Misiuro, T** | 18 |
| Moody, MJ | 32 |
| Moraes, F | 42 |
| **Morris, A** | 09 |
| **Moulin, MJ** | 31 |
| Mullarkey, C | 05 |
| Munaweera, M | 23 |
| Munro, FH | 32 |
| **Narayanan, J** | 27 |
| Necretales, RA | 08 |
| Neelemaat, – | 32 |
| Nonesco Jr, H | 18 |
| Nuttall, JE | 32 |
| Oblea, O | 23 |
| Olsen, IK | 10 |
| Oriatto, J | 36 |
| Paceno, RA | 28 |
| Pacis, RA | 17 |
| Pagente, MA | 04 |
| Partridge, CE | 39 |
| **Payton, C** | 04 |
| Peiris, K | 23 |
| **Pereira, FX** | 42 |
| **Pereira, LF** | 06 |
| Perkins, M | 21 |
| **Petersen, JL** | 32 |
| Platt, RJ | 32 |
| Plisenko, A | 02 |
| **Prabhakar, AK** | 42 |
| Quayson, B | 32 |
| Quiambao, R | 08 |
| Rahman, I | 23 |
| Reynolds, PCT | 26 |
| Ridyard, O | 32 |
| Rizvi, N | 36 |
| **Robinson, D** | 08 |
| Rojesh, S | 42 |
| Rontoro, R | 28 |
| Ross, A | 05 |
| **Ross, S** | 05 |
| Ross, SM | 28 |
| Saludez, R | 19 |
| Samaranayake, C | 23 |
| Sanderson, RJ | 02 |
| Sapida, RM | 37 |
| Saxton, L | 21 |
| **Scarr, I** | 05 |
| Scarrott, A | 29 |
| **Sellars, M** | 19 |
| Senador, P | 28 |
| Senador, T | 04 |
| Sepe, JR | 23 |
| Seprick, KD | 23 |
| Sheldon, R | 35 |
| **Singh, VP** | 42 |
| Smith, KR | 32 |
| Smith, M | 40 |
| Smith, R | 41 |
| **Sneeden, R** | 05 |
| Son Jr, GF | 18 |
| Southam, JJ | 32 |
| **Stoker, WJ** | 32 |
| Sturdy, SP | 32 |
| Sutcliffe, MC | 32 |
| Syrytsky, S | 34 |
| **Tadeusz, M** | 18 |
| Tampus, JAD | 17 |
| Tandog, P | 17 |
| Tayag, C | 04 |
| **Tanguy, R** | 04 |
| **Tebbutt, W** | 17 |
| **Temple, DW** | 35 |
| Tenazas, E | 30 |
| Thapa, D | 42 |
| **Thomson, DC** | 32 |
| **Tibbott, A** | 28 |
| **Tucker, R** | 40 |
| **Tudor, SB** | 42 |
| Twitchin, SD | 32 |
| Valles, PS | 06 |
| Vargese, KG | 42 |
| Vibar, P | 23 |
| Villacorte, EL | 19 |
| Wade, GE | 32 |
| Wakelam, DP | 32 |
| Walker, CG | 07 |
| Ward, A | 32 |
| Watson, C | 32 |
| **Watts, M** | 32 |
| Way, DM | 12 |
| Weycham, P | 35 |
| Wilkie, M | 32 |
| Williams, P | 09 |
| Wilson, AG | 32 |
| **Winser, D** | 23 |
| Wood, D | 12 |
| **Woodward, CC** | 32 |
| Worthington, B | 21 |
| **Worthington, K** | 32 |
| **Wostenholme, G** | 41 |

## Nominations for 2001 — 'Marid' category

| | | | | | |
|---|---|---|---|---|---|
| Carvalho, L | 25 | **Horton, G** | **14** | **Warren, DS** | 14 |
| Ford, T | 22 | Shrubsall, R | 22 | **Wilson, BDS** | 22 |
| Saunders, A | 14 | Fraser, S | 25 | | |
| Fardey, D | 14 | **Lloyd, E** | 25 | | |

Note. The digits entered after nominees' names indicate the employing shipping company, manager or operator according to the following list:

01 Andrew Weir Shipping Ltd
02 Anglo-Eastern Ship Management Ltd
03 Barber Ship Management AS
04 Bergesen d.y. ASA
05 Caledonian MacBrayne Ltd
06 Canada Maritime Services Ltd
07 Carisbrooke Shipping plc
08 Celtic Marine Ltd
09 Coflexip Stena Offshore Ltd
10 Cunard Seabourn Ltd
11 Denholm Ship Management (UK) Ltd
12 Dorchester Maritime Ltd
13 EuroShip Services Ltd
14 F.T. Everard & Sons Ltd
15 Fleet Management Ltd
16 Furness Withy (Shipping) Ltd
17 Great White Fleet Ltd
18 Holy House Shipping AB
19 International Marine Transportation Ltd
20 IUM ship management AS
21 James Fisher (Shipping Services) Ltd
22 John H. Whitaker (Tankers) Ltd
23 London Ship Managers Ltd
24 Maersk Company (IOM) Ltd
25 Merchant Ferries Ltd
26 NERC Research Ship Unit
27 Neptune Shipman't Services (Pte.) Ltd
28 Norbulk Shipping UK Ltd
29 OOCL (UK) Ltd
30 Patt Manfield & Co. Ltd
31 P&O Cruises (UK) Ltd
32 P&O Nedlloyd Ltd
33 Red Band AS
34 Safmarine Ship Management
35 Scottish Fisheries Protection Agency
36 Sealion Shipping Ltd
37 Seatrade Groningen BV
38 Sosema SA
39 Souter Shipping Ltd
40 Stephenson Clarke Shipping Ltd
41 The Maersk Company Ltd
42 Zodiac Maritime Agencies Ltd

## Nominations for 2001 — Offshore installations

| **Name** | **Installation** |
|---|---|
| Buchan, A | *AH001* |
| Charlton, I | *Tartan 'A'* |
| Clay, A | *Tartan 'A'* |
| Emery, B | *AH001* |
| Farquhar, D | *Haewene Brim* |
| Forbes, A | *Captain WPP 'A'* |
| Gallacher, W | *Maersk Endurer* |
| Hodgetts, W | *AH001* |
| MacCallum, A | *GSF Magellan* |
| Milne, P | *North Alwyn 'A'* |
| Plummer, J | *North Alwyn 'A'* |
| Price, M | *North Alwyn 'A'* |
| Swales, M | *Morecambe AP1* |
| Vickers, L | *Viking 'B'* |
| *Highland Sprite** | *Morecambe AP1* |

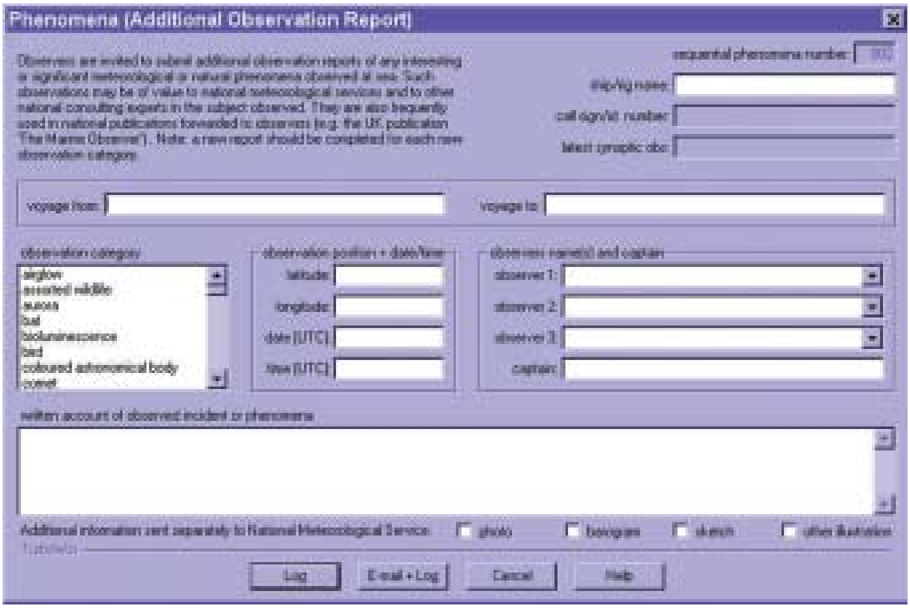
* The *Highland Sprite* is the dedicated support vessel for the Morecambe AP1 installation. The officers on board liaise with their colleagues on the platform and provide observations at times when the former are not present on site, mainly during the night hours.

# TurboWin — release of Version 3.0

The latest edition of KNMI's * TurboWin software — Version 3.0 — has been released and will be made available in the coming months to those ships who submit their observations by this means. Observers will notice that some significant new features have now been added.

## 'Additional observations'

An important new facility has been included in the program to allow observers to electronically report the 'Additional Observations' which are normally recorded using the dedicated pages at the rear of the paper meteorological logbook. The 'Phenomena' window will be found under the 'Notes' drop-down menu, and is shown below.




***Above:*** *The 'Phenomena' window in TurboWin3*

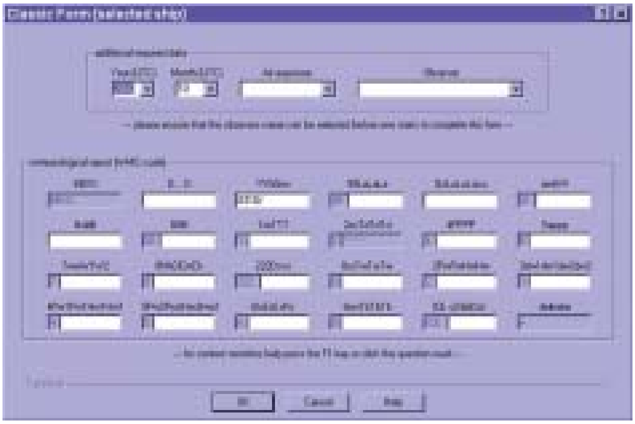
Currently this feature is designed for text-only accounts, and each report can accommodate up to 2,000 characters. Photographs, sketches, barograms, etc, should therefore be forwarded separately to the Editor of *The Marine Observer* at the address shown inside the front cover of this journal. It is vital that such items are clearly identified for matching with their relevant TurboWin reports. Observers are therefore encouraged to annotate any separate enclosures with the sequential phenomena number appearing in the top right hand corner of the new Phenomena window

Phenomena reports recorded using TurboWin are stored on the computer in a log file which will be routinely downloaded by visiting Port Met. Officers.

## Making weather reports using the 'Classic Form'

As users will know, TurboWin allows for the automatic compilation of observations without the necessity of referring to the WMO Ship Code. However, an option is now available for users — should they wish to do so — to enter data directly into Ship Code.

*KNMI: Royal Dutch Meteorological Institute



***Left:** The ‘Classic Form’ for making weather observations in Ship Code*

This takes the form of a ‘Classic Form’ which follows the sequence of code groups specified in the Ship Code in a similar fashion to the paper-based meteorological logbook. The form is not, however, avaliable to VOSClim recruited ships..

## VOSClim ships

To assist those observers on ships involved with the VOSClim Project, and for the information of other voluntary observers, the VOSClim brochure is now available in the program. The brochure can be accessed when entering the station details under the ’Maintenance’ menu.

## Other revisions

Among the revisions, users will also find that this latest version now supports Supplementary and Auxiliary ships by disabling those code groups that are not applicable. In addition the ‘Help’ facility and quality control checks have been updated.

## Recording pressure readings — a special note to observers

It has been found that on some occasions the height correction required for mean sea level pressure readings has been applied twice, i.e. the correction has been applied both by the observer and the software. Observers are reminded that the software will compute and apply the height correction if ‘no’ is selected in the ‘reading indicates pressure at mean sea level box’ and a value is entered in the ‘Barometer height above sea level’ box.

## Further information

The TurboWin software can be downloaded free of charge, after registration, from the dedicated website at:

www.knmi.nl/onderzk/applied/turbowin/turbowin.html

Marine Networks staff have liaised closely with KNMI regarding the development of this latest software release and it is hoped that users will appreciate the additional functionality that has now been included. However, we would welcome observers’ comments on the software and on any additional features they would like to see incorporated in the future.

# The Exodus crossing of the Red Sea: a meteorologist's view

**E.N. Lawrence**

A reasoned scientific explanation can now be proffered for the memorable event generally known as the Exodus Red Sea crossing. This progress is partly due to a recent discovery — scientific evidence is now available for a long-term world-wide tidal cycle which, along with other natural factors, could collectively have produced the ground path across the Red Sea.

For discussion to be profitable, it must harmonise with the historical account rather than with controversial and inappropriate assumptions; for example, what is indicated by the literal translation, 'Sea of Reeds'. The statement in the account that the sea "...returned to its strength..." (Exod. 14:27) — ending the period for a safe crossing — is crucial evidence that the critical factor was tidal variation.

Regarding the attendant meteorological and marine conditions favourable for a ground path across the Red Sea, two basic technical questions have long awaited a conclusive answer:

1. What processes produced these favourable conditions?
2. What physical factors account for the opportune timing of conditions favourable for the crossing?

## A sea-bed sediment cycle

Progress towards answering the first of these two questions may be inferred from a report by Pearce (source Keeling *et al*, 2000) that by analysing sediment cores from the Atlantic Ocean, Gerard Bond* found a 1,500–1,800-year ocean sediment cycle (compare with the '11-year' cycle in tree rings) which is traceable back more than 100,000 years to the last major ice age. This newly found sediment cycle can be connected progressively with tide levels.

## A series of cyclic mechanisms

The report further states that Keeling† provides an explanation for the existence of this sediment cycle — it is part of a chain of far reaching consequences of an astronomical cycle. A cycle of orientation of the moon and sun relative to the earth, involving proximity and alignment, causes cyclic variation in the strength of gravitation/attraction pull, which generates a world-wide tidal cycle, similar in timing to the originating astronomical cycle.

This long term tidal cycle was thought to result in a synchronous 'vertical sea-water-mixing' cycle which, in turn, would lead to a tendency for two further synchronous cyclic developments, namely:

1. in sea-bed disturbance / sea-bed water-mixing, affecting sediment deposit;
2. in mixing relatively warm surface-water with cold water from depth, causing cyclic change in sea-surface temperature, together with similar variation in adjacent surface-air temperature.

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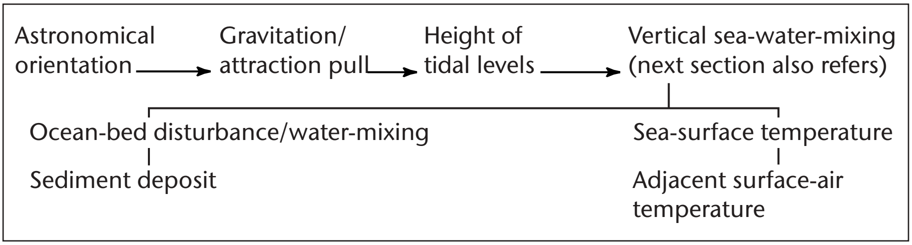
*Lamont Doherty Earth Laboratory, Columbia University, Palisades, New York

† Scripps Institution of Oceanography, University of California, San Diego

To briefly summarise the above suggested series, the 'domino chain' of synchronous cyclic events involves the following variables, in causal order:




The report explains that in the implied cyclic processes:

- the maximum pull coincides with strong tides (i.e. extremes of high and low tide-levels), and the strong tides cause extreme sea-water vertical-mixing extending down to the sea-bed, leading to much colder *surface-water* and minimal sea-bed sediment deposit;
- and conversely that the minimum pull coincides with extremely weak tides (i.e. having little effect on tide levels/little ebb and flow) and a set of opposite extremes, i.e. much warmer *surface water* (due to minimal vertical-water-mixing) and minimal disturbance at depth, allowing maximal sea-bed sediment deposit.

## How a sediment cycle can be produced by a tidal cycle

Some suggestions follow to explain how variations in tidal water-mixing may cause variation in sea-bed water-mixing and sediment — without involving continuous vertical-sea-water-mixing to the sea bed.

Excess water (due to extremely high tide-levels etc) 'piled up' against a steep wind-facing coast may lead to increased gravitationally-induced, return circulatory current at depth. This causes increased sea-bed water-mixing and minimal sediment deposit. At a coast with a seismic fault and seismic stress near breaking point, increased water disturbance at sea-bed level may follow from seismic activity triggered in a number of ways. To give some examples:

1. The physical impact of excess water (due to strong tides, etc) on a steep rocky coast may cause severe vibration down to sea-bed level.
2. Seismicity at sea-bed level may result from complex tidal water-loading factors, as in a large reservoir (Hubbert *et al*; Gupta, Engelder, Guha).
3. Plate movement may ensue from a substantial difference between the weight/pressure of coastland and the weight/pressure of the adjacent sea, as a result of an extreme low tide adjacent to coastland that is still heavily flooded from a previous extreme high tide.

With respect to reservoir loading factors, Bolt's findings suggest that, after extreme coastal flooding, any delay in seismicity may, similarly, be caused by the time taken for excess water to seep through porous crustal rocks until it lubricates a micro-crack and allows sudden sliding.

In all these processes — linking tide-level extremes with increased sea-bed water-mixing and minimal sediment — sea-mixing at depth may be spread by ocean currents and/or general seismicity. It can also be modified by topography of the sea bed, coastline and adjacent coastland areas, by the seismic status and condition of land/sea areas near coasts and especially by the degree to which prolonged heavy rain and gales augment extreme high-tide level.

Each of these links of tidal-variation with sediment accommodates:

1. the report's synchronous cycle of surface temperature (which requires sea-water-mixing to a substantial depth);
2. all the reported assessed chain of causal cyclic extremes, omitting the premise of tidally-induced downward vertical-mixing of sea water throughout the ocean depth.

**Note.** Of course, additional particles from such land phenomena as volcanic and seismic activity, Sahara dust storms and flooding with increased river flow into the oceans may also affect sediment deposit. Dust layers in sediment are thought to be due mainly to climatic factors. A further variable that might affect sediment deposit is long term solar activity via its influence on terrestrial weather.

## Timing of the very low Red Sea tide in the long term tidal cycle

So far, evidence has been presented of the existence of a long term world tidal cycle, which could make possible the very low tide associated with the Red Sea crossing. The historical details of the Red Sea low tide, already discussed, render it eligible for investigation as a candidate for status as an extreme of the long term tidal cycle.

Concerning the timing of maximum tidal events, Keeling *et al* state that, in addition to four governing astronomical factors involving proximity, the "...actual timing of specific maximum (tidal-forcing) events of the 1,800-year cycle depends...also on the timing of syzygy (alignment). This additional requirement causes the interval between specific maxima to (be)...1,682, 1,823, or 2,045 years, or even occasionally ±18.03 years from the three principal intervals". Thus, these five factors together with other astronomical intricacies bring about variation in the intervals between tidal-forcing extremes.

Keeling *et al* recognise that the Little Ice Age period (around the 1600s) qualifies as an extreme in the long term tidal cycle. The date of the Red Sea crossing is assessed by historians variously as around 1500/1300 BCE. So, the time interval from the date of the Red Sea crossing to the Little Ice Age is of the order of two cycle periods of the 1,500–1,800-year tidal cycle reported by Pearce. Thus, irrespective of other requirements, the Red Sea's very low tide qualifies *timewise* as a tidal extreme of the long term tidal cycle.

## Further evidence denoting a tidal extreme

In addition to timing, the two further cited basic indications of a tidal extreme are extreme air-cooling and extremes of tide levels (Keeling *et al*). At the time of the Exodus, an extreme low tide-level is evident. As for evidence of the low temperature indication, the context of the account denotes that the Red Sea crossing took place in early spring, the season when the "...strong east wind all the night..." (Exod. 14:21) in the Red Sea area could be synoptic evidence of an intense and persistent cold 'winter' anticyclone over the Eurasian landmass.

It has now been shown that the occasion of the Red Sea crossing:

1. comes within acceptable time assessments for a "tidal-forcing extreme", according to Keeling *et al* (2000);
2. manifests an extreme low tide-level;
3. was associated with conditions from which extreme air cooling (which need not necessarily include the Red Sea area) may be inferred meteorologically.

Thus, it is reasonable to conclude that the Red Sea crossing attains the status of an extreme of the long term tidal cycle.

## Conditions further contributing to the Red Sea path

From historical details and the meteorology of the region, it is possible to reason that during an extreme-tidal period in the long term tidal cycle, the following recorded and inferred meteorological and marine factors and their interactions would tend to further exaggerate the already extreme effects — enough to expose a ground path across the sea:

1. Commonly occurring nocturnal low-level inversion in the early-spring desert air.
2. "...a strong [ground layer] east wind all the night...". To a meteorologist, this easterly can be reasonably regarded as both seasonal (as discussed earlier) and possibly also, as part of a cold anticyclone, diurnally stronger at night. A strong ground-layer wind would naturally prevent or remove inversion in the ground-layer.
3. Inversion above the east-wind level would act as a lid, preventing air from rising, so that the strong east wind below the inversion was made stronger.
4. When the strengthened east wind encountered sea-water doubly shallowed by means of an extreme low tide over a normally undersea ridge (next section also refers ), it was able to funnel through the very shallow water above the ridge to form a ground path with a "wall" of water on both the north and south sides of the funnelled east-west path.

## Location and duration of the Red Sea path

It would be expected that the particular location of the Exodus path would be associated with normally shallower water. Some historians conclude that the crossing was from a point near a peninsula on the west side of the northern end of the Gulf of Suez. It is reasonable to suggest that the Exodus route was along an existing ridge normally below sea level, extending approximately eastwards from such a peninsula. Any existing east-west ridges below sea level are unlikely to have been caused by dredging for the Suez Canal construction, the purpose of which was to obtain a north-south shipping lane. It must be noted however that in addition to possible effects of dredging operations, there could be natural changes in sea-bed depths over the course of time.

Regardless of where the crossing actually occurred, "...when the morning appeared..." (Exod. 14:27), the extreme low tide level — plus possibly one or more of the other, contributing factors favourable for a Red Sea footpath — had ceased to operate, and so the path had disappeared.


## Acknowledgement

The ready co-operation of staff of the National Meteorological Library and Archive is much appreciated.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# The Leonid meteors

**Neil Bone (Director, BAA Meteor Section.)**

The Leonid meteor shower, active between 15 and 20 November each year, is renowned for the periodic 'storms' which it can produce in the years close to the return of its parent comet, 55P/Tempel-Tuttle, to the inner solar system. Tempel-Tuttle was last back close to the sun in early 1998, and the Leonids have produced unusually high activity since 1994 — storms were seen on 17/18 November 1999, and in a couple of interludes on 18/19 November 2001.

The current round of elevated Leonid rates is drawing to a close, and 2002 probably represents the last chance to see a Leonid storm for some considerable time. A meteor storm is loosely defined as an interval where the rates exceed 1,000 per hour. The window in which Leonid storms can occur repeats at roughly 33-year intervals, but the set of returns around 2032–33 is far less favourable, as gravitational effects mean that Earth will not pass so close to comet Tempel-Tuttle's main debris trail — indeed, the next good opportunity for catching extremely high Leonid activity is not until 2098!

## Prospects for 2002

Leonid activity is normally only substantial close to the peak, expected around 18–19 November. At other times there is usually a trickle of about five meteors per hour from the shower. Rates may well be slightly higher than this on 18/19 November when Earth passes through strands of debris shed by the comet in 1766 and 1866. A model of Leonid dust trails, developed by Robert McNaught (Anglo Australian Observatory), and David Asher (Armagh Observatory), has been fairly successful in predicting past peaks, as in, for example, 2001.

For 2002, the model forecasts a couple of peaks on 19 November, close to 0400 UTC and also from 1000–1100 UTC, favouring east Atlantic and American longitudes, respectively. The peak intensity is more difficult to predict than the timing. It is thought that rates of up to 4,000 Leonids per hour might occur near these times — the latter peak being even stronger.

Moonlight will significantly affect the visibility of the Leonids in 2002. On 19 November the moon is only a day from Full, and its glare will therefore drown out the fainter meteors. It has been suggested, however, that the 0400 UTC peak may show a substantial proportion of brighter meteors and fireballs (rather like that seen in 1998) . A fireball is, by definition, a meteor that exceeds the brilliance of the planet Venus, which will be visible as a 'Morning Star' in mid-November. Any storm peaks that do occur will probably be of fairly short duration, perhaps an hour or so. Even with moonlight swamping the fainter meteors, one meteor every few seconds may be seen under clear skies if the hoped-for storms materialise.

## Source of the Leonid shower

The Leonids appear to emanate from a radiant in the 'Sickle' asterism in Leo, which appears like a backward question-mark — the bright star Regulus marking the 'full-stop'. The radiant does not rise at most locations until just before local midnight, so Leonid meteors are seen only in the early morning hours. Numbers are generally highest when the radiant is high in the sky, as it will be, for example, on the Greenwich Meridian by 0400 UTC on 19 November.

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* See 'The 1998 Leonids' in *The Marine Observer*, 1999, 183

Leonids are notably swift — the stream particles collide almost head-on with the upper atmosphere, and start to burn up by friction (ablation) at typical altitudes of 120 km. The large amounts of energy dissipated in these collisions often result in Leonid meteors being bright, and leaving behind them long-duration ionisation trains which may take several seconds to fade from view. Trains left by the very brightest Leonids have been observed to persist for several minutes as slowly-expanding hazy clouds.

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*Editor's note.* Readers may recall that in 2001 a special campaign to observe the Leonids was mounted by the Royal Dutch Meteorological Institute (KNMI) — Voluntary Observing ships in particular being asked to take part. As this edition goes to press, the final analysis is nearing completion, but a brief summary of the results so far appears below. More information is available on the campaign web site: www.weerboek.nl (Click on 'Meteor-Project', then 'Report No.1' for English version.)

By all accounts those observers who were lucky enough to witness the event in 2001 found it quite spectacular. We look forward to receiving reports from observers who are suitably placed — weather and bridge watches permitting — to see what happens this year.

## Extracts from the preliminary report of the 2001 Leonid shower

The observations from the campaign will be used to construct a continuous Zenith Hourly Rate diagram covering the period 17–20 December. Prior to the campaign such information had been compiled primarily from land-based observations, therefore the lack of data from ocean regions produced areas of apparently low activity. With the input

of ships' reports, however, the extent of the Leonid dust/debris cloud, indicated by the observed meteor count, will be better understood.

*Above: Locations of Leonid observations 16–20 November 2001 (further additions anticipated)*

About 40 ships had reported sightings to KNMI by mid-December (the map shows the locations of the majority of these), although more were expected. Several notable events were recorded, one such coming from the *Maracas Bay* whilst near Cuba on the night of 18/19 November during which meteor counts of 10–15 per minute at 0420 UTC increased to 25–30 per minute over about five hours, that rate then being maintained for the next 40 minutes before decreasing as dawn approached. Another ship had earlier reported (on 17/18 November) 38 meteors in five minutes, followed by 68 in the next 15 minutes, with the highest count being five meteors in three seconds.

## More information requested for 2002

With prospects for this year's shower looking favourable, we would like to encourage all observing ships to participate once again in a global project to record the event. Your sightings can be e-mailed to obsmar@metoffice.com

# Whither the weather*

The marine accident investigator has two roles: to investigate accidents to determine what happened and why, and to identify trends. The aim of both is identical, to prevent them happening again.

Readers of our investigation reports and *Safety Digests* will have noticed that certain elements keep cropping up again and again. Perhaps the most obvious is the frequency with which reference is made to the human factor as an underlying cause of so many accidents.

It isn't the only one. Weather and sea conditions not only provide the backdrop to practically everything we do at sea, but are often crucial factors when things go wrong.

You only have to reflect how the weather has played its part in our maritime history. The storm of 14 October 1881, when 300 fishermen from Eyemouth in Scotland lost their lives, is still remembered. A glass calm sea, freezing temperatures, and an iceberg played a significant part in the loss of the *Titanic*. A ferocious storm in the Irish Sea lay at the heart of how the ferry *Princess Victoria* sank on 31 January 1953, while fog featured as the crucial factor in the collision between the *Stockholm* and *Andrea Doria* in July 1956.

The 1979 Fastnet race is still recalled with horror by the ocean-going community, as is the Sydney Hobart race of 1998. And large ships are not immune when reflecting on the 400 or so containers that were lost overboard from the container ship *APL China* in the same year. Bad weather played a part in the break-up of *Erika* in December 1999.

Study, and knowledge of the weather is a core subject for seafarers, and they are introduced to it early in their careers. For those working in machinery spaces, the galley or the accommodation, it might not be quite such a formal agenda item, but it only takes a day or two for the first time voyager to discover that ships roll, pitch, heave, lurch and corkscrew. They soon learn the importance of stowing things away properly, and the art of maintaining a balance and sure foothold at sea. Choice of suitable footwear is crucial. The old adage of "one hand for the ship and one for you" is as true today as ever.

Sailors the world over live with the effects of the weather. Some become quite boring about it, and revel in how thick the fog was on their last voyage, or describe in vivid detail how they survived Typhoon 'X' in the South China Sea. The marine accident investigator, meanwhile, is forever being told how a 'freak' wave was responsible for some disaster. Weather is a factor we cannot ignore.

While every investigation tends to throw up some new lesson, it is instructive to read old reports to see whether we can still learn from the experiences of the past. The answer is we can, and this article draws together a number of lessons that will come as no surprise to the average mariner, but will serve as ready reminders for those among us who might have become slightly blasé about matters meteorological.

Despite satellite surveillance systems and computer-based predictions to help forecasters, and modern communications that enable mariners to access the latest information in detail, the weather is still a fickle commodity, with the ability to surprise. There have been a number of accidents to both small craft and large merchant vessels where those on board have failed to heed the available weather forecasts. There have, for example, been some incidents where it appears the sole source was the local TV channel or radio station. As mariners know only too well, the weather offshore is likely to be very different to that inland.

* Reproduced from 'A Pause for thought' in *Safety Digest* 2/2002, 53, published by the Marine Accident Investigation Branch. Crown copyright. *Safety Digest* can be found at: www.maib.dft.gov.uk

Those intending to put to sea in charge of a vessel have a duty to all on board, and as part of the safe passage plan, to gather as much information about the predicted weather as possible, and apply their own judgement on the conditions to be expected. At its most basic, this not only means examining the general synopsis and monitoring area forecasts, but also looking at the sky, interpreting the barometer and, where feasible, looking beyond the harbour wall. And there is everything to be said for contacting the local harbourmaster, coastguard, or local weather station to establish the current conditions and what is forecast. Local knowledge can be invaluable.

Once at sea it pays to read every available forecast. Conditions can change, and sometimes rapidly. Once again, the mariner must not only pay heed to the forecasts, but must also use these to complement his own observations. An understanding of what is happening when, for instance, high winds are predicted, is invaluable. Such knowledge may also enable him to predict the formation of a secondary depression in advance of it featuring in an externally produced forecast.

And when the bad weather arrives, the good seafarer should be well prepared.

Take fog. It doesn't take a genius to realise that the risk of collision increases many times over when underway in fog or other conditions of reduced visibility. Snow, very heavy rain, and sandstorms have even greater powers of degrading the navigation and anti collision aids at your disposal. Those of us who are unaccustomed to navigating in falling snow may well be surprised at how deceptive the imagined visibility can be. What seems to be a good mile or two, may in fact be no more than a couple of cables.

Despite radar and ARPA, many of us are guilty of failing to adjust to the Rule 19 mentality when operating in conditions of reduced visibility.

One of the most common factors to emerge in any analysis of a collision in fog, or something similar, is the tendency for watchkeepers to make unjustifiable assumptions about another vessel's heading when her range is close. Time and time again watchkeepers react with total disbelief when the 'other' vessel looms out of the murk to reveal a starboard bow instead of the expected port, and vice versa. The lesson is that if you cannot see the other vessel at close range, and you find yourself making an assumption about her heading, you may well be wrong. Act accordingly.

This may be an opportune moment to remind ourselves of a technique successfully adopted by our forefathers in certain conditions of abnormal visibility: the placing of a lookout low down and well forward. A lookout in the bows, as opposed to high up in the heated comfort of a carpeted bridge, is often well placed to see something a few precious seconds before the officer of the watch. To maximise his effectiveness he must, however, have very good communications with the bridge.

But while fog is an unwelcome bedfellow for mariners, it is the bad weather that does the damage.

Despite the lessons of the past, and hard won experience, some vessels still proceed to sea with gear and cargo insufficiently secured. No matter how benign the conditions seem beyond the breakwater, it is still possible to get caught out. By the time the pilot has been dropped, and you encounter the first heavy sea or swell, it may already be too late to put someone safely on to the upper deck to lash things down. Good seamanship starts in port. Check and double-check that cargo-securing arrangements are in place before putting to sea, and that any loose gear has been properly secured. Particular attention should be paid to securing containers. Transverse forces acting at the top of a stack, when rolling in a beam sea, can be immense.

One of the primary causes of *Braer* suffering an engine failure before going aground at Garthness on the Shetland Islands, in 1993, was the failure to properly secure some spare pipes on deck. As the tanker laboured in heavy weather, they broke loose and damaged some vent pipes, which allowed seawater to drain into the oil fuel tanks.

Apart from anything else, there are dangers in putting seafarers on deck in rough weather. More than one person has been killed or seriously injured by green seas while working in an exposed position. Analysis often reveals that had things been properly attended to in the first place, it would never have been necessary to put someone out to secure loose gear or shut a weathertight opening.

Another factor for people working in exposed conditions is that they are never as efficient as they would be in fair weather or in harbour. Little allowance is ever given to reduced performance in bad weather, so expectations of normal responses, and attention to detail, are likely to be misplaced.

For the watchkeeper working in a totally enclosed bridge there is a danger that he or she might become detached from the elements outside, and will no longer have that instinctive feel for the actual conditions. There is no reason why someone so protected shouldn't be aware of the sea conditions, providing a conscious effort is made to watch what is happening and analyse its effect.

An awareness of how bad weather can damage vessels comes with experience. Nobody will thank you if you push a vessel too hard. More than one ro-ro ferry has damaged its bow visor in rough seas, and the prudent mariner may well choose to reduce speed before the damage is done.

And it is worth remembering the topography of the seabed. Smaller vessels, including leisure craft, can be very vulnerable when approaching the edge of a continental shelf in foul weather. And many a mariner has been surprised by how vicious the seas can be when underway in a gale in the relatively shallow waters of, say, the North Sea or the Baltic.

As conditions deteriorate, the small boat sailor should take care to shorten sail in ample time and be prepared to ride out the conditions if necessary. Anticipating how one might react in bad weather, before setting out, helps. As the barometer drops, the wind rises, the seas build, and the visibility clamps, it is a bit late to wonder where the trysail might be stowed, or realise you have never used the new parachute anchor before. Sea room is the small boat sailor's greatest asset. He should not squander this advantage, unless he is very confident of his position and his ability to take his craft safely to shelter. Many a yachtsman has foundered at the harbour bar, having been perfectly safe offshore.

The two most frequently ignored factors among small boat users in bad weather are the need to keep warm, dry and well nourished, and for the skipper to get his head down so he can rest. It is interesting to note the number of mistakes fatigued skippers make.

Among the most frequently observed shortcomings of fishermen in similar conditions are the failure to make vessels completely weathertight by shutting external doors and the hatches properly, and not appreciating the dangers of free surface effect if water is sloshing around in the fish hold.

The big ship sailor faces a slightly different problem. There is no single reason that stands out as an area of concern, but there is perhaps the need to remind those in this category that big seas can still pack a heavy punch. If the master decides that he should route his vessel well clear of stormy weather, then he should not hesitate to do so.

Ships can still drag their anchor if in an exposed anchorage, and if a master has any concerns about the scantlings in his ship, he would be well justified to slow down sooner — rather than later — on confronting bad weather.

Remembering that one square metre of water approaching you on a steady bearing weighs one tonne. A breaking wave of, say only 3m high, will be travelling at about 12 knots, and the combination of its weight and approach speed could inflict heavy damage to a vessel that is not being well handled, or if there is a flaw in its structure. The implications make for sober reflection.

But that's seafaring. The good seafarer can cope with bad weather. The sea will expose those who are not so well prepared.

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# Noticeboard

## Australian Bureau of Meteorology: new marine radio services

The Bureau of Meteorology's marine page has been updated with new links providing a comprehensive run down of the Bureau's new HF marine radio services (NMRS). The new link came into effect on 1 July 2002, and is readily accessible from the marine page: www.bom.gov.au/marine

## Readers' Survey of *The Marine Observer* – 2002

In the July edition of *The Marine Observer* we invited readers to complete a survey relating to the journal. By now we trust that the survey has found its way to everyone, and we look forward to receiving more responses. Only by knowing how our readers feel about the journal and its contents can we produce a publication that will continue to meet with general satisfaction, therefore every response will count in the analysis of results.

So, if you have not yet sent in a survey form, find the July 2002 edition and get writing!

## Falklands Conservation black-browed albatross survey

The numbers of black-browed albatrosses breeding in the Falkland Islands has decreased by 80,000 pairs during the last 10 years. Such a dramatic decline is a major cause of concern and, in an effort to discover where they go, and what happens to young birds once they leave the nest, Falklands Conservation teams spray-painted 10,000 fledgling black-browed albatrosses with a harmless, temporary, bright-orange paint in the first week of April 2002. This would make them easily identifiable as Falkland Island birds if subsequently seen at sea.

By the end of August 50 sightings had been made of marked birds off Argentina and Brazil and, at that time, the paint appeared to be wearing well but it is unlikely that any remains on the marked birds. In due course we hope to publish some results of this project.

## FTP Mail Service — forecasts and warnings for shipping by e-mail

This service was described in *The Marine Observer* (October 2001, 197). In Table 1 the e-mail text to access the Shipping and High Seas forecasts issued by the Met Office could have been misinterpreted in that the text **open iwin.nws.noaa.gov** should appear on one line and not split after the word 'open'. The complete command is:

**open iwin.nws.noaa.gov**
**cd data**
**cd text**
**cd NNNNNN**
**get EGRR.TXT**
**quit**

For the High Seas forecast for METAREA I substitute **FQNT21** for **NNNNNN**. For the Offshore Shipping Forecast for waters around the UK substitute **FPUK71** for **NNNNNN**.

It is important to note the capitalisation and ensure that the message is in pure text format. The instructions in Table 2 were correct in that **open** and **cd data** occupy separate lines.

The service can also be used to access charts at sea via e-mail, including those previously available via the Bracknell radio-facsimile broadcast. The script to access charts is (note the capitalisation):

**open**
**cd fax**
**get NNNNNN.TIF**
**quit**

Substitute **NNNNNN**.TIF with the following (depending on the chart required):

**PPVA89.TIF** for the latest analysis, **PPVE89.TIF** for the 24-hour forecast chart, **PPVI89.TIF** for the 48-hour forecast chart, and **PPVK89.TIF** the 72-hour forecast chart. Note that the **get** command can be repeated in the same message to obtain a set of charts. Charts in TIF format will be up to 70 Kb in size.

More details about the use of the Internet for marine products may be found on the NWS web pages at http://www.nws.noaa.gov/om/marine/internet.htm, with details of the FTP mail service at http://weather.noaa.gov/pub/fax/ftpmail.txt

## Changes to Niton NAVTEX service

As seafarers may already be aware, changes were made to the NITON NAVTEX service on 518 kHz commencing at 1200 UTC on 17 September 2002. They were necessary to avoid interference with transmisssions from Ostend, and the Niton broadcast of information made on behalf of the French hydrographic authorities.

Summarised, the details for Niton are now as follows:

1. The transmission identification character 'B1' is now 'E'.
2. Transmission timings (UTC) are 0040, 0440, 0840, 1240, 1640, 2040.
3. Coastal navigational warning broadcasts included on all transmissions.
4. Relevant NAVAREA I warnings, SUBFACTS and GUNFACTS are transmitted at 0440 UTC and 1640 UTC.
5. The 24-hour Shipping Forecast is transmitted at 0840 UTC and 2040 UTC, and the Extended Outlook is transmitted at 0040 UTC.

## Obituary — Captain J.R.G. Hannah

It is with great regret that we record the death, earlier this year, of Captain John Richard Garlies Hannah.

Dick Hannah was born on 1 November 1930 in Ranchi, India, and was the grandson of a Hooghly River pilot. He was educated primarily in India, but afterwards joined H.M.S. *Conway* in 1945 from where he joined the *Durham* (the New Zealand Shipping Company's training ship) three years later. Whilst with that company he served in all ranks, including Chief Instructional Chief Officer on the *Durham*.

His first command came in 1966 when he was appointed Master of the *Paparoa* and, two years later, joined the Overseas Container Line Ltd where he took command of the *Botany Bay*. When he eventually left the sea he was to finish his career as Fleet Operations Manager for P&O Containers Ltd.

He was a great supporter of the UK Voluntary Observing Fleet, firstly at sea by encouraging his officers to complete and transmit meteorological weather observations, and later by accompanying to Bracknell those Masters from the P&O container division who were nominated to receive special long-service awards.

## Retirement — Captain P.A. Furneaux

P. Furneaux

After 40 years of making meteorological observations, two million sea miles, and half a million air miles joining and leaving ships — I have retired!

Born in September 1943 in Crediton, Devon, I was educated at St Mary Redcliffe School, Bristol, before going to H.M.S. *Worcester* in 1958. I joined Alfred Holt & Company in 1961, my first ship being the *Antilochus*, and spent many happy years in the Far East and Australia. I served to the rank of Chief Officer, on various types of vessels, until the demise of Ocean Steamship when I transferred to OCL in 1984. After a spell in their London headquarters, I obtained command in 1998 on the *Remuera Bay*. Then P&O Containers Ltd amalgamated with Royal Nedlloyd to become P&O Nedlloyd Ltd, and my last command was the *P&O Nedlloyd Hudson*.

I recall recording my first observation in 1962, followed by several years of SHRED* reporting and then observing for the American Voluntary Observing Fleet on our cross-trading ships, before returning to the UK ships. One personal satisfaction resulting from my seagoing career is that I emulated a distant relative, Captain Tobius Furneaux who was reputedly the first person to have circumnavigated the world in both directions. I managed this on general cargo and containerships — Tobius sailed with Captain Cook on his first and second voyages to Australia in the late eighteenth century.

I am a council member of the Nautical Institute and a member of the Honourable Company of Master Mariners. I have also taken an interest in the Tiverton Sea Cadets, many of whom have joined me on coastal voyages with P&O Nedlloyd Ltd. Elsewhere, my time will be occupied with hobbies such as gardening, DIY, and the restoration of antique furniture.

*Editor's note*. The records of the Marine Networks section show that Captain Furneaux was nominated to receive an Excellent Award on seven occasions during his observing career. His contributions to voluntary observing work are greatly appreciated on both sides of the Atlantic. We wish him a long and happy retirement.

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* SHRED. Ships' REDuced messsage — a form of weather observation code no longer in use.

# UK and overseas Port Met. Office services

***Note:*** **Offices in this list that hold stationery and instruments are indicated by ***

| Location | Name | E-mail | Telephone | Fax |
|---|---|---|---|---|
| **UK** | | | | |
| South-east England * | Captain Harry H. Gale | pmolondon@metoffice.com | +44 (0)1375 859970 | +44 (0)1375 859972 |
| Bristol Channel * | Captain Austin P. Maytham | pmocardiff@metoffice.com | +44 (0)29 2045 1323 | +44 (0)29 2045 1326 |
| South-west England * | Captain James M. Roe | pmosouthampton@metoffice.com | +44 (0)23 8022 0632 | +44 (0)23 8033 7341 |
| East England * | Captain John Steel | pmohull@metoffice.com | +44 (0)1482 867226 | +44 (0)1482 868116 |
| North-west England * | Colin B. Attfield | pmoliverpool@metoffice.com | +44 (0)151 6490541 | +44 (0)151 6490547 |
| Scotland * | Tony Eastham | pmoedinburgh@metoffice.com | +44 (0)131 528 7305 | +44 (0)131 528 7345 |
| Offshore Adviser, Aberdeen * | Iain J. Hendry | ihendry@metoffice.com | +44 (0)1224 407557 | +44 (0)1224 407568 |

## Port Met. Office services overseas

| Location | Name | E-mail | Telephone | Fax | Telex |
|---|---|---|---|---|---|
| **AUSTRALIA** | | | | | |
| Fremantle * | M. Young | malyoung@iinet.net.au | +61 8 9474 1974 | +61 8 9260 8475 | — |
| Melbourne * | M.J. Hills | m.hills@bom.gov.au | +61 3 9669 4982 | +61 3 9663 4957 | AA152898 |
| Sydney * | E.E. Rowlands | e.rowlands@bom.gov.au | +61 2 9296 1547 | +61 2 9296 1648 | — |
| **CANADA** | | | | | |
| Dartmouth, N.S. | R. Sheppard | randy.sheppard@ec.gc.ca | 1 902 426 6703 | 1 902 426 6404 | — |
| Hamilton | R Shukster | rick.shukster@ec.gc.ca | (905) 312 0900 | (905) 312 0730 | — |
| Montreal (Ville St Laurent) | J. Laroche | jacques.laroche@ec.gc.ca | (514) 283 6325 (Ansafone) | (514) 283 1629 | 05 827697 DOE AES MONTREAL |
| Mount Pearl | J. Cossar | jack.cossar@ec.gc.ca | (709) 722 4798 | (709) 722 5097 | — |
| Vancouver * | M. Riley | mike.riley@ec.gc.ca | (604) 664 9136 | (604) 664 9195 | 04 508556 |
| **CHINA** | | | | | |
| Kowloon * | C.F. Wong | hkopmo@hko.gov.hk | (852) 2926 8200 | (852) 2311 9448 | 54777 GEOPH HX |
| **DENMARK** | | | | | |
| Copenhagen | L.O. Niegsch | lor@dmi.dk | (45) 39 15 7343 | (45) 39 15 7390 | 27138 metin |
| **FALKLAND ISLANDS** * | R. Gorbutt | — | 500 27260 | 500 27265 | — |
| **FRANCE** | | | | | |
| Marseille and Fos * | P. Coulon | mir13@meteo.fr | (33) 442 959025 | (33) 442 959029 | — |
| Le Havre | G. Doligez | gerard.doligez@meteo.fr | (33) 232 740360 | (33) 232 740361 | — |
| **GERMANY** | | | | | |
| Bremerhaven * | H. Hesse | henning.hesse@dwd.de | (49) 471 7004018 | (49) 471 7004017 | — |
| Hamburg * | P. Gollnow | peter.gollnow@dwd.de | (49) 40 6690 1411 | (49) 40 6690 1496 | 215515 HADW D |

## Port Met. Office services overseas (contd)

| Location | Name | E-mail | Telephone | Fax | Telex |
|---|---|---|---|---|---|
| **GIBRALTAR** | Met. Office Gibraltar | | 350 53419 | 350 53474 | — |
| **GREECE** Piraeus | G. Kassimidis | — | (301) 096 21116/28950 | (301) 96 28952 | 215255 EMY GREECE |
| **INDIA** | | | | | |
| Bombay | Port Met. Officer | — | (91) 22 2613733 | — | — |
| Madras * | Port Met Officer | — | (91) 44 560187 | (91) 44 827 1581 | 041 7286 |
| **JAPAN** | | | | | |
| Yokohama | Port Met. Officer | — | (8145) 621 1991 | (8145) 622 3520 | — |
| **KENYA** | | | | | |
| Mombasa | A.J. Mafimbo | — | (254) 11 25685 or 43344 | (254) 11 433440 | — |
| **MAURITIUS** Vacoas | S. Ragoonaden | — | (230) 686 1031/32 | (230) 686 1033 | 4722 METEO IW |
| **NETHERLANDS** | | | | | |
| De Bilt * (all ports) | J.W. Schaap | Jan.Schaap@knmi.nl | (31) 30 220 6391 | (31) 30 221 0849 | 47096 NL |
| **NEW ZEALAND** | | | | | |
| Wellington * (all ports) | Ms Julie Fletcher | fletcher@met.co.nz | (64) 4 4700 789 | (64) 4 4700 772 | NZ 30636 |
| **NORWAY** | | | | | |
| Bergen | Port Met. Officer | — | (475) 552 36600 | (475) 552 36703 | 40427/42239 |
| **SAUDI ARABIA** | | | | | |
| Jeddah | M. Rajkhan | — | (966) 2 683 4444 Ext. 325 | — | 601236 ARSAD SJ |

| Location | Name | E-mail | Telephone | Fax | Telex |
|---|---|---|---|---|---|
| **SINGAPORE *** | E. Lee | LEE_Mun_San@NEA.gov.sg | (65) 545 7198 | (65) 545 7192 | RS 50345 METSIN |
| **SOUTH AFRICA** | | | | | |
| Cape Town * | C.S. Marais | maritmect@weathersa.co.za | (27) 21 934 0450 | (27) 21 934296 | 527101 |
| Durban and Richards Bay * | G. McKay | mckay@weathersa.co.za | (27) 31 424224 | (27) 31 426830 | 624132 |
| **USA** | | | | | |
| Anchorage | L. Hubble | Larry.Hubble@noaa.gov | (907) 271 5135 | 907 271 3711 | — |
| Baltimore | J. Saunders | James.Saunders@noaa.gov | 410 633 4709 | 410 633 4713 | — |
| Cleveland | G. Smith | George.E.Smith@noaa.gov | 216 265 2374 | 216 265 2371 | — |
| Houston/ Galveston * | C. Fakes | Chris.Fakes@noaa.gov | (281) 534 2640 | (281) 337 3798 | 77539 |
| Honolulu | D. LeeLoy | Derek.Leeloy@noaa.gov | 808 532 6439 | 808 532 5569 | — |
| Jackonsville | L. Cain | Larry.Cain@noaa.gov | 904 741 5186 | 904 741 0078 | — |
| Kodiak | R. Courtney | Richard.Courtney@noaa.gov | 907 487 2102 | 907 487 9730 | — |
| Long Beach * | R. Webster | Bob.Webster@noaa.gov | 562 980 4090 | 562 980 4089 | 7402731 BOBW UC |
| New Orleans | J. Warrelmann | John.Warrelmann@noaa.gov | 504 589 4839 | Same–call first | — |
| Norfolk | P. Gibino | Peter.Gibino@noaa.gov | 757 441 3415 | 757 441 6051 | — |
| Oakland | R. Novak | Bob.Novak@noaa.gov | 510 637 2960 | 510 637 2961 | 7402795 WPMO UC |
| Port Everglades | R. Drummond | Robert.Drummond@noaa.gov | 954 463 4271 | 954 462 8963 | — |
| Seattle | P. Brandow | Pat.Brandow@noaa.gov | 206 526 6100 | 206 526 4571 | 7608403 SEA UC |
| South Amboy, N.J. * | T. Kenefick | Timothy.Kenefick@noaa.gov | 732 316 5409 | 732 316 7643 | — |
| Valdez | L. Chrystal | Lynn.Chrystal@noaa.gov | 907 835 4505 | 907 835 4598 | — |

# Index to Volume 72, 2002

**Note: An index of observing ships named in this volume follows the main index listing.**

## Index of ships and offshore installations contributing to *The Marine Observer* in 2002

## Inmarsat-C Land Earth Stations accepting 'Code 41' messages (ships' weather observations)

### Atlantic Ocean Region — East

| *Station name* | *Country* | *ID No.* |
|---|---|---|
| Aussaguel | France | 121 |
| Burum (Station 12) | The Netherlands | 112 |
| Goonhilly | United Kingdom | 102 |
| Raisting | Germany | 115 |
| Southbury | United States | 101 |
| Thermopylae | Greece | 120 |

### Atlantic Ocean Region — West

| *Station name* | *Country* | *ID No.* |
|---|---|---|
| Burum (Station 12) | The Netherlands | 012 |
| Goonhilly | United Kingdom | 002 |
| Southbury | United States | 001 |

### Indian Ocean Region

| *Station name* | *Country* | *ID No.* |
|---|---|---|
| Arvi | India | 306 (Within Metearea VIII (N) only) |
| Aussaguel | France | 321 |
| Burum (Station 12) | The Netherlands | 312 |
| Perth | Australia | 322 |
| Raisting | Germany | 333 |
| Thermopylae | Greece | 305 |
| Sentosa | Singapore | 328 |
| Yamaguchi | Japan | 303 |

### Pacific Ocean Region

| *Station name* | *Country* | *ID No.* |
|---|---|---|
| Perth | Australia | 222 |
| Santa Paula | United States | 201 |
| Sentosa | Singapore | 210 |
| Yamaguchi | Japan | 203 |